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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

North American Electric Reliability Corporation)
)

Docket No. _____

PETITION OF THE
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
FOR APPROVAL OF
PROPOSED RELIABILITY STANDARD CIP-012-2

Pursuant to Section 215(d)(1) of the Federal Power Act (“FPA”),¹ Section 39.5 of the regulations of the Federal Energy Regulatory Commission (“FERC” or “Commission”),² and Order No. 866,³ the North American Electric Reliability Corporation (“NERC”)⁴ hereby submits for Commission approval proposed Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers. The proposed Reliability Standard advances the reliability of the Bulk-Power System (“BPS”) by requiring Responsible Entities⁵ to implement protections regarding the availability of communication links and sensitive Bulk Electric System (“BES”) data communicated between BES Control Centers.⁶ As such, the proposed Reliability

¹ 16 U.S.C. § 824o.

² 18 C.F.R. § 39.5 (2023).

³ *Critical Infrastructure Protection Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers*, Order No. 866, 170 FERC ¶ 61,031 (2020). As discussed more fully herein, Order No. 866 approved Reliability Standard CIP-012-1, which NERC developed in response to a directive issued by the Commission in *Revised Critical Infrastructure Protection Reliability Standards*, Order No. 822, 154 FERC ¶ 61,037 (2016), *order denying reh’g*, Order No. 822-A, 156 FERC ¶ 61,052 (2016).

⁴ The Commission certified NERC as the electric reliability organization (“ERO”) in accordance with Section 215 of the FPA. *N. Am. Elec. Reliability Corp.*, 116 FERC ¶ 61,062 (2006), *order on reh’g & compliance*, 117 FERC ¶ 61,126 (2006), *aff’d sub nom. Alcoa, Inc. v. FERC*, 564 F.3d 1342 (D.C. Cir. 2009) [hereinafter ERO Certification Order].

⁵ As used in the CIP Reliability Standards, a Responsible Entity refers to the registered entities subject to the CIP Reliability Standards.

⁶ Unless otherwise designated, all capitalized terms shall have the meaning set forth in the *Glossary of Terms Used in NERC Reliability Standards*,

https://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf.

Standard addresses the Commission’s directive from Order No. 866 to modify Critical Infrastructure Protection (“CIP”) Reliability Standards to provide such protections. NERC requests that the Commission approve the proposed Reliability Standard, provided in Exhibit A hereto, as just, reasonable, not unduly discriminatory or preferential, and in the public interest.

NERC also requests approval of: (1) the associated Implementation Plan (**Exhibit B**); (2) the associated Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) (**Exhibit F**); and (3) the retirement of currently effective Reliability Standard CIP-012-1.

As required by Section 39.5(a) of the Commission’s regulations,⁷ this petition presents the technical basis and purpose of the proposed Reliability Standard, a summary of the development history (**Exhibit G**), and a demonstration that the proposed Reliability Standard meets the criteria identified by the Commission in Order No. 672⁸ (**Exhibit C**). The NERC Board of Trustees adopted the proposed Reliability Standard on December 12, 2023.

I. SUMMARY

The currently effective CIP-012 Reliability Standard, Reliability Standard CIP-012-1, mitigates the cyber security risks associated with communications between BES Control Centers, and helps support situational awareness and reliable BPS operations, by requiring Responsible Entities to protect the confidentiality and integrity of Real-time Assessment and Real-time monitoring data transmitted between BES Control Centers. NERC initially developed Reliability Standard CIP-012-1 in response to the Commission’s directive in Order No. 822.⁹ In approving

⁷ 18 C.F.R. § 39.5(a).

⁸ *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, 114 FERC 61,104, at PP 262, 321-37 (2006) [hereinafter Order No. 672], *order on reh’g*, Order No. 672-A, 114 FERC 61,328 (2006).

⁹ In Order No. 822, the Commission directed NERC to develop modifications to the CIP Reliability Standards to require Responsible Entities to implement controls protecting communications links and sensitive data communicated between BES Control Centers. *See* Order No. 822 at P 53.

Reliability Standard CIP-012-1, the Commission further directed NERC to develop modifications to provide availability protections.

The proposed Reliability Standard CIP-012-2 improves upon and expands the protections required by Reliability Standard CIP-012-1 by requiring Responsible Entities to mitigate the risk posed by loss of availability of communication links and Real-time Assessment and Real-time monitoring data transmitted between Control Centers. Proposed Reliability Standard CIP-012-2 modifies CIP-012-1 by adding two new Parts to Requirement R1 to address availability: Part 1.2, which requires protections for the availability of data in transit; and Part 1.3, which requires protections to initiate recovery of lost (i.e., unavailable) communication links.

Consistent with the directive in Order No. 866, NERC considered the risks posed by different types of BES Control Centers and the data communicated between those Control Centers to determine the scope and applicability of the proposed standard. The applicability of proposed Reliability Standard CIP-012-2 is unchanged from the currently effective standard, and applies to all Responsible Entities who own or operate Control Centers, and continues to include the limited exemption from CIP-012-1 for facilities that, while meeting the definition of Control Center, only communicate Real-time data with other Control Centers regarding a co-located field asset – i.e., a transmission station or generation facility. In addition, the scope of proposed Reliability Standard CIP-012-2 is unchanged from the currently effective standard.

NERC respectfully requests that the Commission approve the proposed modifications to Reliability Standard CIP-012-2 as just, reasonable, not unduly discriminatory or preferential, and in the public interest. NERC further requests that the Commission approve the proposed modifications to Reliability Standard CIP-012-2 to become effective as set forth in the proposed Implementation Plan (**Exhibit B**).

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to the following:¹⁰

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III. REGULATORY BACKGROUND

The following background information is provided below: (a) an explanation of the regulatory framework for NERC; (b) a description of the NERC Reliability Standards Development Procedure; (c) a history of the CIP-012 Reliability Standard and the Commission directives that preceded development; and (d) the history of the Project 2020-04 Modifications to CIP Standards Standard Drafting Team (“SDT”) work on proposed Reliability Standard CIP-012-2.

¹⁰ NERC respectfully requests a waiver of Rule 203 of the Commission’s regulations, 18 C.F.R. § 385.203, to allow the inclusion of more than two persons on the service list in this proceeding.

a. Regulatory Framework

By enacting the Energy Policy Act of 2005,¹¹ Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the BPS, and with the duty of certifying an ERO that would be charged with developing and enforcing mandatory Reliability Standards, subject to Commission approval. Section 215(b)(1) of the FPA states that all users, owners, and operators of the BPS in the United States will be subject to Commission-approved Reliability Standards.¹² Section 215(d)(5) of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard.¹³ Section 39.5(a) of the Commission's regulations requires the ERO to file for Commission approval each Reliability Standard that the ERO proposes should become mandatory and enforceable in the United States, and each modification to a Reliability Standard that the ERO proposes to make effective.¹⁴

The Commission has the regulatory responsibility to approve Reliability Standards that protect the reliability of the BPS and to ensure that such Reliability Standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest. Pursuant to Section 215(d)(2) of the FPA and Section 39.5(c) of the Commission's regulations, the Commission will give due weight to the technical expertise of the ERO with respect to the content of a Reliability Standard.¹⁵

b. NERC Reliability Standards Development Procedure

The proposed Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.¹⁶ NERC

¹¹ 16 U.S.C. § 824o.

¹² *Id.* § 824(b)(1).

¹³ *Id.* § 824o(d)(5).

¹⁴ 18 C.F.R. § 39.5(a).

¹⁵ 16 U.S.C. § 824o(d)(2); 18 C.F.R. § 39.5(c)(1).

¹⁶ Order No. 672 at P 334.

develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC Standard Processes Manual.¹⁷ In its ERO Certification Order, the Commission found that NERC’s rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards and thus satisfy several of the Commission’s criteria for approving Reliability Standards.¹⁸ The development process is open to any person or entity with a legitimate interest in the reliability of the BPS. NERC considers the comments of all stakeholders. Further, a vote of stakeholders and adoption by the Board is required before NERC submits the Reliability Standard to the Commission for approval.

c. History of the CIP-012 Reliability Standard

In Order No. 822, the Commission directed NERC, pursuant to section 215(d)(5) of the FPA, to develop modifications to the CIP Reliability Standards to require Responsible Entities to implement controls protecting communication links and sensitive data communicated between BES Control Centers “in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).”¹⁹ In response to this directive, NERC developed Reliability Standard CIP-012-1, which required Responsible Entities to implement controls to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while such data is being transmitted between applicable Control Centers. While Order No. 822 directed NERC to develop the modifications as part of its approval of Reliability Standard CIP-006-6, NERC

¹⁷ The NERC Rules of Procedure are available at <http://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx>. The NERC Standard Processes Manual is available at <https://www.nerc.com/AboutNERC/Pages/Rules-of-Procedure.aspx>.

¹⁸ ERO Certification Order at P 250.

¹⁹ Order No. 822 at P 53.

determined that a new Reliability Standard, CIP-012-1, was appropriate given differences in applicability and scope from CIP-006-6.²⁰

In Order No. 866, the Commission approved Reliability Standard CIP-012-1. The Commission, however, noted that a reliability gap remained regarding cyber security protections for the *availability* of communication links and sensitive BES data communicated between Control Centers.²¹ The Commission reiterated its directive from Order No. 822 that BES Control Centers “must be capable of receiving and storing a variety of sensitive bulk electric system data from interconnected entities,”²² and that currently effective Reliability Standards do not address the availability portion of this directive.²³ Specifically, the Commission explained that modifying Reliability Standard CIP-012-1 to include availability protections would not be duplicative of currently effective Reliability Standards because the latter “either do not apply to communications between Control Centers or do not create an obligation to protect the availability of data between Control Centers.”²⁴

Regarding specific Reliability Standards, Order No. 866 provided that that IRO-002-5 and TOP-001-4 only require “redundant and diversely routed data exchange infrastructure *within* the Control Center environment” and not “*between* individual Control Centers.”²⁵ Similarly, the Commission explained that these standards do not “create[] an obligation to maintain data availability between Control Centers.”²⁶ The Commission also distinguished Reliability Standards

²⁰ *Petition of the North Am. Elec. Reliability Corp. for Approval of Proposed Reliability Standard CIP-012-1*, Docket No. RM18-20-000 at p. 9 (Sept. 18, 2018).

²¹ Order No. 866 at P 16.

²² *Id.* at P 26 (citing Order No. 822, 154 FERC ¶ 61,037 at P 4).

²³ Order No. 866 at P 26.

²⁴ *Id.*

²⁵ *Id.* at P 27.

²⁶ *Id.*

IRO-010-2 and TOP-003-3 because while requirements for mutually agreeable security protocols for exchange of Real-time data “may have the effect of contributing to greater availability”, they do not “create an obligation, as directed in Order No. 822, to protect the availability of those communication capabilities and associated data by applying appropriate security controls.”²⁷ In addition, the Commission noted that an obligation to protect availability “afford[s] flexibility in terms of what data is protected and how,” and is distinct from relying only on other currently effective Reliability Standards “whose effect may be to support availability.”²⁸ The Commission agreed with NERC’s prior comments regarding Reliability Standard EOP-008-2 that redundancy (e.g., maintaining a backup Control Center) helps maintain availability; however, the Commission emphasized that this is an “ancillary benefit” and not a requirement which would close the identified reliability gap.²⁹

Accordingly, the Commission directed NERC to develop modifications to require protections for the availability of communication links and data communicated between BES Control Centers.³⁰

d. Development of the Proposed Reliability Standard

As further described in Exhibit G, NERC initiated a Reliability Standard development project, Project 2020-04 Modifications to CIP-012 (“Project 2020-04”), to address the directives set forth in Order No. 866. On April 26, 2021, NERC posted the initial draft of proposed Reliability Standard CIP-021-2 for a 45-day comment period and ballot. The initial draft did not receive the requisite approval from the Registered Ballot Body (“RBB”). After considering comments to the initial draft, NERC posted a second draft of the proposed Reliability Standard for a 55-day

²⁷ *Id.*

²⁸ *Id.* at P 28.

²⁹ *Id.* at P 29.

³⁰ *Id.* at P 3.

comment period and ballot on November 30, 2021, which also failed to receive the requisite approval from the RBB. Following consideration of comments, a third draft of the proposed Reliability Standard was posted on October 3, 2022 for a 45-day comment period. It again failed to garner the requisite approval. After considering the comments, NERC posted a fourth draft of proposed Reliability Standard CIP-012-2 on September 19, 2023 for a 45-day comment period, which received the requisite approval from the RBB with affirmative votes of 84.22 percent at 83.45 percent quorum. On November 28, 2023, NERC posted a final ballot for proposed Reliability Standard CIP-012-2 for a 10-day comment period, which received affirmative votes of 88.36 percent at 88.62 percent quorum. The Board adopted the proposed Reliability Standard on December 12, 2023.

IV. JUSTIFICATION FOR APPROVAL

Proposed Reliability Standard CIP-012-2 improves upon and expands the protections required by Reliability Standard CIP-012-1 by requiring Responsible Entities to mitigate the risk posed by loss of availability of communication links and Real-time Assessment and Real-time monitoring data transmitted between Control Centers. Specifically, Proposed Reliability Standard CIP-012-2 modifies CIP-012-1 by adding two new Parts to Requirement R1 to address availability: Part 1.2, which requires protections for the availability of data in transit; and Part 1.3, which requires protections to initiate recovery of lost (i.e., unavailable) communication links. The modifications in Proposed Reliability Standard CIP-012-2 advance the reliability of the BPS by requiring Responsible Entities to implement protections to ensure the timeliness and accessibility of communications between applicable Control Centers. NERC requests that the Commission approve the proposed Reliability Standard as just, reasonable, not unduly discriminatory or preferential, and in the public interest.

As discussed below, proposed Reliability Standard CIP-012-2 addresses the Commission's directive in Order No. 866 and is just, reasonable, not unduly discriminatory or preferential, and in the public interest. The following section provides an explanation of:

- the purpose and applicability of the proposed Reliability Standard (Subsection A);
- the modifications proposed in Reliability Standard CIP-012-2, including a discussion of the manner in which the modifications address the directive in Order No. 866 (Subsection B);³¹ and
- an overview of the other minor modifications to proposed Reliability Standard CIP-012-2 (Subsection C).

This section concludes with a discussion of the enforceability of the proposed Reliability Standard (Subsection D).

a. Purpose and Applicability

The purpose of proposed Reliability Standard CIP-012-2 is substantively unchanged from the currently effective standard. As modified, proposed Reliability Standard CIP-012-2 requires entities to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity), and transmission of information (availability) between applicable Control Centers.³² In requiring additional protections regarding availability, proposed Reliability Standard CIP-012-2 will provide timely and reliable access to information necessary for secure and reliable BES operations. In order for certain Responsible Entities to adequately perform their Real-time reliability functions, their associated Control Centers must be capable of accessing a variety of sensitive BES data from interconnected entities. Helping to ensure the timeliness and accessibility of these communications through the proposed protections in proposed Reliability Standard CIP-012-2 supports reliable operations of the BPS.

³¹ Proposed Reliability Standard CIP-012-2 consists of one requirement with five parts.

³² See Technical Rationale at p. 2.

The applicability and scope of protections of Reliability Standard CIP-012-2 is unchanged from the currently effective standard. Proposed Reliability Standard CIP-012-2 applies to entities registered as Balancing Authorities, Generator Operators, Generator Owners, Reliability Coordinators, Transmission Operators, and Transmission Owners that own or operate a Control Center. The proposed standard continues to apply to Control Centers with high, medium, and low impact BES Cyber Systems and focuses on Responsible Entities that own or operate Control Centers. Proposed Reliability Standard CIP-012-2 continues to include the limited exemption from the currently effective standard for facilities that, while meeting the definition of Control Center, only communicate Real-time data with other Control Centers regarding a co-located field asset – i.e., a transmission station or generation facility.

b. Revisions to Requirement R1

Proposed Reliability Standard CIP-012-2 consists of a single Requirement with five Parts that will require Responsible Entities to implement one or more plans to protect the confidentiality, integrity, and availability of communication links and sensitive BES data communicated between Control Centers. The plan(s) must include: (1) identification of security protections; (2) identification of availability protections; (3) identification of methods for recovery of communication links; (4) identification of where the protections or methods are applied; and (5) identification of the responsibilities of each entity if the Control Centers are owned or operated by different Responsible Entities.³³

Proposed Reliability Standard CIP-012-2 modifies the currently effective standard to include two new Parts, Requirement R1 Parts 1.2 and 1.3, with conforming changes to the existing Parts. As discussed below, proposed Requirement R1 Part 1.2 requires a Responsible Entity to

³³ See Technical Rationale at p. 2.

identify methods to protect against loss of availability of Real-time Assessment and Real-time monitoring data communicated between Control Centers. Proposed Requirement R1 Part 1.3 requires an entity to identify methods to initiate recovery of lost communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. The modifications are shown in blackline below:

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure ~~and, unauthorized modification of, and loss of availability, of data used in~~ Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]
- 1.1. Identification of ~~security protection~~method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers;
 - 1.2. Identification of ~~where~~method(s) used to mitigate the ~~Responsible Entity applied security protection~~risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring for transmitting Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for ~~applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.~~ implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

Proposed Requirement R1 Parts 1.2 and 1.3 will require Responsible Entities to develop and implement a plan to address the risks posed by loss of availability of communication links and Real-time Assessment and Real-time monitoring data transmitted between Control Centers.

Under proposed Requirement R1, Part 1.2, Responsible Entities must identify methods within their CIP-012-2 plan to mitigate the risks posed by a loss of the ability to communicate

Real-time Assessment and Real-time monitoring data. Loss of data transmission capability between Control Centers can occur as the result of many scenarios, including misconfiguration of equipment, a physical break of transmission medium, or a cyber-attack. As a CIP standard, the focus of proposed Reliability Standard CIP-012-2 is the application of cyber protections to maintain availability.³⁴ Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are several potential methods to maintain the ability to communicate Real-time Assessment and Real-time monitoring data.³⁵

Under proposed Requirement R1, Part 1.3, Responsible Entities must identify methods within their CIP-012 plan to initiate the recovery of lost communication links. An important element of data communications is the availability of the communication links themselves. Communication links are the medium by which the data is transmitted between Control Centers (e.g., fiber, copper lines, satellite, etc.).³⁶ The ability to recover such links after a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may reference other applicable portions of existing plans that accomplish the objective of this requirement.

Proposed Reliability Standard CIP-012-2 satisfies the Commission's directive in Order No. 866 that NERC develop Reliability Standard requirements to protect the availability of communication links and data communicated between individual BES Control Centers.³⁷ The Commission noted that these requirements can provide flexibility in terms of what data is protected and how.³⁸ Proposed CIP-012-2 complies with this directive because it would obligate

³⁴ *Id.* at p.2-3.

³⁵ *Id.* at p. 2.

³⁶ *Id.* at p. 2.

³⁷ Order No. 866 at P 26-27.

³⁸ *Id.* at P 28.

Responsible Entities to protect the availability of data communicated between Control Centers, including requirements to initiate recovery of communication capabilities (e.g., communication links) and protect against loss of availability of the associated data in transit between Control Centers.

For purposes of the proposed Reliability Standard, “availability” is defined as “providing timely and reliable access to information,” and is based on the definition of “availability” from the National Institute of Standards and Technology (“NIST”).³⁹ The proposed Reliability Standard describes availability as providing “access to” information rather than ensuring “use of” information, as the latter refers to data at rest residing within BES Cyber Systems and is explicitly protected by other NERC CIP and Operations and Planning Reliability Standards.⁴⁰ To alleviate any potential confusion, the proposed Requirement R1 Parts 1.2 and 1.3 language requires protections for “loss of ability to communicate” data and “methods to initiate recovery” of communication links. The proposed language satisfies the reliability concern underlying the Commission’s directive, which is to address the availability of data in motion and not data at rest.

In addition to this determination, the SDT considered extensive comments and feedback from industry in describing the “availability” component of CIP-012, which suggested that substantial confusion could arise from use of the term “availability” as a descriptor in Requirement R1 Parts 1.2 or 1.3 due to its differing interpretations in cyber security, operations, and communications sectors. For example, the SDT considered the following industry concerns:

³⁹ NIST Special Publication 800-59, *Guideline for Identifying an Information System as a National Security System* at 13, under “Availability” from 44 U.S.C., Sec. 3542 (b)(1)(C) (“availability, which means ensuring timely and reliable access to and use of information.”).

⁴⁰ See Technical Rationale at p. 3.

- Different industry segments (cybersecurity, telecommunications) have different or conflicting interpretations of the term “availability” which could cause confusion or inconsistency when interpreting compliance obligations under the proposed Reliability Standard;⁴¹
- Other, dissimilar NERC standards use the term “availability” which could cause confusion or inconsistency when interpreting compliance obligations under multiple NERC Reliability Standards;⁴²
- “Availability” is an ambiguous term that does not adequately describe an entity’s obligations under the proposed Reliability Standard;⁴³ and

⁴¹ See, e.g., NERC, *Consideration of Comments – CIP-012-2, Project 2020-04 Modifications to CIP-012*, Comments of Lower Colorado River Authority (“LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness . . . entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments.”) at 35; and Comments of Bonneville Power Administration (“‘Availability’ means different things to cybersecurity professionals and communications professionals (who will be interpreting and implementing this Requirement)[.] Availability in cybersecurity circles is ‘Ensuring timely and reliable access to and use of information.’ BPA agrees that this definition meets the intent of the FERC Order. Availability in communications circles is a ‘Quantitative measurement of the expected desirable performance criteria of a communications link/channel/system.’ . . . This definition doesn’t meet FERC’s intentions, but will be the first thing that comes to mind in telecom engineers who read it.”) at 23, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04%20Consideration%20of%20Comments_third%20ballot_100322.pdf.

⁴² See *Id.* at 19, Comments of MRO NSRF (“The NSRF recognizes the challenges and unintended consequences associated with “availability” being added as a new definition to the NERC Glossary of Terms since “availability” is used in other standards which could be impacted. In light of that, the NSRF suggests a definition be added (and limited in scope) to the CIP-012 standard itself. Additionally, clarification of “availability” could also be included in the Technical Rationale for CIP-012 itself. The benefits of a definition include formalization within the Standard’s vernacular, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams.”).

⁴³ See, e.g., NERC, *Consideration of Comments – CIP-012-2, Project 2020-04 Modifications to CIP-012*, Comments of ACES Power Marketing (“Although the FERC order uses “availab[i]lit[ty]” We suggest using “and loss of data used for . . .” in R1. We feel by removing “availability”, it addresses the overall picture of availability without directly using availability and relieves the need to define it. The new measures describe what the requirement is aiming to mitigate, making it clearer for Regional Entities to con[s]truct their plans”) at 24, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04_Consideration%20of%20Comments%2009072023.pdf; Comments of Duke Energy (“We prefer the language of FERC Order No. 822 specifically directing NERC to modify the Reliability Standards to require entities to implement controls to protect communication links and data communicated between BES Control Centers. We think that availability should be addressed using language that references controls to protect availability of communication links and data.”) at 15, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04%20Consideration%20of%20Comments_third%20ballot_100322.pdf; Comments of APS - Arizona Public Service Co. (“The focus is on providing protections regarding availability of the communication links and data instead of providing the availability of communications links and data. The focus should be on the protections of the availability of links and data to make sure the responsible entity can plan for both recovery of compromised communication links and the use of backup communications.”) at 29, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04_Response%20to%20Comments_112021.pdf.

- Entities have little to no control over the availability of communications networks, and thus have limited options, e.g., redundancy, as a protection against loss of availability.⁴⁴

As a result of this feedback, the SDT chose to use “loss of availability” in the initial Requirement R1 language, “loss of ability to communicate” in Requirement R1 Part 1.2, and “methods to initiate recovery” of communication links in Part 1.3. The SDT provided further descriptive language throughout the Technical Rationale and draft Implementation Guidance⁴⁵ to aid industry in meeting compliance obligations for this Requirement, including “information . . . while in transit,”⁴⁶ “loss of ability to communicate . . . data,”⁴⁷ “loss of data transmission capability,”⁴⁸ “transmission of information,”⁴⁹ and “loss of data flow.”⁵⁰ These descriptors provide precision for

⁴⁴ See, e.g., NERC, *Consideration of Comments – CIP-012-2, Project 2020-04 Modifications to CIP-012*, Lower Colorado River Authority (“LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness . . . entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments.”) at 35, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04%20Consideration%20of%20Comments_third%20ballot_100322.pdf; Comments of Network and Security Technologies (“N&ST is concerned that as written, [the Requirement] could be construed as requiring a Responsible Entity to achieve 100% availability of communication links and the data they carry, something FERC Order 866 concedes cannot always be guaranteed”) at 47; Comments of Tacoma Public Utilities and Tacoma Power (“Tacoma Power is concerned on utilizing the terminology “availability” in the Requirement language. Responsible Entities do not have complete control over portions of the communication system outside of the entities’ footprint. Responsible Entities cannot assure the availability of communication carrier networks, even if contract language specifies the availability. Tacoma Power recommends amending the language in the Requirement to specify that entities only need to ensure availability up to the connection to the common carrier and provide demarcation of what parts of the system are under the Entities’ control.”) at 25, https://www.nerc.com/pa/Stand/Project202004Modifications%20to%20CIP012DL/2020-04_Response%20to%20Comments_112021.pdf.

⁴⁵ The NERC Compliance Guidance Policy is available at: <https://www.nerc.com/pa/comp/guidance/Documents/Compliance%20Guidance%20Policy.pdf>. Implementation Guidance provides non-exclusive examples or approaches to compliance, which are vetted by industry and endorsed by the ERO Enterprise. Endorsement from the ERO Enterprise of an example means that the ERO Enterprise CMEP staff will give these examples deference when conducting compliance monitoring activities. As such, registered entities can rely upon examples as reasonable assurance that compliance requirements will be met if examples are followed, understanding that compliance determinations may differ depending on facts, circumstances, and system configurations.

⁴⁶ Technical Rationale at p. 2.

⁴⁷ Technical Rationale at p. 2; Implementation Guidance at p. 4.

⁴⁸ Technical Rationale at p. 2.

⁴⁹ *Id.* at p. 2.

⁵⁰ *Id.* at p. 3.

Responsible Entities to understand the scope of Requirement R1 Parts 1.2 and 1.3 while alleviating the potential confusion a singular usage of “availability” would cause, based on industry feedback.

The proposed language for Requirement R1 Parts 1.2 and 1.3 satisfies the Commission’s directives in Order No. 866 to “address the risks associated with the availability of communication links and data” communicated between Control Centers,⁵¹ to refrain from placing undue burden on Responsible Entities who maintain third-party contracts associated with communication links,⁵² and to provide for incident recovery and continuity of operations in the compliance plan.⁵³ Proposed Requirement R1 Part 1.2 addresses these directives by requiring Responsible Entities to identify methods implemented to mitigate the resulting risks when data becomes unable to transmit between Control Centers for any cyber security-related reason, including any alternative or backup communication paths. Similarly, Requirement R1 Part 1.3 requires Responsible Entities to identify methods that will be used to initiate the recovery of lost communication links, including any third-party contracts or service agreements where communication links are managed by a telecommunications service provider.

In addition, the SDT recognized that Responsible Entities may already have addressed certain contingencies, such as redundancy of communication links and backup communications capability, in their existing recovery and/or incident response plan(s) to comply with other Reliability Standards.⁵⁴ Relevant evidence arising out of these plans may be referenced in the CIP-

⁵¹ Order No. 866 at P 33.

⁵² *See Id.* at P 32-33 (where the Commission discusses how entities could “enter into service contracts with telecommunication service providers that include an agreed-upon quality of service commitment to maintain the availability of the data exchange capability to minimize the availability risk” and “contract with telecommunication service providers to minimize the risk of loss of availability of communication links and data communicated between bulk electric system Control Centers in cases where communications between Control Centers are managed by a third party.”).

⁵³ *Id.* P 35.

⁵⁴ *E.g.*, Reliability Standards CIP-008 or CIP-009.

012 plan to meet CIP-012 requirements, avoiding duplication of administrative efforts.⁵⁵ The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity’s operational environment.

c. Other Modifications

The proposed Reliability Standard contains a number of minor, conforming modifications to align the language across all Parts of Requirement R1. These changes are shown in redline in Exhibit A and are summarized below.

The enumeration of Requirement R1 is modified to reflect the addition of Requirement R1 Part 1.2 and Part 1.3. In addition, the original Requirement R1 Part 1.2 and Part 1.3 are revised to Requirement R1 Part 1.4 and 1.5, respectively.

The language of Requirement R1 is modified to provide for the “loss of availability” of data covered by the Reliability Standard. In Requirement R1 Part 1.1, “security protection” is replaced by “method(s)” to promote conformity across all Parts. Requirement R1 Part 1.1 also clarifies that the data at issue is data “used in” Real-time operations. In Requirement R1 Parts 1.4 and 1.5, conforming changes are made to include applicable other Parts in these two portions of the Requirement.

In addition, the proposed Reliability Standard includes other minor, conforming modifications to the non-enforceable sections of the standard, as described in Exhibit A.

d. Enforceability of Proposed Reliability Standard

The proposed Reliability Standard also includes measures that support each requirement by clearly identifying what is required and how the ERO will enforce the requirement. These

⁵⁵ See Implementation Guidance at iv.

measures help ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.⁵⁶ In addition, the proposed Reliability Standard include VRFs and VSLs. The VRFs and VSLs provide guidance on the way that NERC will enforce the requirements of the proposed Reliability Standard. The VRFs and VSLs for the proposed Reliability Standard comport with NERC and Commission guidelines related to their assignment. The SDT made one minor modification the VSLs for proposed Reliability Standard CIP-12-2. The “Severe” VSL is modified to apply where a Responsible Entity fails to implement “three or more” Parts, rather than “any” Part. This modification reflects the increased number of Parts in CIP-012-2 (from three parts in CIP-012-1 to five Parts in CIP-012-2), and better captures the severity of missing a majority (three) of applicable Parts, which ranges from four to five Parts depending on whether the Control Center is owned or operated by different Responsible Entities. Exhibit G provides a detailed review of the VRFs and VSLs, and the analysis of how the VRFs and VSLs were determined using these guidelines.

V. EFFECTIVE DATE

NERC respectfully requests that the Commission approve the proposed Reliability Standard to become effective as set forth in the proposed Implementation Plan, provided in Exhibit B hereto. The proposed Implementation Plan provides that the proposed Reliability Standard shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the Commission’s order approving the proposed Reliability Standard. The 24-month implementation period is designed to afford Responsible Entities sufficient time to implement the new controls and coordinate with other Responsible Entities that own or operate Control Centers as required in proposed Reliability Standard CIP-012-2. As such,

⁵⁶ Order No. 672 at P 327.

the proposed implementation timeframe appropriately balances the urgency in the need to implement the standard against the reasonableness of the time allowed for those who must comply to develop and implement the necessary plans, develop infrastructure, coordinate among other entities, or develop other relevant capability.

VI. CONCLUSION

For the reasons set forth above, NERC respectfully requests that the Commission approve:

- proposed Reliability Standard CIP-012-2, and associated elements included in Exhibit A, effective as proposed herein;
- the proposed Implementation Plan included in Exhibit B; and
- the retirement of Reliability Standard CIP-012-1, effective as proposed herein.

Respectfully submitted,

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Date: January 31, 2024

Exhibit A

Proposed Reliability Standard CIP-012-2

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1. Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
- 1.2. Identification of method(s) used to mitigate the risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
- 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
- 1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
- 1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

M1. Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each Part:

Part 1.1

- Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers
- Physical access restrictions to unencrypted portions of the network

Part 1.2

- Identification of alternative communication paths or methods between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service level agreements with carriers containing high availability provisions
- Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data

Part 1.3

- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery

- Methods for the recovery of links such as standard operating procedures, applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans
- Documentation of the process to restore assets and systems that provide communications
- Process or procedure to contact a communications link vendor to initiate and or verify restoration of service

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Third party Agreements detailing where the methods are implemented if such methods are implemented by the third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement, or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

- 1.1. Compliance Enforcement Authority:** “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.
- 1.2. Evidence Retention:** The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until

mitigation is complete and approved or for the time specified above, whichever is longer.

- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|--|--|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|-------------------|---|-------------------------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1Docket No. RM18-20-000 | |
| 2 | December 12, 2023 | Adopted by NERC Board of Trustees | Revised under Project 2020-04 |

Exhibit B

Implementation Plan

Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communications links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

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Exhibit C

Order No. 672 Criteria

EXHIBIT C

Order No. 672 Criteria

In Order No. 672,¹ the Commission identified a number of criteria it will use to analyze Reliability Standards proposed for approval to ensure they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The discussion below identifies these factors and explains how the proposed Reliability Standard meets or exceeds the criteria.

1. Proposed Reliability Standards must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve that goal.²

The proposed Reliability Standard improves upon and expands the protections required by NERC's CIP Reliability Standards by requiring Responsible Entities to protect the availability of certain Real-time sensitive data pertaining to Real-time operations while being transmitted between Bulk Electric System ("BES") Control Centers, consistent with the Commission directive in Order No. 866.³ Specifically, in addition to the original requirements under CIP-012-1, proposed Reliability Standard CIP-012-2 improves reliability by requiring Responsible Entities to develop a plan to mitigate the risks posed by loss of availability of communication links and Real-time Assessment and Real-time monitoring data between Control Centers. The plan must include the following two new components: (1) protections against loss of availability of Real-time Assessment and Real-time monitoring data between Control Centers (Part 1.2); and (2) methods

¹ *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, 114 FERC ¶ 61,104, *order on reh'g*, Order No. 672-A, 114 FERC ¶ 61,328 (2006) [hereinafter Order No. 672].

² See Order No. 672, *supra* note 1, at P 324.

³ *Critical Infrastructure Protection Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers*, Order No. 866, 170 FERC ¶ 61,031 (2020). Order No. 866 sought approval of the CIP-012-1 Reliability Standard directed by the Commission in Order No. 822, *Revised Critical Infrastructure Protection Reliability Standards*, 154 FERC ¶ 61,037 (2016) ("Order No. 822"), *order denying reh'g*, Order No. 822-A, 156 FERC ¶ 61,052 (2016).

to initiate recovery of lost communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers (Part 1.3).

2. Proposed Reliability Standards must be applicable only to users, owners and operators of the bulk power system, and must be clear and unambiguous as to what is required and who is required to comply.⁴

The proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply, in accordance with Order No. 672. The proposed Reliability Standard applies to Balancing Authorities, Generator Operators, Generator Owners, Reliability Coordinators, Transmission Operators, and Transmission Owners that own or operate a Control Center. The proposed Reliability Standard clearly articulates the actions that such entities must take to comply with the standard.

3. A proposed Reliability Standard must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.⁵

The Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) for the proposed Reliability Standard comports with NERC and Commission guidelines related to their assignment, as discussed further in Exhibit F. The assignment of the severity level for each VSL is consistent with the corresponding requirement. The VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations. For these reasons, the proposed Reliability Standard includes clear and understandable consequences in accordance with Order No. 672.

4. A proposed Reliability Standard must identify clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and nonpreferential manner.⁶

⁴ See Order No. 672, *supra* note 1, at PP 322, 325.

⁵ See Order No. 672, *supra* note 1, at P 326.

⁶ See Order No. 672, *supra* note 1, at P 327.

The proposed Reliability Standard contains measures that support the requirement by clearly identifying what is required to demonstrate compliance. These measures help provide clarity regarding the manner in which the requirement will be enforced and help ensure that the requirement will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.

- 5. Proposed Reliability Standards should achieve a reliability goal effectively and efficiently — but do not necessarily have to reflect “best practices” without regard to implementation cost or historical regional infrastructure design.⁷**

The proposed Reliability Standard achieves the reliability goals effectively and efficiently in accordance with Order No. 672. The proposed Reliability Standard clearly articulates the security objective that applicable entities must meet and provide entities the flexibility to tailor their processes and plans required under the standard to best suit the needs of their organization.

- 6. Proposed Reliability Standards cannot be “lowest common denominator,” *i.e.*, cannot reflect a compromise that does not adequately protect Bulk-Power System reliability. Proposed Reliability Standards can consider costs to implement for smaller entities, but not at consequences of less than excellence in operating system reliability.⁸**

The proposed Reliability Standard does not reflect a “lowest common denominator” approach. The proposed Reliability Standard satisfies the Commission’s directive in Order No. 866 and requires availability protections for Control Centers containing BES Cyber Systems of any impact level.

- 7. Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one geographic area or regional model. It should take into account regional variations in the organization and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.⁹**

⁷ See Order No. 672, *supra* note 1, at P 328.

⁸ See Order No. 672, *supra* note 1, at PP 329-30.

⁹ See Order No. 672, *supra* note 1, at P 331.

The proposed Reliability Standard applies throughout North America and does not favor one geographic area or regional model.

8. Proposed Reliability Standards should cause no undue negative effect on competition or restriction of the grid beyond any restriction necessary for reliability.¹⁰

The proposed Reliability Standard has no undue negative impact on competition. The proposed Reliability Standard requires the same performance by each of the applicable Functional Entities for mitigating the risks posed by loss of availability and communication links used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers. The proposed Reliability Standard does not unreasonably restrict the available transmission capability or limit use of the Bulk-Power System in a preferential manner.

9. The implementation time for the proposed Reliability Standard is reasonable.¹¹

The proposed 24-month implementation period for the proposed Reliability Standard is just and reasonable and appropriately balances the urgency in the need to implement the standard against the reasonableness of the time allowed for those who must comply to develop and implement the necessary plans, develop infrastructure, coordinate among other entities, or develop other relevant capability. NERC proposes an effective date that is the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the Commission's order approving the proposed Reliability Standard. The 24-month implementation period is designed to afford Responsible Entities sufficient time to implement the new controls and coordinate with

¹⁰ See Order No. 672, *supra* note 1, at P 332.

¹¹ See Order No. 672, *supra* note 1, at P 333.

other Responsible Entities that own or operate Control Centers as required in proposed Reliability Standard CIP-012-2.

10. The Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard development process.¹²

The proposed Reliability Standard was developed in accordance with NERC's Commission-approved processes for developing and approving Reliability Standards. Exhibit G includes a summary of the development proceedings and details the processes followed to develop the proposed Reliability Standard. These processes included, among other things, comment and ballot periods. Additionally, all meetings of the drafting team were properly noticed and open to the public. The initial and additional ballots achieved a quorum, and the last additional ballot and final ballot exceeded the required ballot pool approval levels.

11. NERC must explain any balancing of vital public interests in the development of proposed Reliability Standards.¹³

NERC has identified no competing public interests regarding the request for approval of the proposed Reliability Standard. No comments were received that indicated the proposed Reliability Standard conflicts with other vital public interests.

12. Proposed Reliability Standards must consider any other appropriate factors.¹⁴

No other negative factors relevant to whether the proposed Reliability Standard is just and reasonable were identified.

¹² See Order No. 672, *supra* note 1, at P 334.

¹³ See Order No. 672, *supra* note 1, at P 335.

¹⁴ See Order No. 672, *supra* note 1, at P 323.

Exhibit D

Implementation Guidance

NERC

NORTH AMERICAN ELECTRIC
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DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

November 2023

RELIABILITY | RESILIENCE | SECURITY



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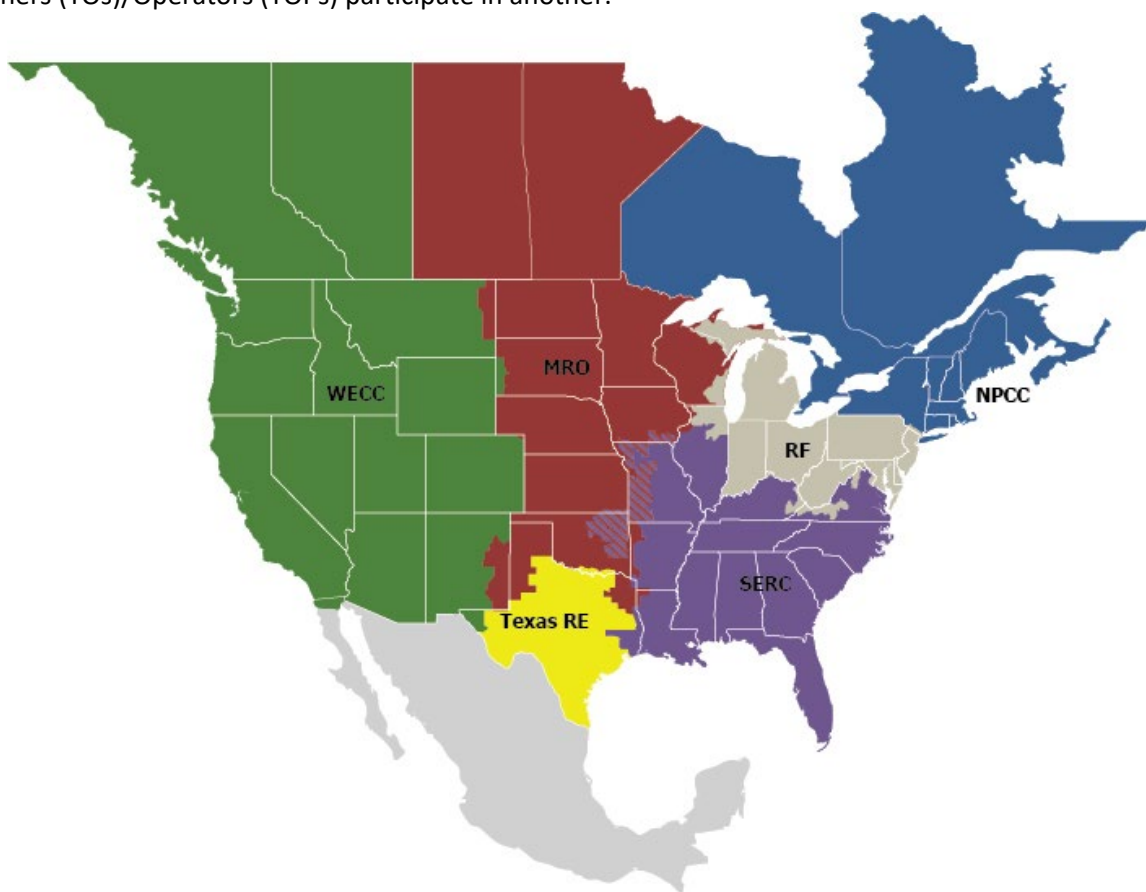
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged. There should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#).

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability, both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of methods used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order No. 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “Providing timely and reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. If a Responsible Entity's CIP or Operations and Planning (O&P) plans address all of the required elements for CIP-012-2, any relevant evidence arising out of these plans may be referenced as part of their CIP-012 plan to meet the requirements and avoiding duplication of administrative efforts.

For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN.
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data.
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of Ability to Communicate Data (R1.2)

Mitigating the risks posed by loss of ability to communicate Real-time Assessment and Real-time monitoring data consists of taking measures to help protect the continued flow of data. This can be accomplished in a variety of ways including redundant links, diverse systems or services designed to protect against loss of ability to communicate such data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of ability to communicate such data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used to Initiate Recovery (R1.3)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to initiate the recovery of data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes, or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should clarify the limitations where any components of the availability solution fall outside of the scope of the referenced plan. Any components not included in the referenced plan may be brought into the referenced plan itself or included directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide

availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section regarding communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an Inter-Control Center Communications Protocol (ICCP) link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

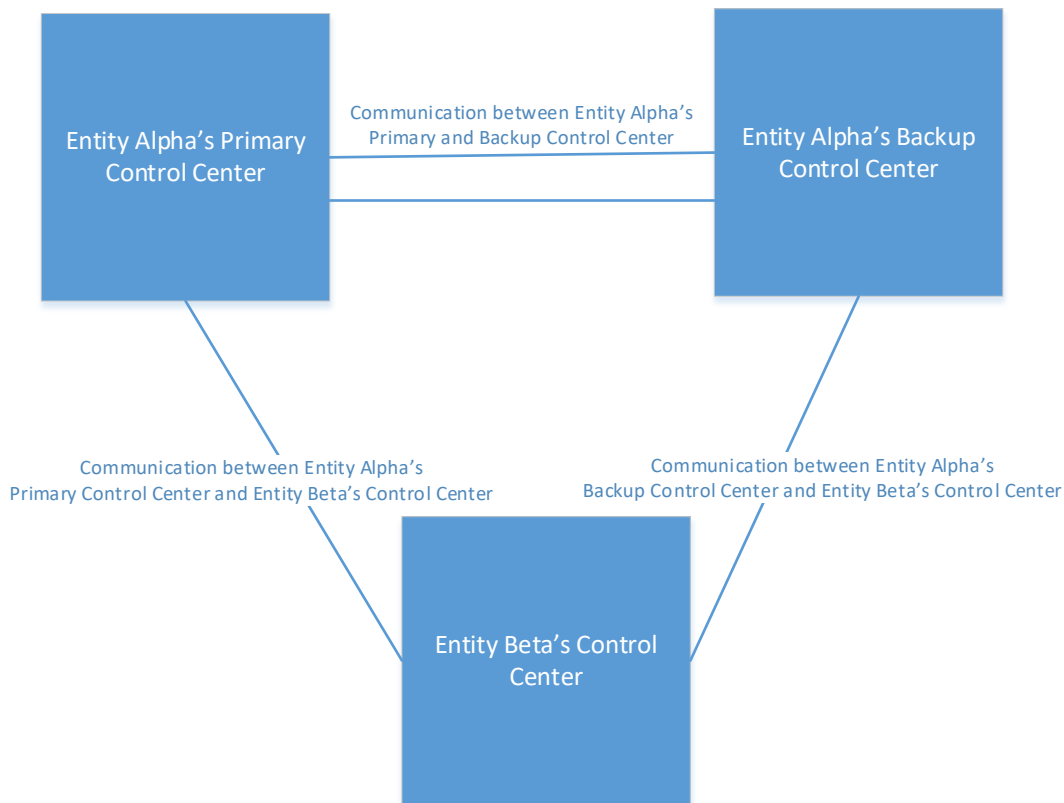


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with Requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in Requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using ICCP.

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center PSP. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center PSP (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is protected. Entity Beta ensures Entity Alpha's communication link endpoint equipment is protected by including the communication endpoint within a Control Center PSP or where other physical protection is applied. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of Ability to Communicate Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used to Initiate Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center PSP and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a PSP or where other physical protection is applied. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.

- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include, but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model

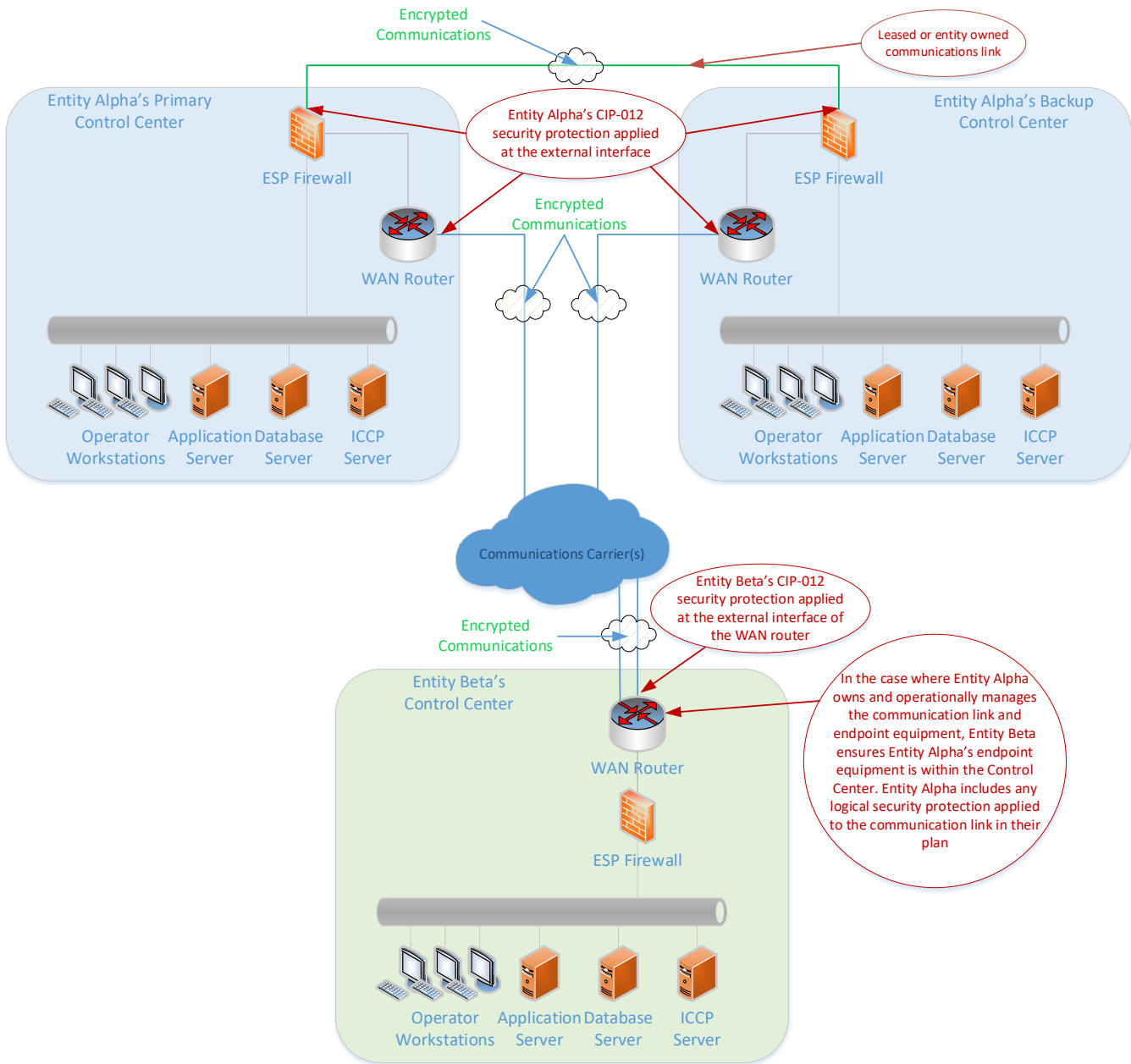


Figure 2: Network diagram and identification of where logical protection is applied

Reference Model

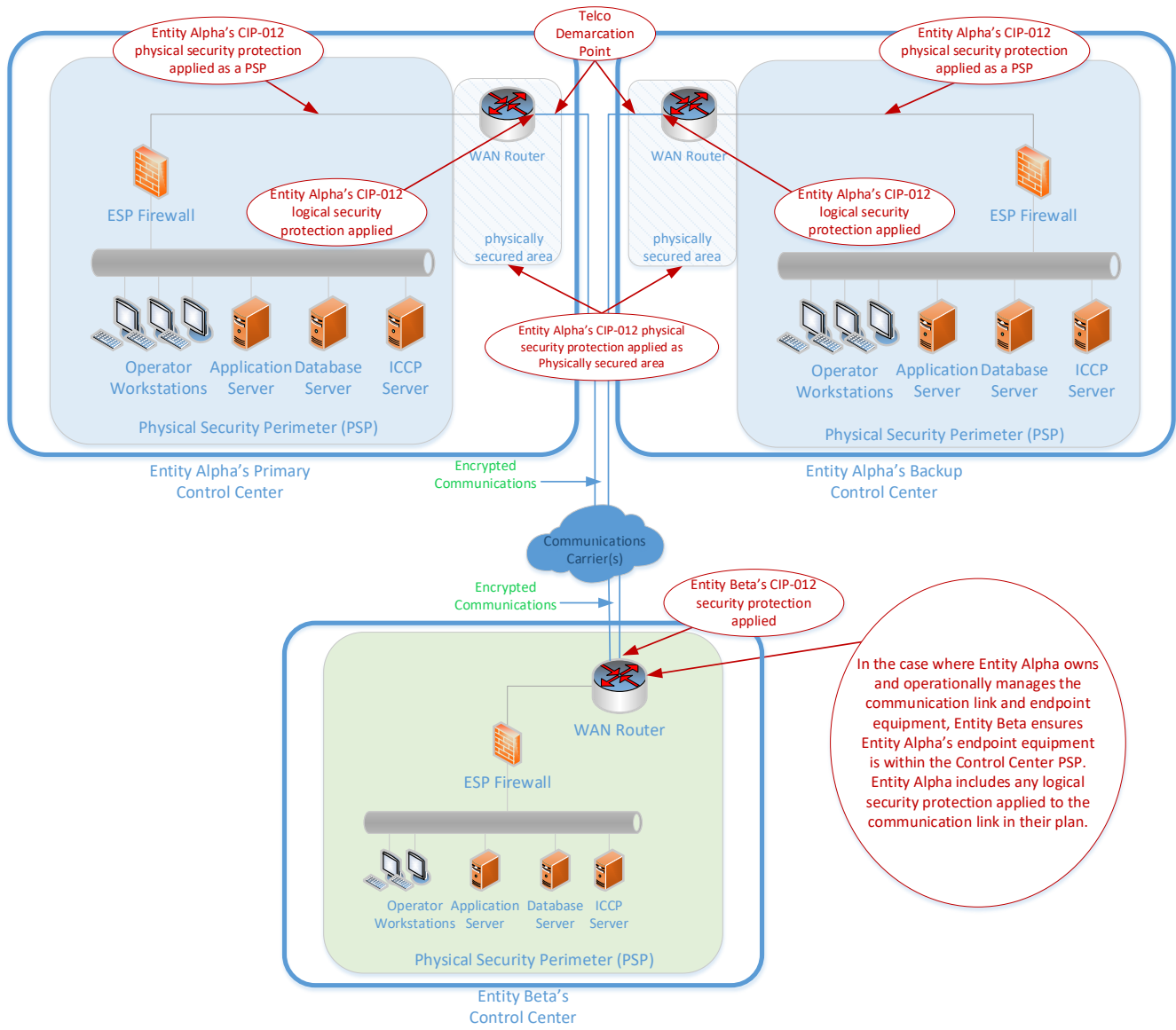


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

Exhibit E

Technical Rationale

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

November 2023

RELIABILITY | RESILIENCE | SECURITY



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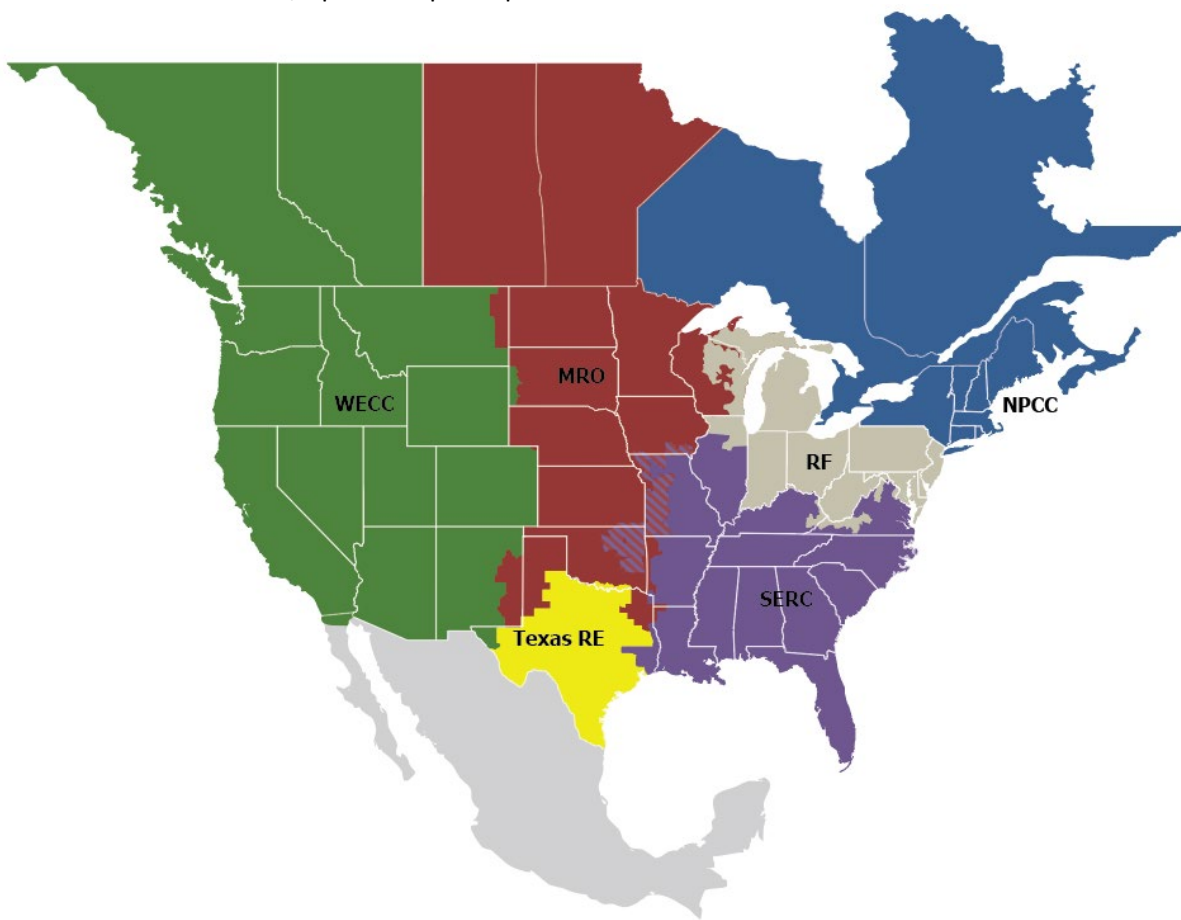
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | Reliability First |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the Standard Drafting Team’s (SDT) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communication links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT refined the subparts of R1, to include additional requirements for entities to: (a) requiring entities to identify methods used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have addressed these contingencies in their

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

existing recovery and/or incident response plan(s). Relevant evidence arising out of these plans may be referenced to meet CIP-012 requirements, avoiding duplication of administrative efforts.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their Balancing Authority (BA) or Transmission Operator (TOP) Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this scenario which is described in further detail below.

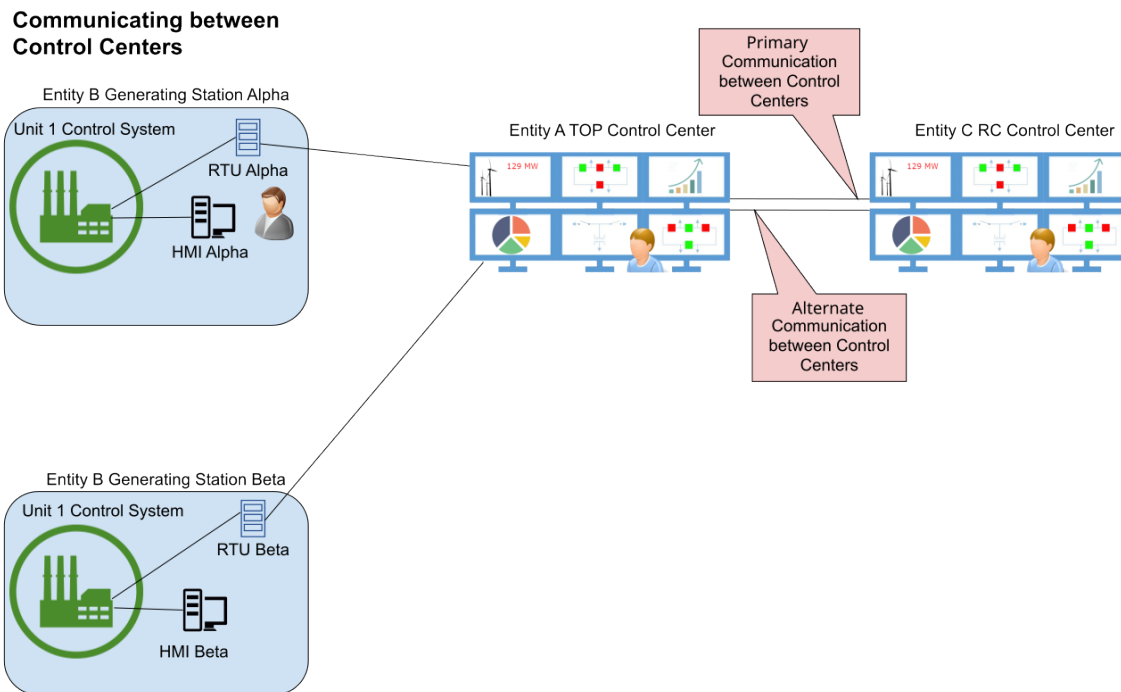


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

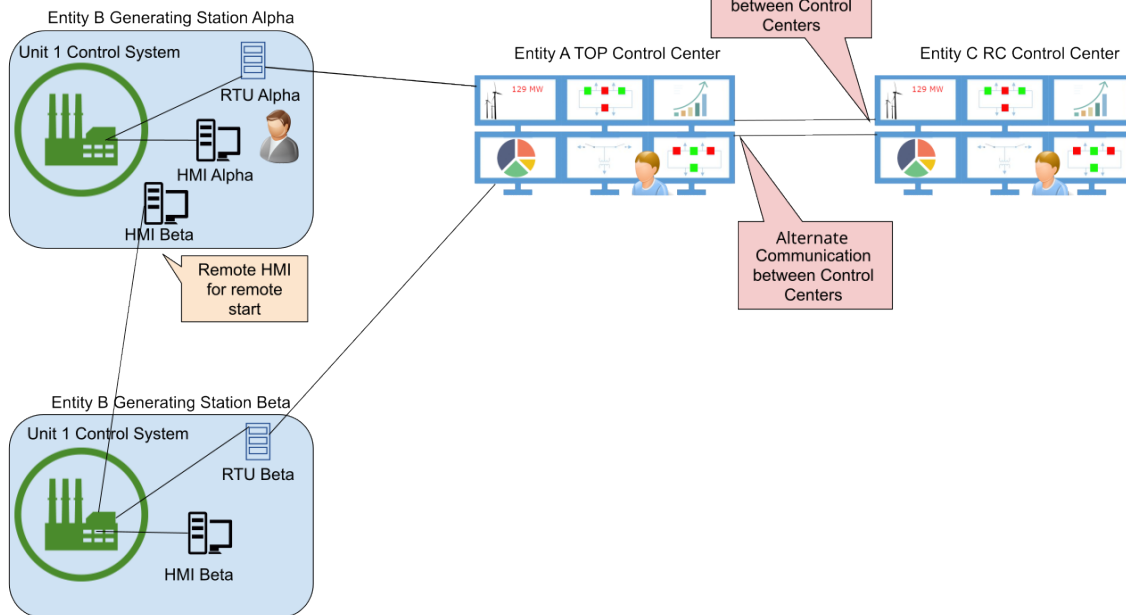


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

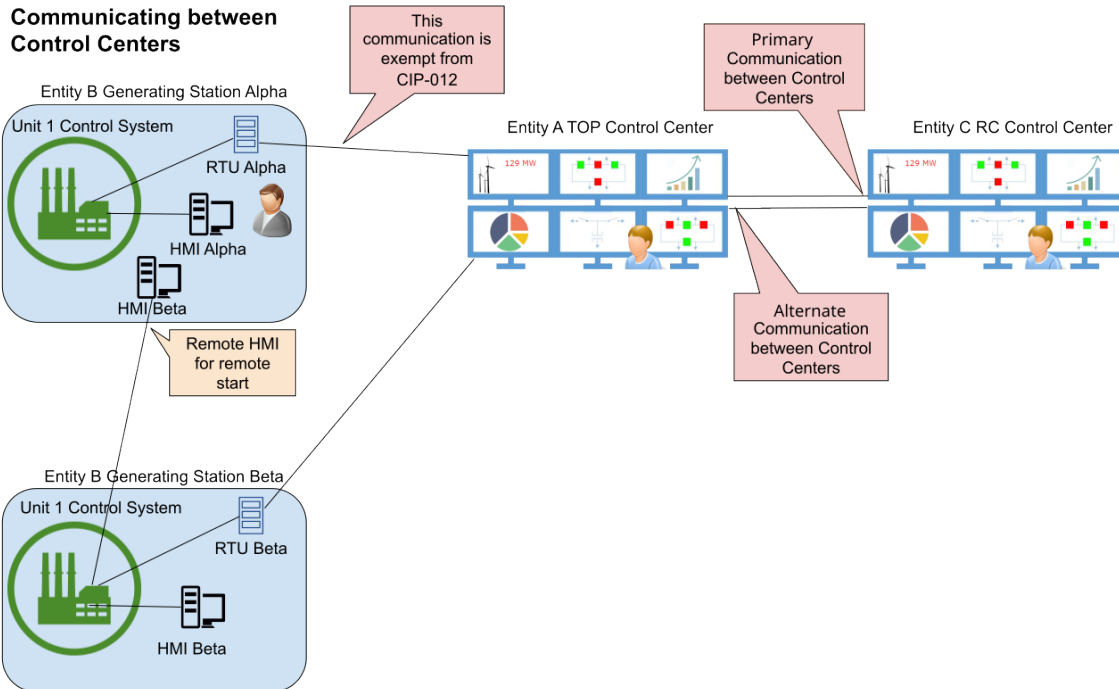


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for Transmission Owners (TOs) and Generation Operators (GOPs), the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers.

The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

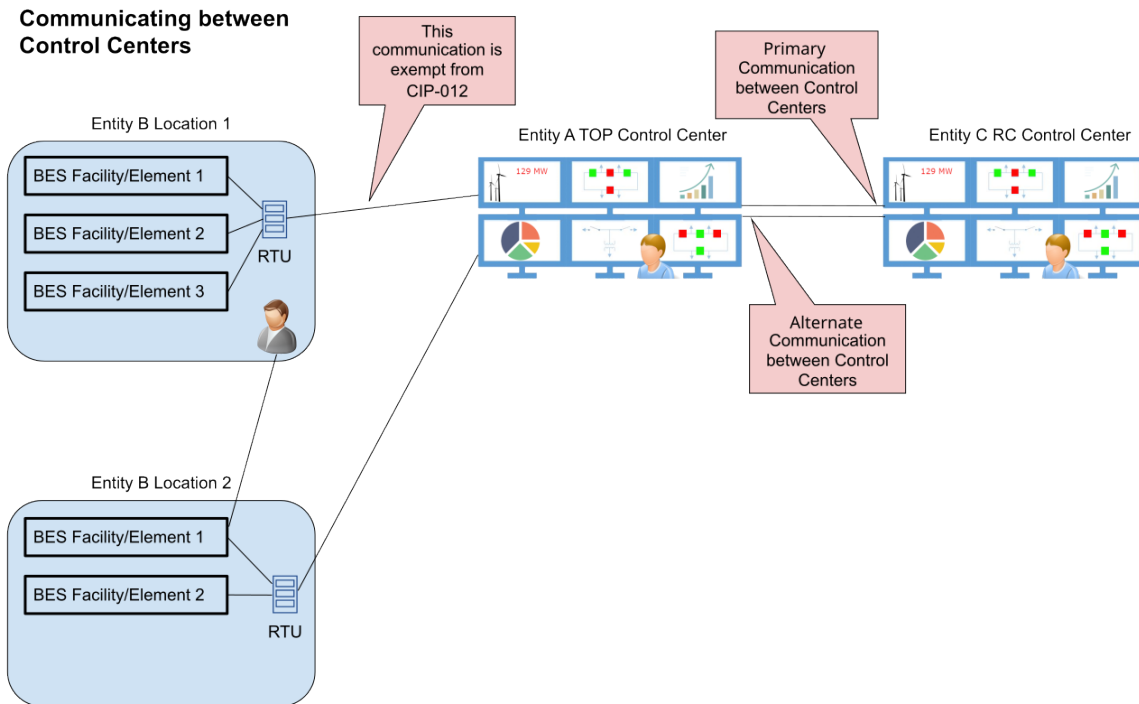


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1,1.2, and 1.3.

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of the ability to communicate Real-time Assessment and Real-time monitoring data. A loss of data transmission capability between Control Centers can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining the ability to communicate Real-time Assessment and Real-time monitoring data.

Part 1.3 addresses the need to identify measures to initiate the recovery of communication links. An important element of data communications is the availability of the communication links themselves. Communication links are the medium by which the data is transmitted between Control Centers (e.g., fiber, copper lines, satellite, etc.). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.4 requires the identification of where methods to mitigate are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan. For further information, please see 'Identification of Where Protections are Applied by the Responsible Entity' section below.

Part 1.5 addresses requirements for each side of the data transfer when Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates restoration when there is a problem with the transmission of the data.

Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity, and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity), and transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴
- Based on the NIST definition⁵, availability is defined by the SDT as, “providing timely and reliable access to information.”

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operations and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the suite of NERC Reliability Standards.

When Real-time Assessment or Real-time monitoring data is lost, an entity does not have the data needed for secure operation of Bulk Electric System. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may be achieved in several ways which are identified within the Measures section of the Standard.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA, or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under “Availability” from 44 U.S.C., Sec. 3542 (b)(1)(C)

latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place. If the point where security protections (e.g., encryption/decryption) is applied on a communication link that is located outside of the Responsible Entities' Control Center PSP (e.g., physically secured area, telecom room), then security protections are still required for the data until it crosses into the Control Center PSP.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.4 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.5.

Control Center Ownership

The CIP-012 Standard Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. It also covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

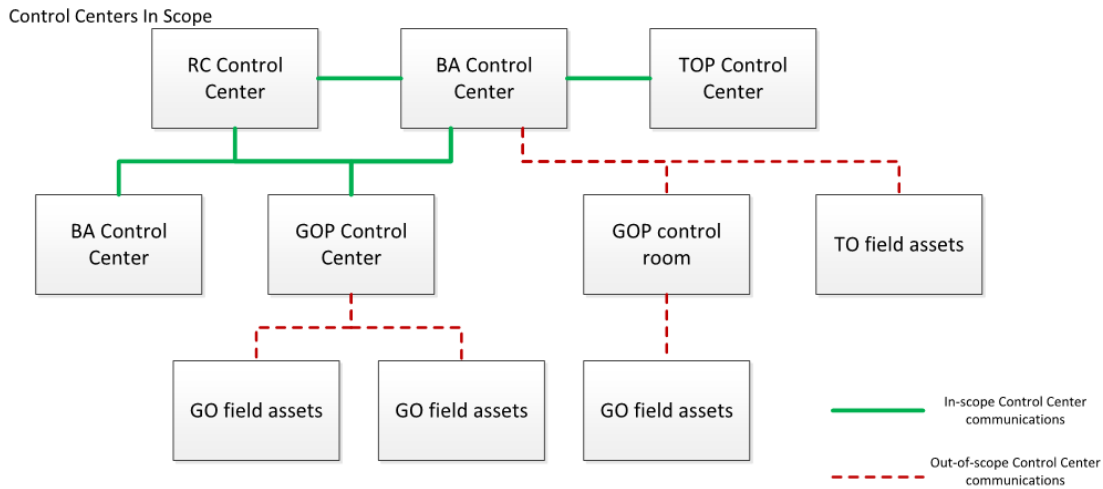


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.5 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Exhibit F

Analysis of Violation Risk Factors and Violation Severity Levels

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not substantially change from the previously FERC approved CIP-012-1 Reliability Standard. The severe VSL was modified to reflect the proposed Requirement R1 which now has five subparts.

| VSLs for CIP-012-2, Requirement R1 | | | |
|------------------------------------|--|--|--|
| Lower | Moderate | High | Severe |
| N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirement R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R1.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language.</p> <p>The moderate VSL addresses where the Responsible Entity documented its plan(s), but failed to include one of the applicable parts of the plan as specified in Requirement R1.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s), but failed to include two of the applicable parts of the plan as specified in Requirement R1.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|--|---|
| <p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|--|---|

Exhibit G

Summary of Development History and Complete Record of Development

Summary of Development History

The following is a summary of the development record for proposed Reliability Standard CIP-012-2.

I. Overview of the Standard Drafting Team

When evaluating a proposed Reliability Standard, the Commission is expected to give “due weight” to the technical expertise of the ERO.¹ The technical expertise of the ERO is derived from the standard drafting team (“SDT”) selected to lead each project in accordance with Section 4.3 of the NERC Standard Processes Manual.² For this project, the SDT consisted of industry experts, all with a diverse set of experiences. A roster of the Project 2020-04 SDT members is included in **Exhibit H**.

II. Standard Development History

A. Federal Energy Regulatory Commission Directive

On January 23, 2020, the Federal Energy Regulatory Commission (“FERC”) issued Order No. 866 approving CIP-012-1.³ While approving the standard, FERC expressed concern the CIP-012-1 did not address protections for the availability of communication links and data communicated between Control Centers and directed NERC to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communications links and data communicated between Bulk Electric System Control Centers.

B. Standard Authorization Request Development

¹ Section 215(d)(2) of the Federal Power Act; 16 U.S.C. § 824(d)(2) (2018).

² The NERC *Standard Processes Manual* is available at https://www.nerc.com/AboutNERC/RulesOfProcedure/Appendix_3A_SPM_Clean_Mar2019.pdf.

³ *Critical Infrastructure Protection Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers*, Order No. 866, 170 FERC ¶ 61,031 (2020).

On March 18, 2020, the Standards Committee authorized posting a Standards Authorization Request (“SAR”) for a 30-day informal comment period beginning April 8, 2020 and a nomination period for SAR Drafting Team members. The informal comment period and the nomination period for the SAR drafting team were extended through June 11, 2020.⁴ A supplemental nomination period was conducted from June 24, 2020 through July 20, 2020 due to the need for additional team members.⁵ The Standards Committee appointed the SAR Drafting Team on September 24, 2020.⁶ The Standards Committee accepted the revised SAR on December 9, 2020.⁷

C. First Posting - Comment Period, Initial Ballot, and Non-binding Poll

On April 21, 2021, the Standards Committee authorized initial posting of proposed Reliability Standard CIP-012-2, the associated Implementation Plan and other associated documents for a 45-day formal comment period. The initial posting took place from April 26, 2021 through June 9, 2021, with a parallel initial ballot and non-binding poll on the Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) held during the last 10 days of the comment period from May 31, 2021 through June 9, 2021.⁸ The initial ballot for proposed Reliability Standard CIP-012-2 received 37.42 percent approval, reaching quorum at 90.1 percent of the ballot pool, and the initial ballot for the associated Implementation Plan received 68.64

⁴ See NERC Standards Committee March 18, 2020 Agenda Package, Agenda Item 7, https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/SC%20Agenda%20Package_March2020.pdf.

⁵ See NERC Standards Committee September 24, 2020 Agenda Package, Agenda Item 4, https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/SC_Agenda_Package_September_24_2020.pdf.

⁶ *Id.*

⁷ See NERC Standards Committee December 9, 2020 Agenda Package, Agenda Item 5, https://www.nerc.com/comm/SC/Agenda%20Highlights%20and%20Minutes/SC_Agenda_Package_December_9_2020.pdf.

⁸ See Exhibit H, Complete Record of Development, at items 17, 20.

percent approval, reaching quorum at 89.24 percent of the ballot pool.⁹ The non-binding poll for the associated VRFs and VSLs received 36.32 percent supportive opinions, reaching quorum at 87.14 percent of the ballot pool.¹⁰ There were 75 sets of responses, including comments from approximately 178 different individuals and approximately 115 companies, representing all 10 industry segments.¹¹

D. Second Posting - Comment Period, Additional Ballot, and Non-binding Poll

Proposed Reliability Standard CIP-012-2, the associated Implementation Plan, and other associated documents were posted for a 55-day formal comment period from November 30, 2021 through January 24, 2022, with a parallel additional ballot and non-binding poll held from January 14, 2022, through January 24, 2022.¹² The additional ballot for proposed Reliability Standard CIP-012-2 received 34.75 percent approval, reaching quorum at 87.71 percent of the ballot pool, and the initial ballot for the associated Implementation Plan received 65.97 percent approval, reaching quorum at 87.85 percent of the ballot pool.¹³ The non-binding poll for the associated VRFs and VSLs received 37.7 percent supportive opinions, reaching quorum at 85.71 percent of the ballot pool.¹⁴ There were 69 sets of responses, including comments from approximately 144 different individuals and approximately 94 companies, representing all 10 industry segments.¹⁵

E. Third Posting – Comment Period, Additional Ballot, and Non-binding Poll

Proposed Reliability Standard CIP-012-2, the associated Implementation Plan, and other associated documents were posted for a 45-day formal comment period from October 3, 2022 through November 16, 2022 and extended through November 29, 2022, with a parallel additional

⁹ *Id.* at items 21, 22.

¹⁰ *Id.* at item 23.

¹¹ *Id.* at item 18.

¹² *Id.* at items 33, 36, 37.

¹³ *Id.* at items 38, 39.

¹⁴ *Id.* at item 40.

¹⁵ *Id.* at item 34.

ballot and non-binding poll held from November 7, 2022, through November 29, 2022.¹⁶ The additional ballot for proposed Reliability Standard CIP-012-2 received 57.87 percent approval, reaching quorum at 78.57 percent of the ballot pool, and the initial ballot for the associated Implementation Plan received 71.28 percent approval, reaching quorum at 77.85 percent of the ballot pool.¹⁷ The non-binding poll for the associated VRFs and VSLs received 62.07 percent supportive opinions, reaching quorum at 77.58 percent of the ballot pool.¹⁸ There were 71 sets of responses, including comments from approximately 164 different individuals and approximately 110 companies, representing all 10 industry segments.¹⁹

On December 13, 2022 the Standards Committee authorized a 30-day solicitation for nominations from January 4, 2023 through February 2, 2023, due to the loss of four team members.²⁰

F. Fourth Posting – Comment Period, Additional Ballot, and Non-binding Poll

Proposed Reliability Standard CIP-012-2, the associated Implementation Plan, and other associated documents were posted for a 45-day formal comment period from September 19, 2023 through November 2, 2023, with a parallel additional ballot and non-binding poll held from October 24, 2023, through November 2, 2023.²¹ The additional ballot for proposed Reliability Standard CIP-012-2 received 84.22 percent approval, reaching quorum at 83.45 percent of the ballot pool, and the initial ballot for the associated Implementation Plan received 88.98 percent approval, reaching quorum at 83.86 percent of the ballot pool.²² The non-binding poll for the associated VRFs and VSLs received 80.73 percent supportive opinions, reaching quorum at 80.87

¹⁶ The additional ballot was extended to reach quorum. *Id.* at items 52, 55.

¹⁷ *Id.* at items 56, 57.

¹⁸ *Id.* at item 58.

¹⁹ *Id.* at item 53.

²⁰ *Id.* at item 60.

²¹ *Id.* at items 71, 74, 75.

²² *Id.* at items 76, 77.

percent of the ballot pool.²³ There were 63 sets of responses, including comments from approximately 147 different individuals and approximately 102 companies, representing all 10 industry segments.²⁴

G. Final Ballot

Proposed Reliability Standard CIP-012-2 was posted for a 9-day final ballot period from November 28, 2023 through December 7, 2023.²⁵ The final ballot for proposed Reliability Standard CIP-012-2 reached quorum at 88.62 percent of the ballot pool, receiving affirmative support from 88.36 percent of the voters.²⁶ The ballot for the Implementation Plan reached quorum at 88.07 percent of the ballot pool, receiving affirmative support from 90.19 percent of the voters.²⁷

H. Board of Trustees Adoption

The NERC Board of Trustees adopted proposed Reliability Standard CIP-012-2 on December 12, 2023.²⁸

²³ *Id.* at item 78.

²⁴ *Id.* at item 72.

²⁵ *Id.* at item 88.

²⁶ *Id.* at item 89.

²⁷ *Id.* at item 90.

²⁸ NERC, *Board of Trustees Agenda Package Dec. 12, 2023*, Agenda Item 4b. (Project 2020-04 Modifications to CIP-012), https://www.nerc.com/gov/bot/Agenda%20highlights%20and%20Mintues%202013/Board_Open_Meeting_Agenda_Package_December_12_2023_PUBLIC_ONLY.pdf.

Complete Record of Development

Project 2020-04 Modifications to CIP-012

Related Files

Status

Final ballots for **Project 2020-04 Modifications to CIP-012** concluded at **8 p.m. Eastern, Thursday, December 7, 2023** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard will be submitted to the Board of Trustees for adoption and then filed with the appropriate regulatory authorities.

Background

In Order No. 866, FERC stated that "maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan." FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

Standard(s) Affected – [CIP-012](#) - Cyber Security – Communications between Control Centers

Purpose/Industry

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

[Subscribe to this project's observer distribution list](#)

Select "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box

| Draft | Actions | Dates | Results | Consideration of Comments |
|---|---|--|---|--------------------------------|
| <p>Final Draft</p> <p>CIP-012 (79) Clean (80) Redline to Last Posted (81) Redline to Last Approved (82) Implementation Plan</p> <p>Supporting Materials CIP-012 Technical Rationale (83) Clean (84) Redline (85) VRF/VSL Justifications</p> <p>Implementation Guidance (86) Clean (87) Redline</p> | <p>Final Ballot</p> <p>(88) Info Vote</p> | 11/28/23 – 12/07/23 | <p>Ballot Results (89) CIP-012-2 (90) Implementation Plan</p> | |
| <p>Draft 4</p> <p>CIP-012 (61) Clean (62) Redline to Last Posted (63) Redline to Last Approved (64) Implementation Plan</p> <p>Supporting Materials (65) Unofficial Comment Form (Word)</p> <p>CIP-012 Technical Rationale (66) Clean (67) Redline to Last Posted (68) VRF/VSL Justifications</p> <p>Implementation Guidance (69) Clean (70) Redline to Last Posted</p> | <p>Additional Ballot and Non-binding Poll</p> <p>(74) Updated Info (Ballots Open Reminder) (75) Info Vote</p> | 10/24/23 – 11/02/23 | <p>Ballot Results (76) CIP-012-2 (77) Implementation Plan</p> <p>Non-Binding Poll Results (78) CIP-012-2</p> | (73) Consideration of Comments |
| | <p>Comment Period</p> <p>(71) Info Submit Comments</p> | 09/19/23 – 11/02/23 | (72) Comments Received | |
| <p>Supplemental Drafting Team Nominations</p> <p>Supporting Materials (59) Unofficial Nomination Form (Word)</p> | <p>Nomination Period</p> <p>(60) Info Submit Nominations</p> | 01/04/23 – 02/02/23 | | |
| <p>Draft 3</p> <p>CIP-012 (41) Clean (42) Redline to Last Posted (43) Redline to Last Approved (44) Clean (45) Redline to Last Posted</p> <p>Implementation Plan (46) Unofficial Comment Form (Word)</p> <p>Supporting Materials (46) Unofficial Comment Form (Word)</p> <p>CIP-012 Technical Rationale (47) Clean (48) Redline to Last Posted (49) VRF/VSL Justifications</p> <p>Implementation Guidance (50) Clean (51) Redline to Last Approved</p> | <p>Additional Ballot and Non-binding Poll</p> <p>(55) Updated Info (Ballots Open Reminder) Vote</p> | 11/07/22 – 11/29/22 (extended to reach quorum) | <p>Ballot Results (56) CIP-012-2 (57) Implementation Plan</p> <p>Non-Binding Poll Results (58) CIP-012-2</p> | (54) Consideration of Comments |
| | <p>Comment Period</p> <p>(52) Info Submit Comments</p> | 10/03/22 – 11/29/22 (extended) | (53) Comments Received | |

| | | | | |
|---|---|---------------------------------------|--|--|
| <p>Draft 2</p> <p>CIP-012 (24) Clean (25) Redline to Last Posted</p> <p>(26) Implementation Plan</p> <p>Supporting Materials (27) Unofficial Comment Form (Word)</p> <p>CIP-012 Technical Rationale (28) Clean (29) Redline to Last Posted</p> <p>(30) VRF/VSL Justifications</p> <p>Implementation Guidance (31) Clean (32) Redline to Last Approved</p> | <p>Additional Ballot and Non-binding Poll</p> <p>(36) Updated Info</p> <p>(37) Info</p> <p>Vote</p> | <p>01/14/22 – 01/24/22</p> | <p>Ballot Results (38) CIP-012-2</p> <p>(39) Implementation Plan</p> <p>Non-Binding Poll Results (40) CIP-012-2</p> | |
| <p>Draft 1</p> <p>CIP-012 (11) Clean (12) Redline</p> <p>(13) Implementation Plan</p> <p>Supporting Materials (14) Unofficial Comment Form (Word)</p> <p>Technical Rationale (15) CIP-012</p> <p>(16) VRF/VSL Justifications</p> | <p>Initial Ballot and Non-binding Poll</p> <p>(20) Info</p> <p>Vote</p> | <p>05/31/21 – 06/09/21</p> | <p>Ballot Results (21) CIP-012-2</p> <p>(22) Implementation Plan</p> <p>Non-Binding Poll Results (23) CIP-012-2</p> | <p>(35) Consideration of Comments</p> |
| <p>Standard Authorization Request (SAR) (9) Clean (10) Redline</p> | <p>The Standards Committee accepted the SAR on December 9, 2020</p> | | | |
| <p>Supplemental Drafting Team Nominations</p> <p>Supporting Materials (7) Unofficial Nomination Form (Word)</p> | <p>Nomination Period</p> <p>(8) Info</p> <p>Submit Nominations</p> | <p>06/24/20 - 07/20/20</p> | | |
| <p>Drafting Team Nominations</p> <p>Supporting Materials (5) Unofficial Nomination Form (Word)</p> | <p>Nomination Period</p> <p>(6) Info (Updated)</p> <p>Submit Nominations</p> | <p>04/08/20 - 06/11/20 (Extended)</p> | | |
| <p>(1) Standard Authorization Request Supporting Materials</p> <p>(2) Unofficial Comment Form (Word)</p> | <p>Comment Period</p> <p>(3) Info (Updated)</p> <p>Submit Comments</p> | <p>04/08/20 - 06/11/20 (Extended)</p> | <p>(4) Comments Received</p> | |

Standard Authorization Request (SAR)

Complete and submit this form, with attachment(s) to the [NERC Help Desk](#). Upon entering the Captcha, please type in your contact information, and attach the SAR to your ticket. Once submitted, you will receive a confirmation number which you can use to track your request.

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|---|--------------------------|--|
| SAR Title: | Revisions to CIP standards to address Cyber Security Communications between Control Centers | | |
| Date Submitted: | March 4, 2020 | | |
| SAR Requester | | | |
| Name: | Soo Jin Kim, Manager of Standards Development | | |
| Organization: | NERC | | |
| Telephone: | 404.831.4765 | Email: | Soo.jin.kim@nerc.net |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> | New Standard | <input type="checkbox"/> | Imminent Action/ Confidential Issue (SPM Section 10) |
| <input checked="" type="checkbox"/> | Revision to Existing Standard | <input type="checkbox"/> | Variance development or revision |
| <input type="checkbox"/> | Add, Modify or Retire a Glossary Term | <input type="checkbox"/> | Other (Please specify) |
| <input type="checkbox"/> | Withdraw/retire an Existing Standard | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> | Regulatory Initiation | <input type="checkbox"/> | NERC Standing Committee Identified |
| <input type="checkbox"/> | Emerging Risk (Reliability Issues Steering Committee) Identified | <input type="checkbox"/> | Enhanced Periodic Review Initiated |
| <input type="checkbox"/> | Reliability Standard Development Plan | <input type="checkbox"/> | Industry Stakeholder Identified |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| The project will address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communications links and data communicated between the bulk electric system Control Centers. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| This project will address the concerns of FERC outlined in Order No. 866. | | | |
| Project Scope (Define the parameters of the proposed project): | | | |
| This project will address the directive in Order No. 866. | | | |

| Requested information |
|--|
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g., research paper) to guide development of the Standard or definition): |
| In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. See Order No. 866 at PP 35-36. |
| Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project): |
| Cost impact is unknown at this time. |
| Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g., Dispersed Generation Resources): |
| Submitter asserts there are no unique characteristics associated with BES facilities that will be impacted by this proposed standard development project. |
| To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g., Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions): |
| Reliability Coordinator, Balancing Authority, Transmission Owner, Transmission Operator, Distribution Provider, Generator Owner, Generator Operator |
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. |
| |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so, which standard(s) or project number(s)? |
| Project 2016-02 Modifications to CIP Standards and Project 2019-02 BES Cyber Systems Information Access Management are both active CIP projects. |
| Are there alternatives (e.g., guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |
| None at this time. |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input checked="" type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input checked="" type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input checked="" type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|--|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|---|-----------------|
| Region(s)/ Interconnection | Explanation |
| | None identified |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate). | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff | <input type="checkbox"/> Final SAR endorsed by the SC |
| <input type="checkbox"/> Draft SAR presented to SC for acceptance | <input type="checkbox"/> SAR assigned a Standards Project by NERC |
| <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-------------------|-----------------------------|--|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January 18, 2017 | Standards Information Staff | Revised |
| 2 | June 28, 2017 | Standards Information Staff | Updated template |
| 3 | February 22, 2019 | Standards Information Staff | Added instructions to submit via Help Desk |
| 4 | February 25, 2020 | Standards Information Staff | Updated template footer |

Unofficial Comment Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2020-04 Modifications to CIP-012** by **8 p.m. Eastern, June 11, 2020**.

Additional information is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Latrice Harkness](#) (via email), or at 404-446-9728.

Background Information

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers

Questions

1. Do you agree with the proposed scope as described in the SAR? If you do not agree, or if you agree but have comments or suggestions for the project scope please provide your recommendation and explanation.

Yes

No

Comments:

2. Provide any additional comments for the SAR drafting team to consider, if desired.

Comments:

UPDATED

Standards Announcement

Project 2020-04 Modifications to CIP-012 Standard Authorization Request

Informal Comment Period Now Open through June 11, 2020

[Now Available](#)

The informal comment period for the **Project 2020-04 Modifications to CIP-012 Standard Authorization Request (SAR)** has been extended and is now open through **8 p.m. Eastern, Thursday, June 11, 2020**.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. Contact [Linda Jenkins](#) regarding issues using the SBS. An unofficial Word version of the comment form is posted on the [project page](#).

- *If you are having difficulty accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out, contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern).*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The SAR drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

[Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box. For more information or assistance, contact Senior Standards Developer, [Latrice Harkness](#) (via email) or at 404-446-9728.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2020-04 Modifications to CIP-012 | Standard Authorization Request
Comment Period Start Date: 4/8/2020
Comment Period End Date: 6/11/2020
Associated Ballots:

There were 41 sets of responses, including comments from approximately 135 different people from approximately 104 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the proposed scope as described in the SAR? If you do not agree, or if you agree but have comments or suggestions for the project scope please provide your recommendation and explanation.
2. Provide any additional comments for the SAR drafting team to consider, if desired.

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------|-------------|-------------|-------------|--|-------------------|---|-------------------------|---------------------|
| Midcontinent ISO, Inc. | Bobbi Welch | 2 | MRO,RF,SERC | ISO/RTO Council (IRC) Standards Review Committee (SRC)_2020-04_CIP-012 SAR | Bobbi Welch | MISO | 2 | RF |
| | | | | | Ali Miremadi | CAISO | 2 | WECC |
| | | | | | Brandon Gleason | Electric Reliability Council of Texas, Inc. | 2 | Texas RE |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Mark Holman | PJM Interconnection, L.L.C. | 2 | RF |
| | | | | | Charles Yeung | Southwest Power Pool, Inc. (RTO) | 2 | MRO |
| MRO | Dana Klem | 1,2,3,4,5,6 | MRO | MRO NSRF | Joseph DePoorter | Madison Gas & Electric | 3,4,5,6 | MRO |
| | | | | | Larry Heckert | Alliant Energy | 4 | MRO |
| | | | | | Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| | | | | | Jodi Jensen | Western Area Power Administration | 1,6 | MRO |
| | | | | | Andy Crooks | SaskPower Corporation | 1 | MRO |
| | | | | | Bryan Sherrow | Kansas City Board of Public Utilities | 1 | MRO |
| | | | | | Bobbi Welch | Omaha Public Power District | 1,3,5,6 | MRO |
| | | | | | Jeremy Voll | Basin Electric Power Cooperative | 1 | MRO |
| | | | | | Bobbi Welch | Midcontinent ISO | 2 | MRO |

| | | | | | | | | |
|-------------------------------------|---------------|-----------|---|------------------------------|----------------|---|---------|------|
| | | | | | Douglas Webb | Kansas City Power & Light | 1,3,5,6 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 1 | MRO |
| | | | | | John Chang | Manitoba Hydro | 1,3,6 | MRO |
| | | | | | James Williams | Southwest Power Pool, Inc. | 2 | MRO |
| | | | | | Jamie Monette | Minnesota Power / ALLETE | 1 | MRO |
| | | | | | Jamison Cawley | Nebraska Public Power | 1,3,5 | MRO |
| | | | | | Sing Tay | Oklahoma Gas & Electric | 1,3,5,6 | MRO |
| | | | | | Terry Harbour | MidAmerican Energy | 1,3 | MRO |
| | | | | | Troy Brumfield | American Transmission Company | 1 | MRO |
| Westar Energy | Douglas Webb | 1,3,5,6 | MRO,SPP RE | Westar-KCPL | Doug Webb | Westar | 1,3,5,6 | MRO |
| | | | | | Doug Webb | KCP&L | 1,3,5,6 | MRO |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,NA - Not Applicable,RF,SERC,Texas RE,WECC | ACES Standard Collaborations | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Jim Davis | East Kentucky Power Cooperative | 1,3 | SERC |
| | | | | | Scott Brame | North Carolina EMC | 3,4,5 | SERC |
| | | | | | Ryan Strom | Buckeye Power, Inc. | 5 | RF |
| DTE Energy - Detroit Edison Company | Karie Barczak | 3,4,5 | | DTE Energy - DTE Electric | Adrian Raducea | DTE Energy - Detroit Edison Company | 5 | RF |
| | | | | | Daniel Herring | DTE Energy - DTE Electric | 4 | RF |

| | | | | | | | | |
|--|-----------------|----------------------|---------------------------|-----------------------------------|-------------------|--|----|------|
| | | | | | Karie Barczak | DTE Energy - DTE Electric | 3 | RF |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 1,3,4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Ann Carey | FirstEnergy - FirstEnergy Solutions | 6 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 4 | RF |
| Duke Energy | Masuncha Bussey | 1,3,5,6 | FRCC,MRO,RF,SERC,Texas RE | Duke Energy | Laura Lee | Duke Energy | 1 | SERC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | SERC |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | William D. Shultz | Southern Company Generation | 5 | SERC |
| | | | | | Ron Carlsen | Southern Company - Southern Company Generation | 6 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC Regional Standards Committee | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy | 4 | NPCC |

| | Services | | |
|--------------------|---|---|------|
| Alan Adamson | New York State Reliability Council | 7 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Michele Tondalo | UI | 1 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |
| John Pearson | ISO-NE | 2 | NPCC |
| David Kiguel | Independent | 7 | NPCC |
| Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Shivaz Chopra | New York Power Authority | 5 | NPCC |
| Deidre Altobell | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Cristhian Godoy | Con Ed - Consolidated Edison Co. of New York | 6 | NPCC |
| Nicolas Turcotte | Hydro-Qu?bec TransEnergie | 1 | NPCC |

| | | | | | | | | |
|-------------------------------------|-------------|---------|--------|----------|------------------------|--|----|---------------------|
| | | | | | Chantal Mazza | Hydro Quebec | 2 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| | | | | | Nurul Abser | NB Power Corporation | 1 | NPCC |
| | | | | | Randy MacDonald | NB Power Corporation | 2 | NPCC |
| | | | | | Jim Grant | NY-ISO | 2 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Silvia Parada Mitchell | NextEra Energy, LLC | 4 | NPCC |
| | | | | | Michael Ridolfino | Central Hudson Gas and Electric | 1 | NPCC |
| | | | | | Vijay Puran | NYS PS | 6 | NPCC |
| | | | | | ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| | | | | | John Hasting | National Grid USA | 1 | NPCC |
| | | | | | Michael Jones | National Grid USA | 1 | NPCC |
| | | | | | Sean Cavote | PSEG - Public Service Electric and Gas Co. | 1 | NPCC |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| Dominion - Dominion Resources, Inc. | Sean Bodkin | 3,5,6 | | Dominion | Connie Lowe | Dominion - Dominion Resources, Inc. | 3 | NA - Not Applicable |
| | | | | | Lou Oberski | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| | | | | | Larry Nash | Dominion - Dominion Virginia Power | 1 | NA - Not Applicable |
| | | | | | Rachel Snead | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| OGE Energy - Oklahoma | Sing Tay | 1,3,5,6 | SPP RE | OKGE | Sing Tay | OGE Energy - Oklahoma | 6 | MRO |

| | | | | | | | | |
|--------------------------------|-----------------|-----|--|-----------------|-----------------|--|---|----------|
| Gas and Electric Co. | | | | | Terri Pyle | OGE Energy - Oklahoma Gas and Electric Co. | 1 | MRO |
| | | | | | Donald Hargrove | OGE Energy - Oklahoma Gas and Electric Co. | 3 | MRO |
| | | | | | Patrick Wells | OGE Energy - Oklahoma Gas and Electric Co. | 5 | MRO |
| Lower Colorado River Authority | Teresa Cantwell | 1,5 | | LCRA Compliance | Michael Shaw | LCRA | 6 | Texas RE |
| | | | | | Dixie Wells | LCRA | 5 | Texas RE |
| | | | | | Teresa Cantwell | LCRA | 1 | Texas RE |

1. Do you agree with the proposed scope as described in the SAR? If you do not agree, or if you agree but have comments or suggestions for the project scope please provide your recommendation and explanation.

Richard Jackson - U.S. Bureau of Reclamation - 1,5

Answer No

Document Name

Comment

Reclamation recommends the scope of the SAR be expanded to proactively address the types of data covered by CIP-012 and to add NERC Glossary definitions for "Availability," "Real-time Monitoring," "Real-time Data," "BES Data," "Operational Data," and "System Planning Data."

Likes 0

Dislikes 0

Response

Masunchu Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer No

Document Name

Comment

Duke Energy does not agree with the proposed scope as described in the SAR. Duke understands and agrees with the intent to address protections with respect to availability of real time communications between control centers in CIP-012. However, the scope of CIP-012 modifications should remain limited to requirements that directly support protection of real time data between control centers and directly mitigate the risk of unavailability of these communications due to cyber-attacks or incidents. Incident response & recovery, and backup communication capabilities should be addressed within the appropriate existing standards, both CIP and O&P, to ensure elimination of overlap and reduce the possibility of conflicting requirements.

Duke Energy has concerns that the scope is too broadly stated and that the SAR should be limited to availability protections in CIP-012. Duke energy does not agree with the submitter assertion that there are no unique characteristics associated with BES facilities that will be impacted by this proposed standard development project. This impact has yet to be determined, there could be communication system architectural impacts.

Distribution Providers are not currently CIP-012-1 Applicable Entities. Duke Energy recommends that Distribution Providers be removed from applicability unless there some basis provided for their inclusion.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer No

Document Name**Comment**

EEI supports the proposed project, as directed by FERC in Order No. 866, to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers; however, EEI is unable to support the proposed SAR without addressing the following items:

1. The "Project Scope" section should include the FERC Order No. 866 directive language "develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers."
2. The "Purpose and Goal" section should be revised to reflect the reliability-related benefit of improved protections regarding the availability of communication links and data communicated between control centers.
3. The "Detailed Description" section should state clear deliverables with sufficient detail for a drafting team to execute the project. EEI suggests the following for NERC consideration:
 - a. The scope of this project will be to modify Reliability Standard, CIP-012-1 to require BAs, GOs, GOPs, RCs, TOs, and TOPs who own or operate BES Control Centers to implement protections that address the availability of communication links and data links between BES Control Centers. Redundancy of communications links will not be required; however, incident recovery and continuity of operation plans are to be included within the scope.
4. The "Functional Entities" section identifies Distribution Providers (DPs) as one of the functional entities that the proposed standard(s) should apply. DPs should be removed from the SAR for the following reasons:
 - a. {C}DPs are not identified as an Applicable Entity in the draft CIP-012-1; and,
 - b. {C}The SAR's goal and scope are to address FERC Order 866 directives; DPs are not identified in in the order.

EEI recommends DPs either be removed or, alternatively, since inclusion of DPs is beyond FERC Order 866, that NERC provide a justification for including DPs.

Likes 0

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 3,5,6, Group Name Dominion

Answer

No

Document Name**Comment**

Dominion Energy supports the comments submitted by EEI. Dominion Energy supports the project as directed by FERC Order No. 866 but does not agree that the proposed SAR correctly reflects the language and intent of the FERC order. Specifically:

1. The "Project Scope" section should include the FERC Order No. 866 directive language "develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers."
2. The "Purpose and Goal" section should be revised to reflect the reliability-related benefit of improved protections regarding the availability of

communication links and data communicated between control centers.

3. The "Detailed Description" section should state clear deliverables with sufficient detail for a drafting team to execute the project. EEI suggests the following for NERC consideration:

a. The scope of this project will be to modify Reliability Standard, CIP-012-1 to require BAs, GOs, GOPs, RCs, TOs, and TOPs who own or operate BES Control Centers to implement protections that address the availability of communication links and data links between BES Control Centers. Redundancy of communications links will not be required; however, incident recovery and continuity of operation plans are to be included within the scope.

4. The "Functional Entities" section identifies Distribution Providers (DPs) as one of the functional entities that the proposed standard(s) should apply. However, DPs were not identified as an Applicable Entity in draft CIP-012-1 nor were they identified in FERC Order 866. EEI recommends DPs either be removed or NERC include a justification for adding DPs.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 1,3,5,6

Answer

No

Document Name

Comment

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1,3,5,6

Answer

No

Document Name

Comment

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 1,3,5,6**Answer** No**Document Name****Comment**

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response**Becky Webb - Exelon - 1,3,5,6****Answer** No**Document Name****Comment**

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response**Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC****Answer** No**Document Name****Comment**

BPA thanks the drafting team for the opportunity to comment. In addition to the Project 2016-02 and Project 2019-02 Standards Drafting Team efforts, the scope should include examination of impact to CIP-008-6 and CIP-009-6 applicability and requirements. Incident "Recovery" strongly relates to and implies a need for incident response. Recovery cannot proceed without alleviating the proximate cause of an outage. In cases where that cause is a deliberate attack or even an accidental manmade situation, appropriate incident response activities to limit the scope, impact, and duration of the condition must be engaged before beginning recovery operations. Otherwise the situation may recur or recovery operations may fail.

Intentional incidents are not static, but rather have malicious intent driving dynamic adaptation to the defender's actions, and may use the programmed recovery plan activities to further exploit, or embed future exploitation capability into a system that is composed of people, processes, technology, and information.)

Likes 0

Dislikes 0

Response

Marty Hostler - Northern California Power Agency - 3,4,5,6

Answer No

Document Name

Comment

The following are technical reasons why NCPA does not support the subject SAR in its current form:

1. FCC Jurisdiction Infringement: One accurate NERC Staff SAR assertion is their claim "there are no unique characteristics associated with BES facilities that will be impacted by this proposed standard development project."; that is because there are NO BES Reliability Gaps. This SAR appears to be an attempt to forcibly require Registered Entities to pay for modifications to communication facilities that are under the Federal Communication Commission's (FCC) jurisdiction, and is not an enhancement to BES reliability at all.
2. NERC's response to Market Principle one on SAR page three is inaccurate. The project will result in an unfair competitive advantage for non-GOPs in Regions that have BA/ISOs that don't allow GOPs to recover fixed costs for FERC mandated, but unfunded, NERC compliance initiatives.
 - California ISO (CAISO) Market rules, and maybe other ISOs too, do not allow GOPs to recover fixed costs for unfunded FERC/NERC reliability mandates. Non-GOP Market Participants have no said obligations nor costs.
 - If this SAR is to move forward FERC needs to level the playing field and first order BAs to modify their Tariffs, and compensate GO/GOPs for fixed NERC Compliance Costs.
 - Otherwise, at a minimum, this proposed Standard, among others, results in unfair Market competitive advantages for non-GOP generator Market Participants in the CAISO BA to the detriment, disadvantage of GOPs.
 - This is an extremely unfair business practice especially considering the BAs/ISOs are compensated for, allowed to recover, 100% of their NERC/FERC fixed compliance costs.
3. NERC has not provided a cost estimate for this proposal. Future SARs should not be allowed though the Standards Committee without a cost estimate. All stakeholders need to know the estimated cost prior to SAR posting. We need to know the estimated cost of what we are voting on, and it needs to include all cost for everything FERC, WECC, and NERC will ultimately tell us we should be doing.

Likes 0

Dislikes 0

Response

Douglas Webb - Westar Energy - 1,3,5,6 - MRO, Group Name Westar-KCPL

Answer No

Document Name

Comment

Westar Energy and Kansas City Power & Light (Eversource companies) incorporate by reference and endorse the comments of the Edison Electric Institute (EEI).

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 1,5, Group Name LCRA Compliance

Answer

No

Document Name

Comment

LCRA feels that the proposed modifications regarding the communication network providers and the scope of equipment ownership within this SAR is too vague.

Likes 0

Dislikes 0

Response

Robert Blackney - Edison International - Southern California Edison Company - 1,3,5,6 - WECC

Answer

No

Document Name

Comment

Please see comments submitted by the Edison Electric Institute.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

No

Document Name

Comment

Southern Company supports the proposed project, as directed by FERC in Order No. 866, to develop modifications to the CIP Reliability Standards to

require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers. However, we have identified the following items that need to be addressed in this SAR before we can support its approval:

1. The section “Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so, which standard(s) or project number(s)?” should include the following standards for impact as they also are concerned with and have existing requirements for data exchange capabilities, availability, periodicity of providing data, loss of data exchange capability and response, redundant communications infrastructure, and responding to data quality issues.

• IRO-002-6

• IRO-010-2

• IRO-014-3

• TOP-003-3

• IRO-018-1(i) and TOP-010-1(i)

• TOP-001-4

• EOP-008-2

Southern Company also agrees with the following comments provided by Edison Electric Institute (EEI) as summarized below:

1. The “Project Scope” section should include the FERC Order No. 866 directive language “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”
2. The “Purpose and Goal” section be revised to reflect the reliability-related benefit of improved protections regarding the availability of communication links and data communicated between control centers.
3. The “Detailed Description” section should state clear deliverables with sufficient detail for a drafting team to execute the project.
4. The “Functional Entities” section identifies Distribution Providers (DPs) as one of the functional entities that the proposed standard(s) should apply. However, DPs were not identified as an Applicable Entity in draft CIP-012-1 nor were they identified in FERC Order 866. EEI recommends DPs either be removed or NERC include a justification for adding DPs.

Likes 0

Dislikes 0

Response

Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 1,3,5,6, Group Name OKGE

Answer

No

Document Name

Comment

Oklahoma Gas & Electric supports the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Tho Tran - Oncor Electric Delivery - 1 - Texas RE

Answer

No

Document Name

Comment

Oncor supports the comments submitted by EEI.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 1,3,6

Answer

No

Document Name

Comment

Ameren agrees with and supports EEI comments.

Likes 0

Dislikes 0

Response

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer

No

Document Name

Comment

NV Energy supports the project for addressing FERC Order 866; however, NV Energy cannot approve the SAR in its current incomplete state. NVE believes additional information must be provided in the SAR to ensure the future SDT can execute on the project.

NVE recommends the following:

- "Project Scope" section should include the FERC Order No. 866 directive language "develop modifications to the CIP Reliability Standards to

- require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”
- “Purpose and Goal” section should be revised to reflect the reliability-related benefit of improved protections regarding the availability of communication links and data communicated between control centers.
- As previously stated, the “Detailed Description” section should state clear deliverables with sufficient detail for a drafting team to execute the project. NVE suggests the following for NERC consideration:
 - Define the intent of the modifications, as it is unclear if the modification will only be addressed in a future iteration of CIP-012, or will another CIP Standard be required to accomodate this.
 - Recommendation: The scope of this project will be to modify Reliability Standard, CIP-012-1 to require BAs, GOs, GOPs, RCs, TOs, and TOPs who own or operate BES Control Centers to implement protections that address the availability of communication links and data links between BES Control Centers. Redundancy of communications links will not be required; however, incident recovery and continuity of operation plans are to be included within the scope.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

No

Document Name

Comment

We disagree with the FERC Order, based on all the comments which NERC and others raised as documented in the Order along with the additional items:

1. The scope of the SAR is not cybersecurity-related and not refined enough.
2. O&P standards cover communication availability
3. Cyber assets associated with communication networks and data communication links between discrete ESPs are exempt

The scope of this SAR is not clearly defined enough to agree with. Without a significantly defined scope, this project has the possibility to bleed into O&P standards such as IRO and EOP and multiple CIP standards and current projects as noted in the SAR which is of major concern.

FERC’s concerns in Order No. 866 and the scope of the SAR are not cybersecurity in nature and thus should be covered in Operation & Planning standards if required. “Protections regarding the availability of communications links and data communicated between the bulk electric system Control Centers”, is not always controlled by entities, which are dependant on telecommunication carriers and telecommunication equipment, currently not in the scope of the CIP requirements and should remain out of the scope of CIP requirements and fall under O&P standards which cover communication availability and backup communications.

The current CIP standards limit the scope to BES Cyber Systems and associated EACMS, PACS, and PCAs. The standards are specific in exempting, “4.2.3.2. Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters” which in our opinion conflicts with Order No. 866. The proposed changes are already covered in CIP-008 and CIP-009 in regards to compromise and recovery. If the scope of this SAR was added to the CIP standards, we believe this would extend beyond CIP-012 and at a minimum impact CIP-008

and CIP-009 and create intermingled requirements as we had in previous CIP standards, which is not desired.

Therefore we do not agree with the scope of the SAR. We strongly believe Order No. 866 is in direct conflict with the exception of "4.2.3.2. Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters." Combine the exemption, with NERC and the industry's comments in the Order, CIP-008 and CIP-009 coverage of the Order, and the scope of the SAR not being cybersecurity-related, we feel this modification is rooted in the Operations and Planning standards and not the CIP standards.

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

The requested changes from FERC via Order 866 are logical.

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

ReliabilityFirst agrees with the proposed scope of the SAR to address the directive issued by FERC in Order No. 866.

Likes 0

Dislikes 0

Response

Kelsi Rigby - APS - Arizona Public Service Co. - 1,3,5,6

Answer Yes

Document Name

Comment

Although AZPS is in agreement with the intention of the SAR, it makes the following recommendation:

The project scope and goal states that the project will address concerns FERC outlined in Order No. 866; however, it does not specify the exact concern(s) that the project will include. APS recommends adding details specific to the directive that the project is intended to address.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 1,3,4, Group Name FE Voter

Answer Yes

Document Name

Comment

Our concurrence is based on assumption that having geographically diverse and redundant ICCP links constitutes “backup communication capabilities” as referenced in Order 866 Paragraph 35.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

IESO supports the comments submitted by both NPCC and ISO/ RTO Council.

IESO supports the proposed scope of the SAR as addressing the FERC directive in Order 866; i.e. “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. See Order No. 866 at PP 35-36.

Likes 0

Dislikes 0

Response

Dana Klem - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>“These comments represent the MRO NSRF membership as a whole but would not preclude members from submitting individual comments”.</p> <p>There seems to be a disconnect between Project 2020-04, titled “Modifications to CIP-012,” and the SAR itself, which is titled “Revisions to CIP Standards...” and never explicitly mentions CIP-012. Given the FERC Order to “include provisions for incident recovery and continuity of operations,” are CIP-008 Incident Reporting and Response Planning, and/or CIP-009 Recovery Plans for BES Cyber Systems, anticipated to be included within the scope of this SAR? If so, this should be disclosed for transparency, to alert all potentially impacted stakeholders, and to avoid subsequent surprises.</p> <p>MRO NSRF proposes the title of the SAR be modified to match the title of Project 2020-04; i.e. from “Revisions to CIP standards to address Cyber Security Communications between Control Centers” to “Revisions to NERC standards to address Cyber Security Communications between Control Centers.”</p> <p>In addition, MRO NSRF prefers the directive in FERC Order 866 be addressed as part of CIP-012 as opposed to CIP-008 and/or CIP-009 if the directive is to be addressed under the CIP standards.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Madison Gas and Electric (MGE) supports the comments submitted by the MRO NSRF.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>We agree with the proposed scope because it is consistent with the FERC Directive.</p> | |

We suggest including the directive from FERC Order 866 in the "Project Scope" section, "The commission directs NERC to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers."

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1 - MRO

Answer

Yes

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum (NSRF).

Likes 0

Dislikes 0

Response

Sandra Shaffer - Berkshire Hathaway - PacifiCorp - 6

Answer

Yes

Document Name

Comment

We agree that the proposed SAR covers the FERC order to include provisions for the responsible entities to plan for both recovery of compromised communication links and use of backup communication capability should it be needed for redundancy. However, the SAR is unclear if the new requirements will be addressed in CIP-012, another CIP Standard, or a combination thereof.

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Minnesota Power supports EEI Comments: pasted below:

EEI supports the proposed project, as directed by FERC in Order No. 866, to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers. However, we have identified the following items that need to be addressed in this SAR before we can support its approval:

1. The "Project Scope" section should include the FERC Order No. 866 directive language "develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers."
2. The "Purpose and Goal" section be revised to reflect the reliability-related benefit of improved protections regarding the availability of communication links and data communicated between control centers.
3. The "Detailed Description" section should state clear deliverables with sufficient detail for a drafting to execute the project. EEI suggests the following for NERC consideration:
 - i. The scope of this project will be to modify Reliability Standard, CIP-012-1 to require BAs, GOs, GOPs, RCs, TOs, and TOPs who own or operate BES Control Centers to implement protections that address the availability of communication links and data links between BES Control Centers. Redundancy of communications links will not be required; however, incident recovery and continuity of operation plans are to be included within the scope.
4. The "Functional Entities" section identifies Distribution Providers (DPs) as one of the functional entities that the proposed standard(s) should apply. However, DPs were not identified as an Applicable Entity in draft CIP-012-1 nor were they identified in FERC Order 866. EEI recommends DPs either be removed or NERC include a justification for adding DPs.

Likes 0

Dislikes 0

Response

Carl Pineault - Hydro-Quebec Production - 1,5

Answer

Yes

Document Name

Comment

We support comments from NPCC Regional Standards Committee.

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1,3,5,6

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Bruce Reimer - Manitoba Hydro - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennie Wike - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Anton Vu - Los Angeles Department of Water and Power - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Randy Cleland - GridLiance Holdco, LP - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Laura Nelson - IDACORP - Idaho Power Company - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)_2020-04_CIP-012 SAR

Answer

Document Name

Comment

While the IRC SRC **supports** addressing the spirit of the FERC directive in Order 866; i.e. “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan,” we believe **the issue of “availability” is an operational versus a security** concern. With that as a backdrop, we **disagree** with the foregone conclusion in the SAR Title; i.e. “Revisions to CIP standards to address Cyber Security Communications between Control Centers.”

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE noticed that the applicability section of the SAR includes GOs, TOs, and DPs. The NERC Glossary term for Control Center, however, does not include GOs, TOs, and DPs. Real-time monitoring data between a TOP/RC/BA/GOP Control Center and other control centers **should** be protected since most of the Real-time monitoring information comes from DPs and TOs sending it to TOPs. Texas RE requests that the drafting team not limit the applicability to those entities with Control Centers as defined by the NERC Glossary and be inclusive of GOs, TOs, and DPs that are not included in the NERC Glossary.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC

Answer

Document Name

Comment

While the IRC SRC **supports** addressing the spirit of the FERC directive in Order 866; i.e. “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan,” we believe **the issue of “availability” is an operational versus a security** concern. With that as a backdrop, we **disagree** with the foregone conclusion in the SAR Title; i.e. “Revisions to CIP standards to address Cyber Security Communications between Control Centers.”

Likes 0

Dislikes 0

Response

2. Provide any additional comments for the SAR drafting team to consider, if desired.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

Document Name

Comment

Thank you for the opportunity to provide comments.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC

Answer

Document Name

Comment

The IRC SRC proposes the SAR Title and SAR Type be modified to allow the industry to determine where best to address the FERC directive in Order 866.

The IRC SRC recommends the Requirements focus on a plan of action since a Reliability Entity cannot guarantee a third party's availability or reliability. The IRC SRC requests the Standard Drafting Team not prescribe technical solution(s). As an example, see COM-001-3, R11.

R11. Each Distribution Provider and Generator Operator that detects a failure of its Interpersonal Communication capability shall consult each entity affected by the failure, as identified in Requirement R7 for a Distribution Provider or Requirement R8 for a Generator Operator, to determine a mutually agreeable action for the restoration of its Interpersonal Communication capability.

If changes are made to CIP-012-1, the IRC SRC requests that modifications not adversely impact existing Responsible Entity efforts to implement version 1 by its effective date.

Finally, the SAR Drafting Team should pay attention to NERC's **Operational Data Exchange Simplification Standard Authorization Request (SAR)** seeking to simplify TOP-003 and IRO-010.

Likes 0

Dislikes 0

Response

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer

| | |
|---|--|
| Document Name | |
| Comment | |
| As mentioned in our response to Question 1, within our Recommendation bullet, NVE would like the SDT to consider, if a redundant back up communications method exists that the responsible entity meets the requirement for availability. Also, specification for what is deemed "acceptable availability down-time" should be considered in the development. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Carl Pineault - Hydro-Qu?bec Production - 1,5 | |
| Answer | |
| Document Name | |
| Comment | |
| We support comments from NPCC Regional Standards Committee | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Jendras - Ameren - Ameren Services - 1,3,6 | |
| Answer | |
| Document Name | |
| Comment | |
| None | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | |
| Document Name | |

Comment

None

Likes 0

Dislikes 0

Response

Tho Tran - Oncor Electric Delivery - 1 - Texas RE

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Sandra Shaffer - Berkshire Hathaway - PacifiCorp - 6

Answer

Document Name

Comment

We would like the drafting team to consider, if a redundant back up communications method exists that the responsible entity meets the requirement for availability. Also, specification for acceptable availability down-time should be considered in the development.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1 - MRO

Answer

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum (NSRF).

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer

Document Name

Comment

We expect that the Requirements will focus on a plan since the Entity cannot guarantee a third party's availability or reliability

We request that Standard Drafting Team not prescribe technical solution(s). Also, we suggest that the SAR drafting team consider the CIP-012 relationship to TOP-003 and IRO-10, and the SAR involving Operational Data Exchange simplification – Standards Efficiency Review Phase 2. We suggest that the “Purpose and Goal” section should state the reliability-related benefits, as described in the FERC Order.

We suggest that the “To assist the NERC Standards Committee in appointing a drafting team...” section should not include the Distribution Provider function since the scope involves the availability of communication links and data communicated between bulk electric system Control Centers.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Document Name

Comment

Southern Company requests the SAR drafting team to consider the following:

1. Ensure the SAR provides the SDT with the ability to modify any impacted O&P Standards; don't create a conflict between CIP and O&P where both cover availability by making sure those other Standards are in scope for this SAR because those could be impacted.
2. Ensure the Scope adequately addresses methods to protect availability of communication links and data communicated between bulk electric system Control Centers “as it is communicated between CCs”, or “while it is being communicated.” This is the focus of the FERC Order, and not on data at rest that “could” be transmitted at some point in time.
3. The SAR and Standards drafting teams both need to consider that “availability” can impact integrity when it comes to handling encryption. Don't put in

place or propose requirements around ensuring availability that can come at the expense or degradation of confidentiality or integrity.

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)_2020-04_CIP-012 SAR

Answer

Document Name

Comment

The IRC SRC proposes the SAR Title and SAR Type be modified to allow the industry to determine where best to address the FERC directive in Order 866.

The IRC SRC recommends the Requirements focus on a plan of action since a Reliability Entity cannot guarantee a third party's availability or reliability. The IRC SRC requests the Standard Drafting Team not prescribe technical solution(s). As an example, see COM-001-3, R11.

R11. Each Distribution Provider and Generator Operator that detects a failure of its Interpersonal Communication capability shall consult each entity affected by the failure, as identified in Requirement R7 for a Distribution Provider or Requirement R8 for a Generator Operator, to determine a mutually agreeable action for the restoration of its Interpersonal Communication capability.

If changes are made to CIP-012-1, the IRC SRC requests that modifications not adversely impact existing Responsible Entity efforts to implement version 1 by its effective date.

Finally, the SAR Drafting Team should pay attention to NERC's **Operational Data Exchange Simplification Standard Authorization Request (SAR)** seeking to simplify TOP-003 and IRO-010.

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 1,5, Group Name LCRA Compliance

Answer

Document Name

Comment

LCRA expresses concern with understanding how provisions for a registered entity's equipment, compliance plans - with respect to incident recovery and continuity operations - are to be addressed under specific circumstances and whether or not these circumstances would come in to scope under this Standard. Example: communication network/ equipment that is not owned by the registered entity.

LCRA is concerned with the compliance burden associated with a revision to a Standard prior to the current version of the Standard becoming effective. Additionally, the language of the SAR appears to duplicate the efforts of already enforceable Standards (CIP-008, CIP-009, COM-001).

Likes 0

Dislikes 0

Response

Douglas Webb - Westar Energy - 1,3,5,6 - MRO, Group Name Westar-KCPL

Answer

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3,4,5,6

Answer

Document Name

Comment

Madison Gas and Electric (MGE) supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Dana Klem - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer

Document Name

Comment

These comments represent the MRO NSRF membership as a whole but would not preclude members from submitting individual comments".

The NSRF questions the Applicability within the current CIP-012-1. The Purpose states:

To protect the confidentiality and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers. The Applicability Section lists 4.1.3 Generator Owner (GO) and 4.1.6 Transmission Owner (TO). Neither the GO or TO are included in the NERC definition

of Control Center which reads;

One or more facilities hosting operating personnel that monitor and control the Bulk Electric System (BES) in real-time to perform the reliability tasks, including their associated data centers, of: 1) a Reliability Coordinator, 2) a Balancing Authority, 3) a Transmission Operator for transmission Facilities at two or more locations, or 4) a Generator Operator for generation Facilities at two or more locations.

The NSRF recommends that the SAR scope be updated to review the Applicability Section of the current CIP-012-1 and the FERC directive (as already written).

MRO NSRF recommends the Requirements focus on a plan of action since a Reliability Entity cannot guarantee a third party's availability or reliability. As an example, see COM-001-3, R11.

R11. Each Distribution Provider and Generator Operator that detects a failure of its Interpersonal Communication capability shall consult each entity affected by the failure, as identified in Requirement R7 for a Distribution Provider or Requirement R8 for a Generator Operator, to determine a mutually agreeable action for the restoration of its Interpersonal Communication capability.

MRO NSRF requests the Standard Drafting Team not prescribe technical solution(s); e.g. COM-001-3.

MRO NSRF requests that modifications to CIP-012-1 not adversely impact existing Reliability Entity efforts to implement version 1 by its effective date.

The SAR Drafting Team should pay attention to NERC's Compliance Implementation Guidance on simplifying TOP-003 and IRO-010.

Likes 0

Dislikes 0

Response

Marty Hostler - Northern California Power Agency - 3,4,5,6

Answer

Document Name

Comment

No.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

While on the topic of recovery, continuity of operations, and backup or alternate communications capability, "resilience" should be a major topic of

discussion with the intent to bring CIP standards more in line with the greater body of knowledge on incident planning. "Resilience" meaning full OR partial mitigation of impact, scope, and duration to preserve capability; usually expressed in terms of planning for Recovery Point and Recovery Time Objectives (RPO/RTO), possible need for stages of capability/capacity restoration, and using risk management/risk reduction formulas and concepts.

Every effort should be made to look both inside and outside the traditional electric utility industry to incorporate best practices for incident response when drafting new requirements.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Document Name

Comment

IESO supports the comments submitted by both NPCC and ISO/ RTO Council

The IESO prefers the directive from FERC Order 866 be addressed as part of CIP-012 as opposed to CIP-008 and/or CIP-009.

IESO proposes that the title of the SAR be modified to match the title of Project 2020-04; i.e. Modifications to CIP-012.

IESO recommends the Requirements focus on a plan of action since a Reliability Entity cannot guarantee a third party's availability or reliability.

IESO requests the Standard Drafting Team not prescribe technical solution(s); e.g. COM-001-3.

IESO requests that modifications to CIP-012-1 not adversely impact existing Reliability Entity efforts to implement version 1 by its effective date.

The SAR Drafting Team should pay attention to NERC's Compliance Implementation Guidance on simplifying TOP-003 and IRO-010.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 1,3,4, Group Name FE Voter

Answer

Document Name

Comment

Ensure SDT is providing flexibility to account for multiple communications and EMS landscapes and is seeking input from stakeholders during the standards drafting process.

Likes 0

Dislikes 0

Response

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer

Document Name

Comment

No additional questions.

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer

Document Name

Comment

The Standards and Drafting team should be mindful that proposed changes to CIP-012-1 may have implications on various other Operations Reliability Standards that reference data exchange, recovery of compromised communication links, and use of backup communication capability; and that those Operations Reliability Standards may have implications on CIP-012-1 (including but not limited to: TOP-001-4, TOP-003-3, IRO-010-2, and EOP-008-2). The Standards and Drafting team should look for opportunities to create synergies between Standards with common threads to ease the compliance burden where possible.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1,5

Answer

Document Name

Comment

Reclamation recommends when addressing the technical documents to review requirements for electronic communications align where possible to the requirements for oral communication contained in COM-001-3: (1) have electronic communication capability; (2) designate alternative electronic communication capability in the event of a failure of the primary communication capability; (3) test the alternate method of electronic communication; (4) notify the entity on the other end of the communication path if a failure is detected; and, (5) establish mutually agreeable action to restore the electronic communication capability. Entities may want to establish a “heartbeat” within their own systems to detect a data communications failure and not rely on far-end communication of path failures.

Prior to proposing additional modifications, Reclamation also recommends each SDT take additional time to completely identify the scope of each Standard Authorization Request to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Reclamation also recommends the SAR drafting team thoughtfully assess the cost impacts associated with this SAR to effect changes in a cost-effective manner. The SAR proposes a significant increase in the scope of the affected standard, which will have a substantial impact on affected entities and should not be taken without appropriate consideration.

To minimize churn among standard versions, Reclamation recommends the SAR drafting team coordinate changes with other existing drafting teams for related standards; specifically, Project 2016-02 and Project 2019-03. This will reduce the chance that standards will conflict with one another and better align standards.

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric

Answer

Document Name

Comment

nothing futher at this time.

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer

Document Name

Comment

ATC suggests the SDT update the SAR to reflect their work specifically on CIP-012. As it stands the SDT could use the SAR to open any of the CIP

standards to achieve the desired outcome.

Likes 0

Dislikes 0

Response

Kevin Conway - Public Utility District No. 1 of Pend Oreille County - 1,3,5,6

Answer

Document Name

Comment

In some remote areas of the country it is not always possible to have redundant communications because the phone system is owned by a third party communications provider, and the infrastructure costs. A standard of this type has to be developed with the understanding that rural utilities have unique challenges in meeting redundancy and in most cases represent a very small threat to the BES.

Likes 0

Dislikes 0

Response

Unofficial Nomination Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting nominations. Use the [electronic form](#) to submit nominations by **8 p.m. Eastern, June 11, 2020**. This unofficial version is provided to assist nominees in compiling the information necessary to submit the electronic form.

Additional information about this project is available on the [Project 2020-04 Modifications to CIP-012](#) page. If you have questions, contact Senior Standards Developer, [Latrice Harkness](#) (via email), or at 404-446-9728.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

Previous drafting or review team experience is beneficial, but not required. A brief description of the desired qualifications, expected commitment, and other pertinent information is included below.

Project 2020-04 Modification to CIP-012

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communications links and data communicated between the bulk electric system Control Centers.

Standard(s) affected: CIP-012 – Communications between Control Centers

The Reliability Standard(s) developed or revised will include modifications to CIP-012-1. In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability.

The time commitment for these projects is expected to be up to two face-to-face meetings per quarter (on average two full working days and one half-day each meeting) with conference calls scheduled as needed to meet the agreed-upon timeline the review or drafting team sets forth. Outside the scheduled meetings, individuals or subgroups will have additional preparation and support work such as researching and developing proposed concepts, reviewing proposals, compiling comments and drafting responses, etc. Lastly, an important component of the review and drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

We are seeking a cross section of the industry to participate on the team, but in particular are seeking individuals who have experience and expertise in one or more of the following areas:

- Communication networks
- Operations Technology
- Transmission Owner (TO) Control Centers
- Critical Infrastructure Protection (“CIP”) family of Reliability Standards

Individuals who have facilitation skills and experience and/or legal or technical writing backgrounds are also strongly desired. Please include this in the description of qualifications as applicable.

| | | |
|--|---|--|
| Name: | | |
| Organization: | | |
| Address: | | |
| Telephone: | | |
| Email: | | |
| Please briefly describe your experience and qualifications to serve on the requested Standard Drafting Team (Bio): | | |
| <p>If you are currently a member of any NERC drafting team, please list each team here:</p> <p><input type="checkbox"/> Not currently on any active SAR or standard drafting team.</p> <p><input type="checkbox"/> Currently a member of the following SAR or standard drafting team(s):</p> | | |
| <p>If you previously worked on any NERC drafting team please identify the team(s):</p> <p><input type="checkbox"/> No prior NERC SAR or standard drafting team.</p> <p><input type="checkbox"/> Prior experience on the following team(s):</p> | | |
| <p>Acknowledgement that the nominee has read and understands both the <i>NERC Participant Conduct Policy</i> and the <i>Standard Drafting Team Scope</i> documents, available on NERC Standards Resources.</p> <p><input type="checkbox"/> Yes, the nominee has read and understands these documents.</p> | | |
| <p>Select each NERC Region in which you have experience relevant to the Project for which you are volunteering:</p> | | |
| <input type="checkbox"/> MRO <input type="checkbox"/> NPCC <input type="checkbox"/> RF | <input type="checkbox"/> SERC <input type="checkbox"/> Texas RE <input type="checkbox"/> WECC | <input type="checkbox"/> NA – Not Applicable |

Select each Industry Segment that you represent:

| | |
|--------------------------|--|
| <input type="checkbox"/> | 1 — Transmission Owners |
| <input type="checkbox"/> | 2 — RTOs, ISOs |
| <input type="checkbox"/> | 3 — Load-serving Entities |
| <input type="checkbox"/> | 4 — Transmission-dependent Utilities |
| <input type="checkbox"/> | 5 — Electric Generators |
| <input type="checkbox"/> | 6 — Electricity Brokers, Aggregators, and Marketers |
| <input type="checkbox"/> | 7 — Large Electricity End Users |
| <input type="checkbox"/> | 8 — Small Electricity End Users |
| <input type="checkbox"/> | 9 — Federal, State, and Provincial Regulatory or other Government Entities |
| <input type="checkbox"/> | 10 — Regional Reliability Organizations and Regional Entities |
| <input type="checkbox"/> | NA — Not Applicable |

Select each Function¹ in which you have current or prior expertise:

| | |
|---|--|
| <input type="checkbox"/> Balancing Authority | <input type="checkbox"/> Transmission Operator |
| <input type="checkbox"/> Compliance Enforcement Authority | <input type="checkbox"/> Transmission Owner |
| <input type="checkbox"/> Distribution Provider | <input type="checkbox"/> Transmission Planner |
| <input type="checkbox"/> Generator Operator | <input type="checkbox"/> Transmission Service Provider |
| <input type="checkbox"/> Generator Owner | <input type="checkbox"/> Purchasing-selling Entity |
| <input type="checkbox"/> Interchange Authority | <input type="checkbox"/> Reliability Coordinator |
| <input type="checkbox"/> Load-serving Entity | <input type="checkbox"/> Reliability Assurer |
| <input type="checkbox"/> Market Operator | <input type="checkbox"/> Resource Planner |
| <input type="checkbox"/> Planning Coordinator | |

¹ These functions are defined in the NERC [Functional Model](#), which is available on the NERC website.

Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group:

| | | | |
|---------------|--|------------|--|
| Name: | | Telephone: | |
| Organization: | | Email: | |
| Name: | | Telephone: | |
| Organization: | | Email: | |

Provide the name and contact information of your immediate supervisor or a member of your management who can confirm your organization's willingness to support your active participation.

| | | | |
|--------|--|------------|--|
| Name: | | Telephone: | |
| Title: | | Email: | |

UPDATED

Standards Announcement

Project 2020-04 Modifications to CIP-012

Nomination Period Now Open through June 11, 2020

[Now Available](#)

Nominations are being sought for **Project 2020-04 Modifications to CIP-012** SAR drafting team. **The due date has been extended, and is now open through 8 p.m. Eastern, Thursday, June 11, 2020.**

Use the [electronic form](#) to submit a nomination. Contact [Linda Jenkins](#) regarding issues using the electronic form. An unofficial Word version of the nomination form is posted on the [Standard Drafting Team Vacancies](#) page and the [project page](#).

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

The time commitment for this project is expected to be two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed upon timeline the team sets forth. Team members may also have side projects, either individually or by sub-group, to present for discussion and review. Lastly, an important component of the team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful ballot.

Previous drafting team experience is beneficial but not required. See the [project page](#) and nomination form for additional information.

Next Steps

The Standards Committee is expected to appoint members to the SAR drafting team in June 2020. Nominees will be notified shortly after they have been appointed.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

[Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box. For more information or assistance, contact Senior Standards Developer, [Latrice Harkness](#) (via email) or at 404-446-9728.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Unofficial Nomination Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting nominations. Use the [electronic form](#) to submit nominations by **8 p.m. Eastern, July 20, 2020**. This unofficial version is provided to assist nominees in compiling the information necessary to submit the electronic form.

Additional information about this project is available on the [Project 2020-04 Modifications to CIP-012](#) page. If you have questions, contact Senior Standards Developer, [Latrice Harkness](#) (via email), or at 404-446-9728.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

Previous drafting or review team experience is beneficial, but not required. A brief description of the desired qualifications, expected commitment, and other pertinent information is included below.

Project 2020-04 Modification to CIP-012

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communications links and data communicated between the bulk electric system Control Centers.

Standard(s) affected: CIP-012 – Communications between Control Centers

The Reliability Standard(s) developed or revised will include modifications to CIP-012-1. In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability.

The time commitment for these projects is expected to be up to two face-to-face meetings per quarter (on average two full working days and one half-day each meeting) with conference calls scheduled as needed to meet the agreed-upon timeline the review or drafting team sets forth. Outside the scheduled meetings, individuals or subgroups will have additional preparation and support work such as researching and developing proposed concepts, reviewing proposals, compiling comments and drafting responses, etc. Lastly, an important component of the review and drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

We are seeking a cross section of the industry to participate on the team, but in particular are seeking individuals from smaller entities as well as representatives from the following Industry Segments:

- 4 — Transmission-dependent Utilities
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, and Provincial Regulatory or other Government Entities

Individuals who have facilitation skills and experience and/or legal or technical writing backgrounds are also strongly desired. Please include this in the description of qualifications as applicable.

| | | |
|---|---|--|
| Name: | | |
| Organization: | | |
| Address: | | |
| Telephone: | | |
| Email: | | |
| Please briefly describe your experience and qualifications to serve on the requested Standard Drafting Team (Bio): | | |
| <p>If you are currently a member of any NERC drafting team, please list each team here:</p> <input type="checkbox"/> Not currently on any active SAR or standard drafting team. <input type="checkbox"/> Currently a member of the following SAR or standard drafting team(s): | | |
| <p>If you previously worked on any NERC drafting team please identify the team(s):</p> <input type="checkbox"/> No prior NERC SAR or standard drafting team. <input type="checkbox"/> Prior experience on the following team(s): | | |
| <p>Acknowledgement that the nominee has read and understands both the <i>NERC Participant Conduct Policy</i> and the <i>Standard Drafting Team Scope</i> documents, available on NERC Standards Resources.</p> <input type="checkbox"/> Yes, the nominee has read and understands these documents. | | |
| Select each NERC Region in which you have experience relevant to the Project for which you are volunteering: | | |
| <input type="checkbox"/> MRO <input type="checkbox"/> NPCC <input type="checkbox"/> RF | <input type="checkbox"/> SERC <input type="checkbox"/> Texas RE <input type="checkbox"/> WECC | <input type="checkbox"/> NA – Not Applicable |

Select each Industry Segment that you represent:

| | |
|--------------------------|--|
| <input type="checkbox"/> | 1 — Transmission Owners |
| <input type="checkbox"/> | 2 — RTOs, ISOs |
| <input type="checkbox"/> | 3 — Load-serving Entities |
| <input type="checkbox"/> | 4 — Transmission-dependent Utilities |
| <input type="checkbox"/> | 5 — Electric Generators |
| <input type="checkbox"/> | 6 — Electricity Brokers, Aggregators, and Marketers |
| <input type="checkbox"/> | 7 — Large Electricity End Users |
| <input type="checkbox"/> | 8 — Small Electricity End Users |
| <input type="checkbox"/> | 9 — Federal, State, and Provincial Regulatory or other Government Entities |
| <input type="checkbox"/> | 10 — Regional Reliability Organizations and Regional Entities |
| <input type="checkbox"/> | NA — Not Applicable |

Select each Function¹ in which you have current or prior expertise:

| | |
|---|--|
| <input type="checkbox"/> Balancing Authority | <input type="checkbox"/> Transmission Operator |
| <input type="checkbox"/> Compliance Enforcement Authority | <input type="checkbox"/> Transmission Owner |
| <input type="checkbox"/> Distribution Provider | <input type="checkbox"/> Transmission Planner |
| <input type="checkbox"/> Generator Operator | <input type="checkbox"/> Transmission Service Provider |
| <input type="checkbox"/> Generator Owner | <input type="checkbox"/> Purchasing-selling Entity |
| <input type="checkbox"/> Interchange Authority | <input type="checkbox"/> Reliability Coordinator |
| <input type="checkbox"/> Load-serving Entity | <input type="checkbox"/> Reliability Assurer |
| <input type="checkbox"/> Market Operator | <input type="checkbox"/> Resource Planner |
| <input type="checkbox"/> Planning Coordinator | |

¹ These functions are defined in the NERC [Functional Model](#), which is available on the NERC website.

Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group:

| | | | |
|---------------|--|------------|--|
| Name: | | Telephone: | |
| Organization: | | Email: | |
| Name: | | Telephone: | |
| Organization: | | Email: | |

Provide the name and contact information of your immediate supervisor or a member of your management who can confirm your organization's willingness to support your active participation.

| | | | |
|--------|--|------------|--|
| Name: | | Telephone: | |
| Title: | | Email: | |

Standards Announcement

Project 2020-04 Modifications to CIP-012

Supplemental Nomination Period Open through July 20, 2020

[Now Available](#)

Additional nominations are being sought for SAR drafting team members through **8 p.m. Eastern, Monday, July 20, 2020.**

Use the [electronic form](#) to submit a nomination. Contact [Linda Jenkins](#) regarding issues using the electronic form. An unofficial Word version of the nomination form is posted on the [Standard Drafting Team Vacancies](#) page and the [project page](#).

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

The time commitment for this project is expected to be two face-to-face meetings per quarter (on average two full working days each meeting) with conference calls scheduled as needed to meet the agreed upon timeline the team sets forth. Team members may also have side projects, either individually or by sub-group, to present for discussion and review. Lastly, an important component of the team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful ballot.

Previous drafting team experience is beneficial but not required. See the [project page](#) and nomination form for additional information.

Next Steps

The Standards Committee is expected to appoint members to the SAR drafting team in August 2020. Nominees will be notified shortly after they have been appointed.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

[Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box. For more information or assistance, contact Senior Standards Developer, [Latrice Harkness](#) (via email) or at 404-446-9728.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Standard Authorization Request (SAR)

Complete and submit this form, with attachment(s) to the [NERC Help Desk](#). Upon entering the Captcha, please type in your contact information, and attach the SAR to your ticket. Once submitted, you will receive a confirmation number which you can use to track your request.

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|--|--|--|--|
| SAR Title: | | Revisions to CIP Reliability Standards to address Cyber Security of Communications between Control Centers | |
| Date Submitted: | | March 4, 2020 | |
| SAR Requester | | | |
| Name: | | Soo Jin Kim, Manager of Standards Development | |
| Organization: | | NERC | |
| Telephone: | | 404.831.4765 | Email: Soo.jin.kim@nerc.net |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> | New Standard | <input type="checkbox"/> | Imminent Action/ Confidential Issue (SPM Section 10) |
| <input checked="" type="checkbox"/> | Revision to Existing Standard | <input type="checkbox"/> | Variance development or revision |
| <input type="checkbox"/> | Add, Modify or Retire a Glossary Term | <input type="checkbox"/> | Other (Please specify) |
| <input type="checkbox"/> | Withdraw/retire an Existing Standard | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> | Regulatory Initiation | <input type="checkbox"/> | NERC Standing Committee Identified |
| <input type="checkbox"/> | Emerging Risk (Reliability Issues Steering Committee) Identified | <input type="checkbox"/> | Enhanced Periodic Review Initiated |
| <input type="checkbox"/> | Reliability Standard Development Plan | <input type="checkbox"/> | Industry Stakeholder Identified |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012 and directing NERC to develop modifications to CIP-012 to require protections regarding the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| The purpose of this project is to address the Commission directive in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between BES Control Centers. These revisions will improve the security posture of responsible entities by clarifying expectations regarding communication between Control Centers, thereby ensuring the exchange of operational data and addressing the potential risk of loss of data. | | | |

| Requested information |
|--|
| Project Scope (Define the parameters of the proposed project): |
| The proposed project will address the Commission directive regarding the availability of communication links and data communicated between BES Control Centers via development of modifications to CIP-012-1 as outlined in Order No. 866. The work will include development of Violation Risk Factors, Violation Severity Levels and an Implementation Plan for the modified Standard. |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g., research paper) to guide development of the Standard or definition): |
| The SDT shall address the Order No. 866 directive by developing modifications to Reliability Standard CIP-012-1. The Commission directed the following: |
| Per paragraph 3, “[T]he Commission directs NERC to develop modifications to the CIP Reliability Standards to require protections regarding the <i>availability</i> of communication links and data communicated between bulk electric system Control Centers.” |
| In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. See Order No. 866 at PP 35-36. |
| Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project): |
| No additional project costs outside of the time and resources required to serve on the Standard Drafting Team are expected. Cost impact of implementation of the proposed Standard is dependent upon the method(s) by which a Responsible Entity chooses to meet any additional Requirements. However, a question will be asked during the comment period to ensure cost aspects are considered. |
| Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g., Dispersed Generation Resources): |
| Submitter asserts there are no unique characteristics associated with BES facilities that will be impacted by this proposed standard development project. |
| To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g., Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions): |
| Reliability Coordinator, Balancing Authority, Transmission Owner, Transmission Operator, , Generator Owner, Generator Operator |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

| Requested information |
|--|
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. |
| None. |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so, which standard(s) or project number(s)? |
| Project 2016-02 Modifications to CIP Standards, Project 2019-02 BES Cyber Systems Information Access Management, and 2020-03 Supply Chain Low Impact Revisions are both active CIP projects. |
| Are there alternatives (e.g., guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. |
| None at this time. |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input checked="" type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input checked="" type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input checked="" type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

| Market Interface Principles | |
|---|-------------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Market Interface Principles | |
|--|-----|
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|--|-----------------|
| Region(s)/ Interconnection | Explanation |
| | None identified |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate). | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff | <input type="checkbox"/> Final SAR endorsed by the SC |
| <input type="checkbox"/> Draft SAR presented to SC for acceptance | <input type="checkbox"/> SAR assigned a Standards Project by NERC |
| <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-------------------|-----------------------------|--|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January 18, 2017 | Standards Information Staff | Revised |
| 2 | June 28, 2017 | Standards Information Staff | Updated template |
| 3 | February 22, 2019 | Standards Information Staff | Added instructions to submit via Help Desk |
| 4 | February 25, 2020 | Standards Information Staff | Updated template footer |

Standard Authorization Request (SAR)

Complete and submit this form, with attachment(s) to the [NERC Help Desk](#). Upon entering the Captcha, please type in your contact information, and attach the SAR to your ticket. Once submitted, you will receive a confirmation number which you can use to track your request.

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

| Requested information | | | |
|---|---|---|-----------------------------|
| SAR Title: | | Revisions to CIP <u>Reliability</u> sStandards to address Cyber Security <u>of</u> Communications between Control Centers | |
| Date Submitted: | | March 4, 2020 | |
| SAR Requester | | | |
| Name: | | Soo Jin Kim, Manager of Standards Development | |
| Organization: | | NERC | |
| Telephone: | | 404.831.4765 | Email: Soo.jin.kim@nerc.net |
| SAR Type (Check as many as apply) | | | |
| <input type="checkbox"/> New Standard | <input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10) | | |
| <input checked="" type="checkbox"/> Revision to Existing Standard | <input type="checkbox"/> Variance development or revision | | |
| <input type="checkbox"/> Add, Modify or Retire a Glossary Term | <input type="checkbox"/> Other (Please specify) | | |
| <input type="checkbox"/> Withdraw/retire an Existing Standard | | | |
| Justification for this proposed standard development project (Check all that apply to help NERC prioritize development) | | | |
| <input checked="" type="checkbox"/> Regulatory Initiation | <input type="checkbox"/> NERC Standing Committee Identified | | |
| <input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified | <input type="checkbox"/> Enhanced Periodic Review Initiated | | |
| <input type="checkbox"/> Reliability Standard Development Plan | <input type="checkbox"/> Industry Stakeholder Identified | | |
| Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?): | | | |
| <p>The project will address a directive issued by <u>On January 23, 2020,</u> the Federal Energy Regulatory Commission (FERC) in issued <u>approved</u> Order No. 866 <u>approving CIP-012 and directing NERC</u> to develop modifications to the CIP Reliability Standards <u>CIP-012</u> to require protections regarding the availability of communications links and data communicated between the b<u>B</u>ulk e<u>E</u>lectric s<u>S</u>ystem (<u>BES</u>) Control Centers.</p> | | | |
| Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?): | | | |
| <p>This project will address the concerns of FERC outlined in Order No. 866.</p> <p><u>The purpose of this project is to address the Commission directive in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between BES Control Centers. These revisions will</u></p> | | | |

| Requested information |
|--|
| <u>improve the security posture of responsible entities by clarifying expectations regarding communication between Control Centers, thereby ensuring the exchange of operational data and addressing the potential risk of loss of data.</u> |
| Project Scope (Define the parameters of the proposed project): |
| <u>This project will address the directive in Order No. 866. The proposed project will address the Commission directive regarding the availability of communication links and data communicated between BES Control Centers via development of modifications to CIP-012-1 as outlined in Order No. 866. The work will include development of Violation Risk Factors, Violation Severity Levels and an Implementation Plan for the modified Standard.</u> |
| Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification ¹ which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g., research paper) to guide development of the Standard or definition): |
| <u>The SDT shall address the Order No. 866 directive by developing modifications to Reliability Standard CIP-012-1. The Commission directed the following:</u> |
| <u>Per paragraph 3, “[T]he Commission directs NERC to develop modifications to the CIP Reliability Standards to require protections regarding the <i>availability of communication links and data communicated between bulk electric system Control Centers.</i>”</u> |
| In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. See Order No. 866 at PP 35-36. |
| Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project): |
| <u>Cost impact is unknown at this time.</u> <u>No additional project costs outside of the time and resources required to serve on the Standard Drafting Team are expected. Cost impact of implementation of the proposed Standard is dependent upon the method(s) by which a Responsible Entity chooses to meet any additional Requirements. However, a question will be asked during the comment period to ensure cost aspects are considered.</u> |
| Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g., Dispersed Generation Resources): |
| Submitter asserts there are no unique characteristics associated with BES facilities that will be impacted by this proposed standard development project. |

¹ The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

| Requested information | |
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| To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g., Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions): | |
| Reliability Coordinator, Balancing Authority, Transmission Owner, Transmission Operator, Distribution Provider , Generator Owner, Generator Operator | |
| Do you know of any consensus building activities ² in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity. | |
| None. | |
| Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so, which standard(s) or project number(s)? | |
| Project 2016-02 Modifications to CIP Standards , <u>and Project Standards, Project 2019-02 BES Cyber Systems Information Access Management, and 2020-03 Supply Chain Low Impact Revisions</u> are both active CIP projects. | |
| Are there alternatives (e.g., guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives. | |
| None at this time. | |

| Reliability Principles | |
|---|---|
| Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? Please check all those that apply. | |
| <input type="checkbox"/> | 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards. |
| <input type="checkbox"/> | 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand. |
| <input checked="" type="checkbox"/> | 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably. |
| <input checked="" type="checkbox"/> | 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented. |
| <input checked="" type="checkbox"/> | 5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems. |
| <input type="checkbox"/> | 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions. |
| <input type="checkbox"/> | 7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis. |
| <input checked="" type="checkbox"/> | 8. Bulk power systems shall be protected from malicious physical or cyber attacks. |

² Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

| Market Interface Principles | |
|--|----------------|
| Does the proposed standard development project comply with all of the following Market Interface Principles ? | Enter (yes/no) |
| 1. A reliability standard shall not give any market participant an unfair competitive advantage. | Yes |
| 2. A reliability standard shall neither mandate nor prohibit any specific market structure. | Yes |
| 3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. | Yes |
| 4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards. | Yes |

| Identified Existing or Potential Regional or Interconnection Variances | |
|---|-----------------|
| Region(s)/ Interconnection | Explanation |
| | None identified |

For Use by NERC Only

| SAR Status Tracking (Check off as appropriate). | |
|---|--|
| <input type="checkbox"/> Draft SAR reviewed by NERC Staff | <input type="checkbox"/> Final SAR endorsed by the SC |
| <input type="checkbox"/> Draft SAR presented to SC for acceptance | <input type="checkbox"/> SAR assigned a Standards Project by NERC |
| <input type="checkbox"/> DRAFT SAR approved for posting by the SC | <input type="checkbox"/> SAR denied or proposed as Guidance document |

Version History

| Version | Date | Owner | Change Tracking |
|---------|-------------------|-----------------------------|--|
| 1 | June 3, 2013 | | Revised |
| 1 | August 29, 2014 | Standards Information Staff | Updated template |
| 2 | January 18, 2017 | Standards Information Staff | Revised |
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| 4 | February 25, 2020 | Standards Information Staff | Updated template footer |

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is the initial 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|----------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | 03/18/20 |
| SAR posted for comment | 04/08/20 |

| Anticipated Actions | Date |
|--|-------------|
| 45-day formal comment period with ballot | 04/26/21 |
| 10-day final ballot | July 2021 |
| Board adoption | August 2021 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:
[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

- 1.1. Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;
 - 1.2. Identification of where the Responsible Entity applied security protection for transmitting Real-time Assessment and Real-time monitoring data between Control Centers; and
 - 1.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.
- M1.** Evidence may include, but is not limited to, documented plan(s) that meet the security objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).
- R2.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 2.1. Identification of how the Responsible Entity has provided for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;
 - 2.2. Identification of how the Responsible Entity has addressed communications and data flow restoration to maintain continuity of operations in the Responsible Entity's plan; and
 - 2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.
- M2.** Evidence may include, but is not limited to, documented plan(s) that meet the security objective of Requirement R2 and documentation demonstrating the implementation of the plan(s).

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|---|---|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement any Part of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |
| R2. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement any Part of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | |

Standard Development Timeline

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| 10-day final ballot | July 2021 |
| Board adoption | August 2021 |

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Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-~~12~~
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-~~12~~:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-~~12~~.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:
[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

- 1.1. Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;
 - 1.2. Identification of where the Responsible Entity applied security protection for transmitting Real-time Assessment and Real-time monitoring data between Control Centers; and
 - 1.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.
- M1.** Evidence may include, but is not limited to, documented plan(s) that meet the security objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).
- R2.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]
- 2.1. Identification of how the Responsible Entity has provided for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;
 - 2.2. Identification of how the Responsible Entity has addressed communications and data flow restoration to maintain continuity of operations in the Responsible Entity's plan; and
 - 2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.
- M2.** Evidence may include, but is not limited to, documented plan(s) that meet the security objective of Requirement R2 and documentation demonstrating the implementation of the plan(s).

B.C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|------------|---------------------------|--|---|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement any Part of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |
| <u>R2.</u> | <u>N/A</u> | <u>The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R2.</u> | <u>The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R2</u> | <u>The Responsible Entity failed to document plan(s) for Requirement R2;</u> <u>Or</u> <u>The Responsible Entity failed to implement any Part of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances.</u> |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
 - Technical Rationale for CIP-012-2.
-

Version History

| Version | Date | Action | Change Tracking |
|----------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| <u>2</u> | <u>TBD</u> | <u>Adopted by NERC Board of Trustees</u> | |

Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

These standard(s) or definitions must be approved before the Applicable Standard becomes effective:

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communications links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

Unofficial Comment Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2020-04 Modifications to CIP-012** by **8 p.m. Eastern, June 9, 2021**.

Additional information is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Alison Oswald](#) (via email), or at 404-446-9668.

Background Information

In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

Questions

1. The SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree with the proposed R2 language? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

2. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

- Yes
 No

Comments:

3. The SDT is proposing a 24-month implementation plan. Do you agree with the proposed timeframe? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

- Yes
 No

Comments:

4. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.

Comments:

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

April 2021

RELIABILITY | RESILIENCE | SECURITY



3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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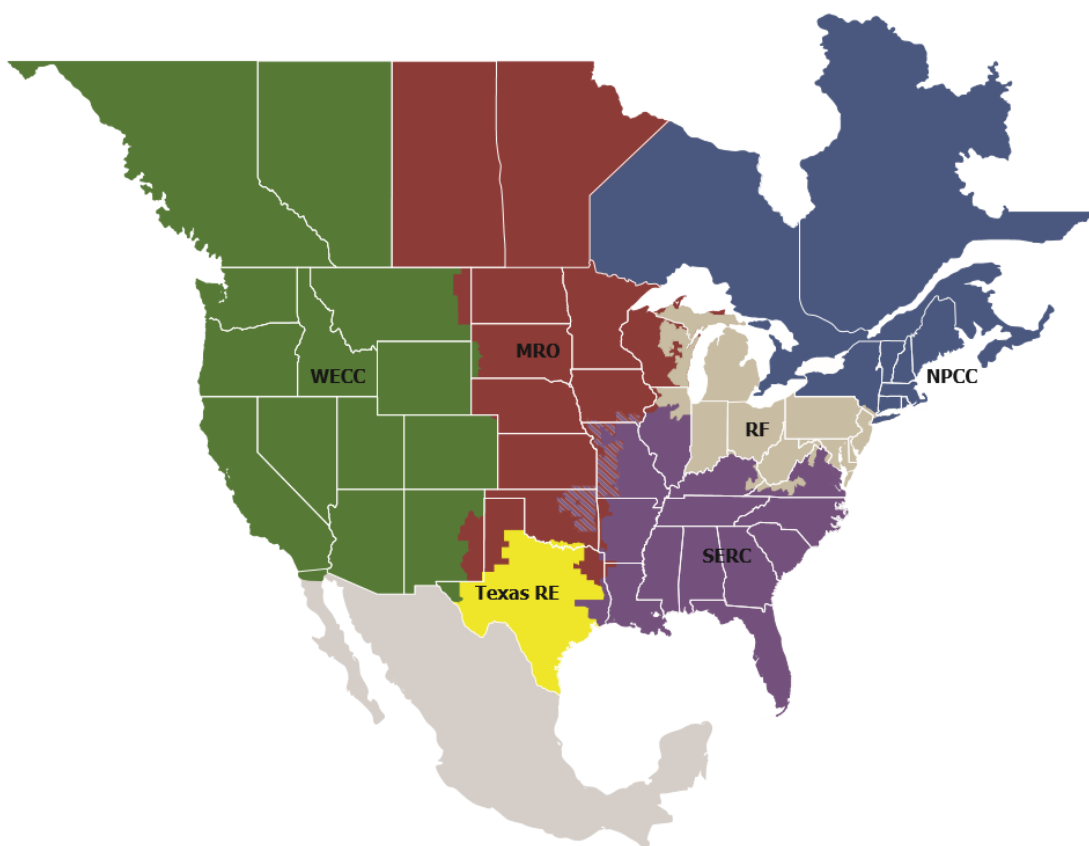
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is divided into six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It will provide stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the SDT's intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communications links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, or low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006-6 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006-6 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection contained in CIP-006-6 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 standard drafting team (SDT) developed CIP-012-2 Requirement R2.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 and CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort.

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to satisfy the security and availability objectives consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Their communications to their BA or TOP Control Centers, however, are not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this particular scenario, which is described in further detail below.

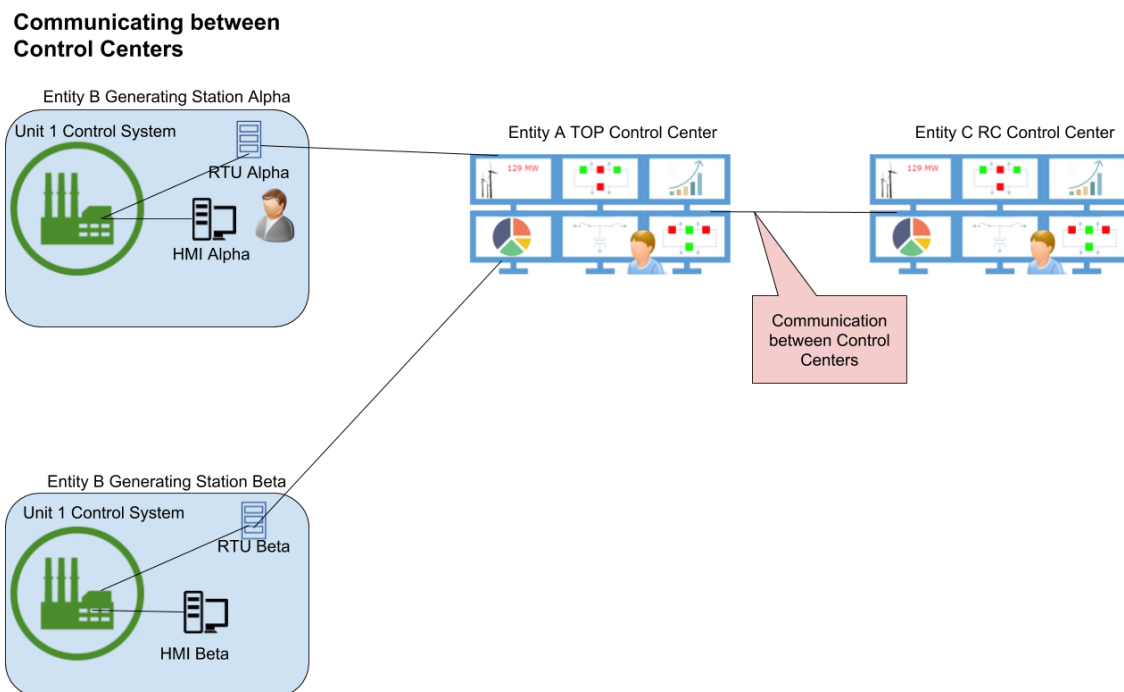


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating (in this instance Entity C's RC Control Center and Entity A's TOP Control Center). The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

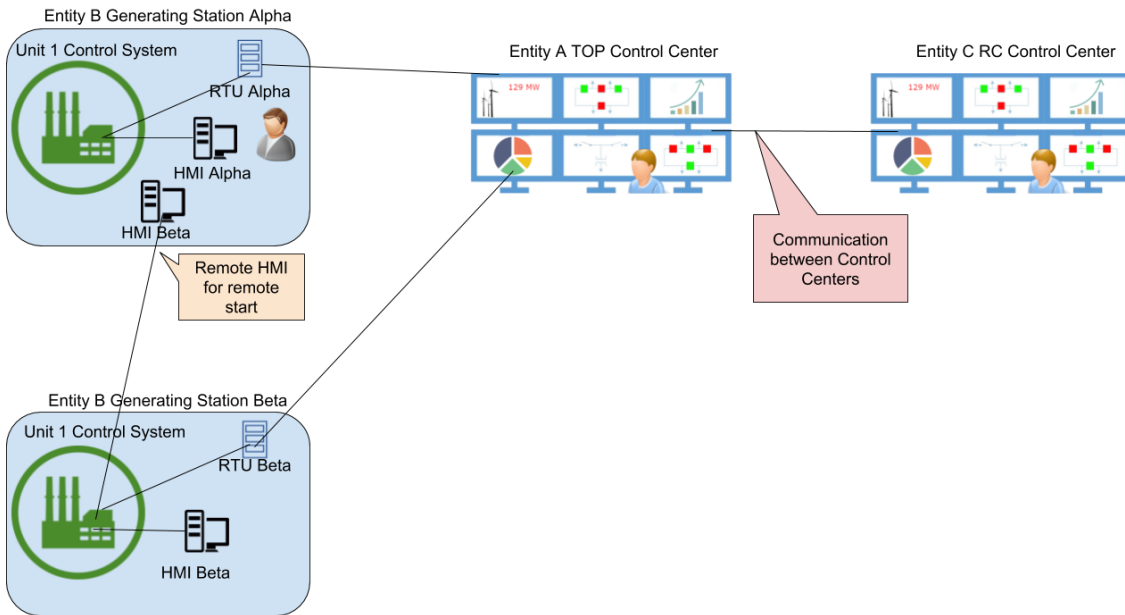


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of...a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual-classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

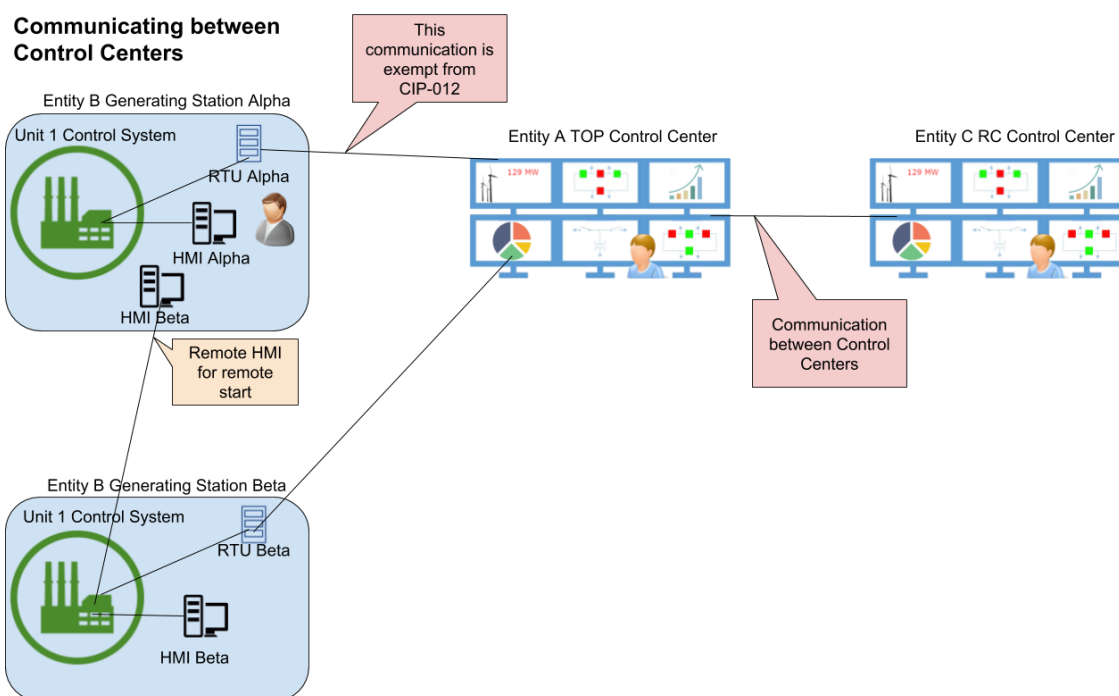


Figure 3

Although moving the HMI did not change the Control Center functions, this proximity makes the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012 without the exemption. Two HMIs have been moved into the same room and a new NERC CIP standard applies to two entities.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for TOs and GOPs the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address at this time. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard, which reads:

4.2.3. A Control Center that transmits to another Control Center the transmitting Control Center.

The intent of this exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the standard for protecting communications between Control Centers because this type of communications may use older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to the originating location.

The above diagrams were generation specific. The following diagram is a more generic example:

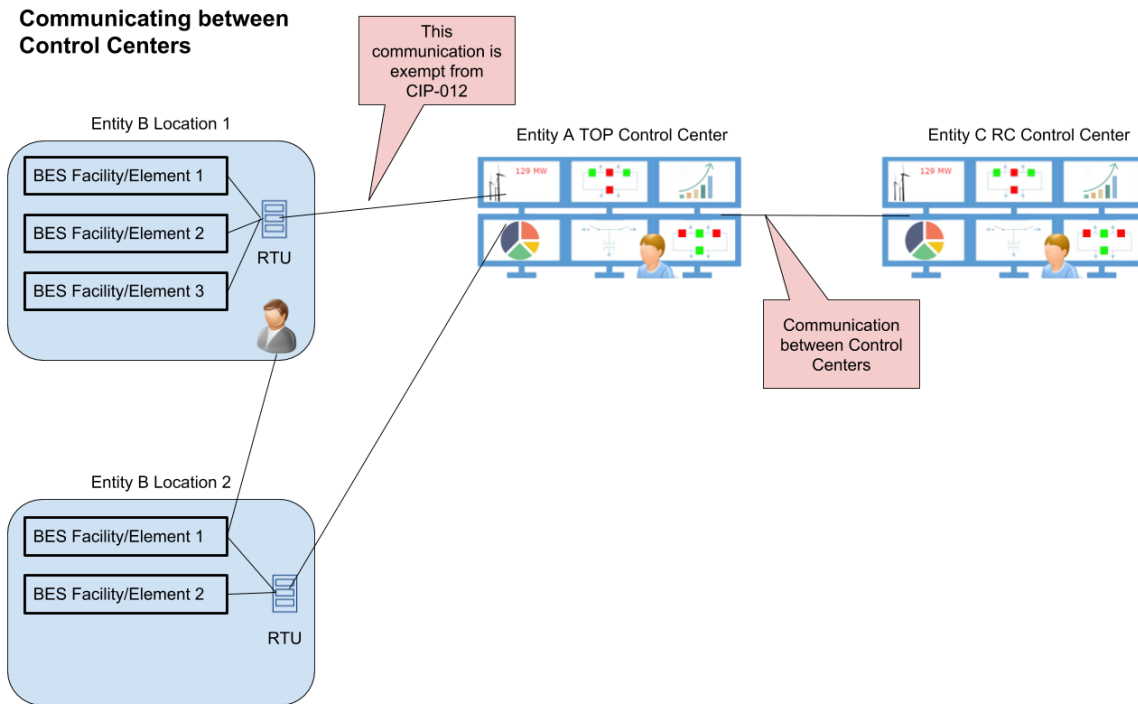


Figure 4

In Figure 4, each location is communicating only the Real-time Assessment or Real-time monitoring data pertaining to that single location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1, and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1** *Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;*
- 1.2** *Identification of where the Responsible Entity applied security protection for transmitting Real-time Assessment and Real-time monitoring data between Control Centers; and*
- 1.3** *If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.*

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the three requirement parts to convey any sequence or significance.

Overview of Confidentiality and Integrity

The SDT drafted CIP-012-1 to address confidentiality and integrity of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality) and unauthorized modification (integrity). For this Standard, the SDT relied on the definitions of confidentiality and integrity as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity's primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001-4 R20, R21, R23, R24, and IRO-002-5 R2 and R3, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of where Security Protection is Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protection for applicable data. The SDT did not specify the location where CIP-012 security protection must be applied. This allows latitude for Responsible Entities to implement the security controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of security measures, such as deep packet inspection implemented at or near the EAP when ESPs are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 security protection may be applied to a Cyber Asset that is not an identified BES Cyber Asset, Protected Cyber Asset, or EACMS. The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under Cyber Security Standards CIP-002 through CIP-011.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security protection. The Responsible Entity should not be held accountable for identifying where a neighboring entity applied security protection at the neighboring entity's facility. A Responsible Entity, however, may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying security protection on both ends of the communication link, the Responsible Entity should identify where it applied security protection at both ends of the link. The SDT intends for there to be alignment between the identification of where security protection is applied in CIP-012 Requirement R1, Part 1.2 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.3.

Control Center Ownership

The standard requirements address protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. They also cover the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several data transmissions between Control Centers that a Responsible Entity should consider to be in-scope. The example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

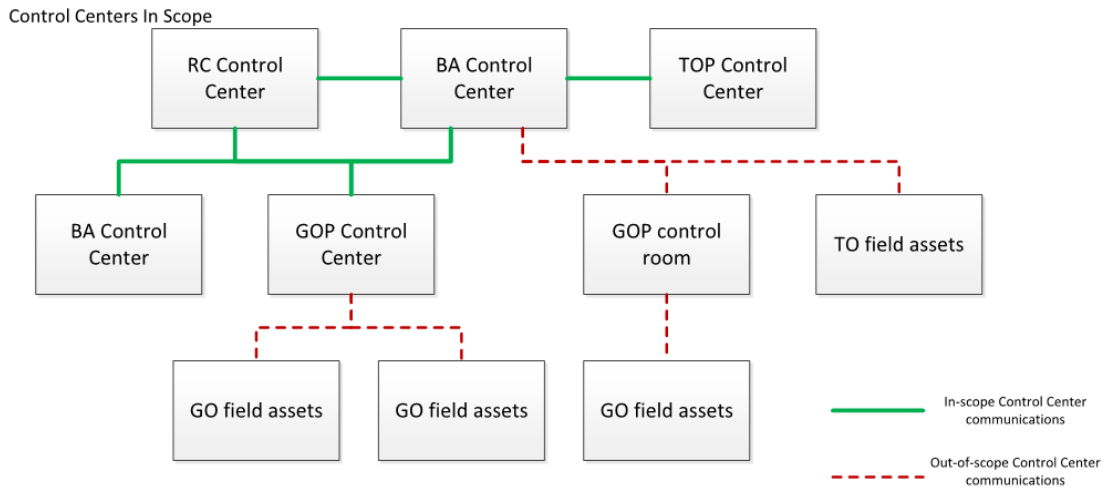


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.3 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.3 provides a mechanism to specify which entity is responsible for the application of security controls. The SDT included this requirement part to address security concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying security controls to ensure the data is protected through its entire transmission and there is no security gap. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Security controls applied by the entity to achieve compliance with Parts 1.1 and 1.2 of the plan should correlate to the documented responsibilities in Part 1.3 of the entity’s plan.

Requirement R2

- R2.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 2.1.** *Identification of how the Responsible Entity has provided for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.*
 - 2.2.** *Identification of how the Responsible Entity has addressed communications and data flow restoration to maintain continuity of operations in the Responsible Entity's plan.*
 - 2.3.** *If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.*

General Considerations for Requirement R2

Requirement R2 focuses on implementing a documented plan to provide for the availability of communications links and data communicated that is critical to the Real-time operations of the Bulk Electric System. This requirement focuses on data which is in transit between applicable Control Centers. While an important element of data communications, communication links themselves are not the only factor in ensuring availability of data. The SDT does not intend for the listed order of the three requirement parts to convey any sequence or significance.

Overview of availability

The SDT drafted Requirement R2 to address availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by loss of data flow (availability) between applicable control centers. For this Standard, the SDT relied on the definitions of availability as defined by National Institute of Standards and Technology (NIST):

- Availability is defined as “Ensuring timely and reliable access to and use of information”

Alignment with IRO and TOP standards

While TOP-001-4 R20, R21, R32, and R24, as well as IRO-002-5 R2 and R3, address availability of Real-time monitoring and Real-time assessment data, their applicable data exchange infrastructure resides within the primary Control Center. CIP-012 also addresses availability of Real-time monitoring and Real-time Assessment data, but the applicable infrastructure includes communication links and data exchange infrastructure enabling transmission between Control Centers.

Identification of How Availability is provided for by the Responsible Entity

The SDT recognizes the need to have a plan to incorporate communication link and data availability measures to the transport of Real-time Assessment and Real-time monitoring data. These availability measures can be achieved via varied solutions including, but not limited to, redundant communication links and data paths. When identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances. The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires

additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering to achieve the availability of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the availability objective is met.

The availability of the communications paths and real-time data flow should be monitored in a way to identify when this communication has become unavailable and the data is no longer updating. Incorporating heartbeat data points, and monitoring if the data stops updating, is one approach to consider. Notification methods should be put into place to ensure adequate response and restoration activities. Restoration methods involving contractual obligation or inter department/utility responsibility should be understood.

The focus of Requirement R2 is about maintaining the flow of Real-time data. At any given time, if a data exchange path becomes unreliable because of the malfunction or failure of an individual component or a combination of components in a particular data exchange path, the remaining available data exchange path(s) would support continued flow of Real-time data. Multiple paths for the data being exchanged should be considered, as well as how these paths are routed, to avoid single points of failure that can halt the flow of Real-time data.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not change from the previously FERC approved CIP-012-1 Reliability Standard.

| VRF Justifications for CIP-012-2, Requirement R2 | |
|---|--|
| Proposed VRF | Medium |
| NERC VRF Discussion | A VRF of Medium was assigned to this requirement. Cyber security plans enable effective implementation of the CIP standard’s requirements to provide for the availability of communications links used for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers. |
| FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report | N/A |
| FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard | The proposed VRF is consistent with other FERC approved VRFs within the standard, specifically Requirement R1. |
| FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards | The requirement complements CIP-006-6, Requirement R1, and CIP-009-6, Requirement R1, which is related to security of networks and communications components. The proposed VRF is consistent with these Requirements. |

VRF Justifications for CIP-012-2, Requirement R2

| Proposed VRF | Medium |
|---|---|
| FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs | Failure to have the required plan would not, under Emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. |
| FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation | N/A |

VSLs for CIP-012-2, Requirement R2

| Lower | Moderate | High | Severe |
|-------|---|--|---|
| N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R2 | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement any Part of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirements R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The requirement is new. Therefore, the proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R2.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language. The moderate VSL addresses where the Responsible Entity documented its plan(s) but failed to include one of the applicable parts of the plan as specified in Requirement R2.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s) but failed to include two of the applicable parts of the plan as specified in Requirement R2.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement plan(s) for Requirement R2.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|--|---|
| <p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|--|---|

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through June 9, 2021
Ballot Pools Forming through May 25, 2021

[Now Available](#)

A 45-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Wednesday, June 9, 2021**.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

Ballot Pools

Ballot pools are being formed through **8 p.m. Eastern, Tuesday, May 25, 2021**. Registered Ballot Body members can join the ballot pools [here](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Initial ballots for the Standard and Implementation Plan, along with non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **May 31 - June 9, 2021**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2020-04 Modifications to CIP-012
Comment Period Start Date: 4/26/2021
Comment Period End Date: 6/9/2021
Associated Ballots: 2020-04 Modifications to CIP-012 CIP-012-2 IN 1 ST
2020-04 Modifications to CIP-012 Implementation Plan IN 1 OT

There were 75 sets of responses, including comments from approximately 178 different people from approximately 115 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. The SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree with the proposed R2 language? If not please provide comments and suggested requirement language.**
- 2. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.**
- 3. The SDT is proposing a 24-month implementation plan. Do you agree with the proposed timeframe? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.**
- 4. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|-----------------|------------|-------------|---|------------------------|--------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| Midcontinent ISO, Inc. | Bobbi Welch | 2 | MRO,RF,SERC | ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1) | Bobbi Welch | MISO | 2 | RF |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Kathleen Goodman | ISONE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Michael Del Viscio | PJM | 2 | RF |
| | | | | | Charles Yeung | SPP | 2 | MRO |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | Marc Donaldson | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |
| | | | | | Ozan Ferrin | Tacoma Public Utilities | 5 | WECC |

| | | | | | | | | |
|----------------------|-----------------------------------|-------------|---|------------------------------|-------------------|--|-------|------|
| | | | | | | (Tacoma, WA) | | |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,NA - Not Applicable,RF,SERC,Texas RE,WECC | ACES Standard Collaborations | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Jennifer Bray | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| | | | | | Ryan Strom | Buckeye Power, Inc. | 5 | RF |
| | | | | | Scott Brame | NC Electric Membership Corporation | 3,4,5 | SERC |
| MRO | Kendra Buesgens | 1,2,3,4,5,6 | MRO | MRO NSRF | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Christopher Bills | City of Independence Power & Light | 4 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 1 | MRO |
| | | | | | Jamie Monette | Allete - Minnesota Power, Inc. | 1 | MRO |
| | | | | | Jodi Jensen | Western Area Power Administration - Upper Great Plains East (WAPA) | 1,6 | MRO |
| | | | | | John Chang | Manitoba Hydro | 1,3,6 | MRO |
| | | | | | Larry Heckert | Alliant Energy Corporation Services, Inc. | 4 | MRO |
| Marc Gomez | Southwestern Power Administration | 1 | MRO | | | | | |

| | | | | | | | | |
|---------------------------------------|---------------------|---|----------|--|-------------------|---------------------------------------|---------|-----|
| | | | | | Matthew Harward | Southwest Power Pool, Inc. | 2 | MRO |
| | | | | | LaTroy Brumfield | American Transmission Company, LLC | 1 | MRO |
| | | | | | Bryan Sherron | Kansas City Board Of Public Utilities | 1 | MRO |
| | | | | | Terry Harbour | MidAmerican Energy | 1,3 | MRO |
| | | | | | Jamison Cawley | Nebraska Public Power | 1,3,5 | MRO |
| | | | | | Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| | | | | | Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| | | | | | Jeremy Voll | Basin Electric Power Cooperative | 1,3,5 | MRO |
| | | | | | Joe DePoorter | Madison Gas and Electric | 4 | MRO |
| | | | | | David Heins | Omaha Public Power District | 1,3,5,6 | MRO |
| Southwest Power Pool, Inc. (RTO) | Kimberly Van Brimer | 2 | MRO,WECC | Southwest Power Pool Standards Review Group (SSRG) | Kim Van Brimer | SPP | 2 | MRO |
| | | | | | Jim Williams | SPP | 2 | MRO |
| | | | | | Matt Harward | SPP | 2 | MRO |
| | | | | | Shannon Mickens | SPP | 2 | MRO |
| | | | | | Alan Wahlstrom | SPP | 2 | MRO |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |

| | | | | | | | | |
|--|-----------------|---------|---------------------------|-------------------|-----------------|--|---|------|
| | | | | | Ann Carey | FirstEnergy - FirstEnergy Solutions | 6 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 4 | RF |
| Duke Energy | Masunch Bussey | 1,3,5,6 | FRCC,MRO,RF,SERC,Texas RE | Duke Energy | Laura Lee | Duke Energy | 1 | SERC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | SERC |
| Public Utility District No. 1 of Chelan County | Meaghan Connell | 5 | | CHPD | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | Ginette Lacasse | Public Utility District No. 1 of Chelan County | 1 | WECC |
| | | | | | Glen Pruitt | Public Utility District No. 1 of Chelan County | 6 | WECC |
| | | | | | Meaghan Connell | Public Utility District No. 1 Chelan County | 5 | WECC |
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |
| | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |

| | | | | | | | | |
|--------------------------------------|-----------|----------------------|------|-----------------------------------|--------------------|--|----|------|
| | | | | | Ron Carlsen | Southern Company - Southern Company Generation | 6 | SERC |
| | | | | | Jim Howell | Southern Company - Southern Company Services, Inc. - Gen | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC Regional Standards Committee | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | David Kiguel | Independent | 7 | NPCC |
| | | | | | Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| | | | | | Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| | | | | | Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| | | | | | Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| | | | | | Shivaz Chopra | New York Power Authority | 5 | NPCC |

| | | | |
|-------------------|--|----|------|
| Deidre Altobell | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Cristhian Godoy | Con Ed - Consolidated Edison Co. of New York | 6 | NPCC |
| Nurul Abser | NB Power Corporation | 1 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |
| Michael Ridolfino | Central Hudson Gas and Electric | 1 | NPCC |
| Vijay Puran | NYSPS | 6 | NPCC |
| ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| Sean Cavote | PSEG - Public Service Electric and Gas Co. | 1 | NPCC |
| Brian Robinson | Utility Services | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Jim Grant | NYISO | 2 | NPCC |
| John Pearson | ISONE | 2 | NPCC |
| John Hastings | National Grid USA | 1 | NPCC |
| Michael Jones | National Grid USA | 1 | NPCC |
| Nicolas Turcotte | Hydro-Qu?bec TransEnergie | 1 | NPCC |

| | | | | | | | | |
|--|-----------------|----|--------|----------|-----------------|--|----|---------------------|
| | | | | | Chantal Mazza | Hydro-Quebec | 2 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Dominion - Dominion Resources, Inc. | Sean Bodkin | 6 | | Dominion | Connie Lowe | Dominion - Dominion Resources, Inc. | 3 | NA - Not Applicable |
| | | | | | Lou Oberski | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| | | | | | Larry Nash | Dominion - Dominion Virginia Power | 1 | NA - Not Applicable |
| | | | | | Rachel Snead | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | 6 | SPP RE | OKGE | Sing Tay | OGE Energy - Oklahoma | 6 | MRO |
| | | | | | Terri Pyle | OGE Energy - Oklahoma Gas and Electric Co. | 1 | MRO |
| | | | | | Donald Hargrove | OGE Energy - Oklahoma Gas and Electric Co. | 3 | MRO |
| | | | | | Patrick Wells | OGE Energy - Oklahoma Gas and Electric Co. | 5 | MRO |
| Western Electricity Coordinating Council | Steven Rueckert | 10 | | WECC CIP | Steve Rueckert | WECC | 10 | WECC |
| | | | | | Morgan King | WECC | 10 | WECC |
| | | | | | Deb McEndaffer | WECC | 10 | WECC |

| | | | | | | | | |
|--|--|--|--|--|--------------|------|----|------|
| | | | | | Tom Williams | WECC | 10 | WECC |
|--|--|--|--|--|--------------|------|----|------|

1. The SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree with the proposed R2 language? If not please provide comments and suggested requirement language.

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer No

Document Name

Comment

Part 2.2 is inconsistent with the language in the other Requirements. Dominion Energy recommends making the language consistent as follows: Identification of how the Responsible Entity has addressed communication links and data restoration to maintain continuity of operations in the Responsible Entity's plan.

Likes 0

Dislikes 0

Response

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer No

Document Name

Comment

This requirement reads as redundant to TOP-001-5 R20 – R24. In satisfying TOP-001-5 R20 & R24, you indirectly satisfy CIP-012 R2.

Likes 0

Dislikes 0

Response

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer No

Document Name

Comment

Duke Energy does not agree with the changes as proposed. The existing wording may be confusing regarding applicability of the term "availability" to links vs to data. We recommend these be presented separately for clarity. Furthermore, we recommend removal of 'restoration' from the requirement,

as there may be alternate means in a plan where full restoration is not immediately needed. Also, data interruption can come in many forms, including partial data loss or data loss from sources, such as RTUs, outside the scope of CIP-012, so requirements to restore all such data may be over-reaching.

Duke Energy proposes the following wording to address the specific handling of links vs data;

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring that is transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:

2.1. Identification of how the Responsible Entity has provided for the availability of the communications links;

2.2. Identification of how the Responsible Entity has addressed the risk of data interruption to maintain continuity of operations; and

2.3. Identification of the responsibilities of each Responsible Entity for providing availability of communications links and data that is transmitted between Control Centers owned or operated by different Responsible Entities.

Examples of 2.2 evidence may include :

- a data interruption response plan with roles and responsibilities or
- alternate data transfer or communication methods or
- Other plans addressing how to mitigate the impact on operations

Likes 1

Minnkota Power Cooperative Inc., 1,5, Fuhrman Andy

Dislikes 0

Response

Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG)

Answer

No

Document Name

Comment

The SPP Standards Review Group (SSRG) recommends the drafting team consider that entities should be able to utilize *redundancy capabilities* or *multiple communication avenues* if one data link is unavailable.

CIP-012-1 falls under the umbrella of [CIP-002-5.1a](#), which does not allow for use of redundant systems to satisfy requirements.

In Order 866, NERC appears to identify redundancy as necessary to data exchange infrastructure ([See P 20 of Order 866](#)), and FERC recognized in [Order 866](#) that redundant communication links help support availability ([See P 21 of Order 866](#)). The SSRG requests that the drafting team include language in CIP-012-1 that recognizes redundant systems as capable of meeting the availability requirements in a plan.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>“Availability” is too ambiguous a term to be used in this requirement. The current interpretation of “availability” is more in line with the amount of uptime and downtime utilization of the links between control centers. BPA recommends the term “availability” be replaced with “redundant links or backup links” to clarify the intent of CIP-012-2.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP</p> | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>While including a requirement for Control Centers owned or operated by different Responsible Entities makes sense for the R1.3 security objective, it does not for R2.3. One entities communication link would only be relevant to their individual provider of that link and not another entity. This appears to simply require an agreement that each entity will ensure they have redundant communication links.</p> <p>The inclusion of ‘in the Responsible Entity’s plan’ in R2.2 seems duplicative as it is already included in R2, ‘The plan shall include:’</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1</p> | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>PNMR believes this requirement is unnecessary as IRO and TOP requirements address availability. If the intent is to cover the backup control centers, then SDT should revise IRO and TOP to scope in the back-up controls rather than a new requirement for CIP-012. Additionally, PNMR agrees with comments made by Duke Energy, SSRG, and Los Angeles Department of Water and Power.</p> | |

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer

No

Document Name

Comment

ATC supports the comments of EEI

Likes 0

Dislikes 0

Response

Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 6, Group Name OKGE

Answer

No

Document Name

Comment

OKGE supports comments provided by EEI.

Likes 0

Dislikes 0

Response

Oliver Burke - Entergy - Entergy Services, Inc. - 1

Answer

No

Document Name

Comment

The addition of "availability" appears to overlap with the "redundancy and diverse routing requirements already established for TOP-001-5 - R24. Is the distinction between the infrastructure (e.g. switches, routers, firewalls) vs. the underlying communication infrastructure (e.g. fiber, ethernet)?

Likes 0

Dislikes 0

| Response | |
|---|----|
| JT Kuehne - AEP - 6 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>AEP supports the comments that EEI has provided. Please see below for EEI's comments:</p> <p>FERC Order No. 866 does not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data. The underscored language is different from what the Commission directed and what is contained in the proposed requirement. Moreover, the Commission acknowledged in the order that the “redundancy of communication links cannot always be guaranteed” (see P35); responsible entities should therefore plan for both recovery of compromised communication links and use of backup communications. To remedy this issue, we suggest the following modification to Requirement R2 and its subparts:</p> <p>R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) that provide protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall include:</p> <p>2.1 Identification of how the Responsible Entity has provided protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers; and</p> <p>2.2 Identification of how the Responsible Entity has addressed communications and data availability (<i>strike flow and replace with availability because the order specifically directed availability</i>) restoration in the Responsible Entity’s plan; and (<i>strike to maintain continuity of operations because this statement makes no sense in the context of restoration of communications.</i>)</p> <p>2.3 If the Control Centers are owned or operated by different Responsible Entities, those entities shall jointly identify and record each entity’s responsibilities for providing protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE | |
| Answer | No |

| | |
|--|----|
| Document Name | |
| Comment | |
| <p>CenterPoint Energy Houston Electric, LLC (CEHE) does not agree with the proposed language. The terminology “real-time assessment and real-time monitoring data” is not clear as to what data is included. CEHE proposes that the SDT incorporate and reference language from the FERC Order - i.e. “With this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data identified under Reliability Standards TOP-003-3 and IRO-010-2.” Adding a reference to the requirement specifying that the data is “the same data identified under Reliability Standards TOP-003-3 and IRO-010-2” would provide clarity on the terminology “real-time assessment and real-time monitoring data.”</p> <p>Additionally, CEHE supports EEI’s comments.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>As mentioned in FERC Order No. 866, CHDP shares the Commission’s concern that Reliability Standard CIP–012–1 does not adequately identify the types of data covered by its requirements and recommends that the term “Real-time monitoring” be defined in the Reliability Standard or the NERC Glossary.</p> <p>In addition, “availability” as proposed in CIP-012-2 is too ambiguous. To clarify the intent of CIP-012-2, CHPD suggests the term “availability” be replaced with more specific wording such as “redundant communication links with diverse equipment and paths”. If “availability” of data remains in the standard, provide guidance on how to establish “availability of data.”</p> <p>CHPD recommends including language in CIP-012-2 that recognizes redundant systems as meeting the availability requirements. If the drafting team intends redundancy to accomplish the goal of availability, CHPD recommends considering expanding the scope of redundancy requirements under TOP-001-5 to include “between Control Centers.” In general, CHPD recommends similar requirements be consolidated under one standard instead of having similar requirements scattered among various standards.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power | |
| Answer | No |

| | |
|---|---|
| Document Name | |
| Comment | |
| <p>Tacoma Power is concerned on utilizing the terminology “availability” in the Requirement language. Responsible Entities do not have complete control over portions of the communication system outside of the entities’ footprint. Responsible Entities cannot assure the availability of communication carrier networks, even if contract language specifies the availability.</p> <p>Tacoma Power recommends amending the language in the Requirement to specify that entities only need to ensure availability up to the connection to the common carrier and provide demarcation of what parts of the system are under the Entities’ control.</p> | |
| Likes 1 | Snohomish County PUD No. 1, 3, Chaney Holly |
| Dislikes 0 | |
| Response | |
| Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Southern Indiana Gas and Electric (SIGE) does not agree with the proposed language. The terminology “real-time assessment and real-time monitoring data” is not clear as to what data is included. SIGE proposes that the SDT incorporate and reference language from the FERC Order - i.e. “With this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data identified under Reliability Standards TOP-003-3 and IRO-010-2.” Adding a reference to the requirement specifying that the data is “the same data identified under Reliability Standards TOP-003-3 and IRO-010-2” would provide clarity on the terminology “real-time assessment and real-time monitoring data.”</p> <p>Additionally, SIGEsupports EEI’s comments</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>LCRA understands the intent of R2 is to reduce the risk that communication links are unavailable between applicable Control Centers; however, LCRA is uncertain what the desired output is based upon how R2 is currently written. Furthermore, the ambiguity around this risk-based requirement could yield inconsistent interpretations across Registered Entities and Regional Entities. By not defining the term “availability” the subjectivity of the requirement is unsatisfactory.</p> | |

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

No

Document Name

Comment

PG&E agrees with the response provided by EEI when EEI indicated FERC Order No. 866 did not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data.

PG&E supports the suggested modifications provided by EEI as part of their submission for this command and ballot.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

No

Document Name

Comment

LCRA understands the intent of R2 is to reduce the risk that communication links are unavailable between applicable Control Centers; however, LCRA is uncertain what the desired output is based upon how R2 is currently written. Furthermore, the ambiguity around this risk-based requirement could yield inconsistent interpretations across Registered Entities and Regional Entities. By not defining the term “availability” the subjectivity of the requirement is unsatisfactory.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

No

Document Name

Comment

ACES feels that this new requirement does not address any risk to the BES. Availability of communications links between Control Centers are often out of the control of Registered Entities, thus the reason for the exceptions in CIP-002 through CIP-011 and CIP-013. Availability of communication links are more often out of the control of a Registered Entity and Registered Entities are at the mercy of communication providers from an availability perspective, and having a plan stating "Control Centers use redundant links and utilize multiple carriers and/or mediums" does not address any risks to the BES. This requirement creates more administrative and compliance burden than protecting the BES.

While availability of data is part of cybersecurity's CIA triad, downed communication links between Control Centers or any other link for that matter, does not make data unavailable and therefore we do not feel this is a cybersecurity issue. If Control Center data links were to become unavailable in any way, the issue would be investigated, and only if it was determined to be a cybersecurity incident would fall into the scope of CIP-008: Incident Reporting and Response planning, thus this requirement is not needed.

ACES also believes that R2.3 is redundant to R2.1 due to the other Responsible Entity's Control Centers being in scope of R2 and is therefore unnecessary.

Likes 0

Dislikes 0

Response

Daniela Atanasovski - APS - Arizona Public Service Co. - 1

Answer

No

Document Name

Comment

AZPS is in agreeance with EEI comments regarding the proposed addition of R2 not being in the scope of FERC Order No.866. The focus is on providing **protections** regarding availability of the communication links and data instead of providing the availability of communications links and data. The focus should be on the protections of the availability of links and data to make sure the responsible entity can plan for both recovery of compromised communication links and the use of backup communications.

Suggested Alterations: addition of "protections" within the standard when speaking to availability.

Likes 0

Dislikes 0

Response

Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6

Answer

No

Document Name

Comment

Southern Indiana Gas and Electric (SIGE) does not agree with the proposed language. The terminology "real-time" assessment and real-time monitoring data" is not clear as what data is included. SIGE proposes that the SDT incorporate and reference language from the FERC Order 0 i.e.

"With this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data identified under Reliability Standard TOP-003-3 and IRO-10-2." Adding a reference to the requirement specifying that the data is "the same data identified under Reliability Standards TOP-003-3 and IRO-010-2" would provide clarity on the terminology "real-time assessment and real-time monitoring data." Additionally, SIGE supports EEI's comments.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

This draft of the requirement implies redundancy, which does not align with existing CIP standards, particularly CIP 002-5.1a. As availability is the purview of operations, it would be better suited to IRO and TOP standards.

BC Hydro recommends removing this requirement from CIP-012 and revise IRO and TOP standards to address this need instead.

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer

No

Document Name

Comment

FERC Order 866 directed NERC to develop modification to require "protections" regarding availability of communication links and data communicated between bulk electric system Control Centers.

R2 should be modified to: 1) include the term "protections;" 2) be objective based; and 3) less prescriptive. The following is suggested:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) **that provide protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall address:

2.1 Methods of protection

2.2 Restoration plans

It is not necessary to have a separate part specifically for identification of responsibilities of Control Centers owned or operated by different Responsible Entities, since those would be covered by 2.1. This could be included in the technical rationale as an example of a possible protection.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document), We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Possible overlap with other approved standards; IRO-010, TOP-003 and COM-001 Standards address availability already. R2 adds layer of complication/possible conflicts with already approved reliability standards. Including availability in CIP-012 introduces an additional requirement for a compliance program to carefully review and maintain all plans/procedures related to standards mentioning availability to avoid potential non-compliance due to possible conflicts in requirements or applicability of measures involved to address availability. This could involve duplication of effort and increase administrative burden beyond what is required to ensure power system reliability in this case.

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer

No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Derek Brown - Evergy - 5

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer No

Document Name

Comment

IESO supports the comments submitted by IRC as well as NPCC

The IRC SRC supports the SDT's efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT adopt the following proposed modifications as the language from R1 may not be a "best fit." (Note: The "Recommended language" for Part 2.1 below is loosely modeled after that of another requirement, that in EOP-008-2, Part 1.6.)

Recommended language:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring . The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. An Operating Process describing the actions to be taken to recover compromised communication links and data used for Real-time Assessment and Real-time monitoring, including:

2.1.1 The use of redundant or backup communication capability to maintain availability during the restoration period.

2.1.2. Identification of the roles for personnel involved in implementing the Operating Process.

2.2. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring.

NPCC: Availability is outside of most entities' control because of outsourcing communications between locations. Also, IRO-010, TOP-003 and COM Standards address availability already. Previously industry gave this feedback. We recommend this SDT support the earlier industry feedback.

Likes 0

Dislikes 0

Response

Allen Klassen - Evergy - 1

Answer

No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Thomas ROBBEN - Evergy - 6

Answer

No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3

Answer

No

Document Name

Comment

Comments: FERC Order 866 directed NERC to develop modification to require "protections" regarding availability of communication links and data communicated between bulk electric system Control Centers.

R2 should be modified to: 1) include the term "protections;" 2) be objective based; and 3) less prescriptive. The following is suggested:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) that provide **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall address:

2.1 Methods of protection

2.2 Restoration plans

It is not necessary to have a separate part specifically for identification of responsibilities of Control Centers owned or operated by different Responsible Entities, since those would be covered by 2.1. This could be included in the technical rationale as an example of a possible protection.

This less prescriptive and objective-based language meets the FERC Order and provides entities flexibility to define protections under their plan that will be used to meet the requirement.

Likes 0

Dislikes 0

Response

Marcus Moor - Evergy - 3

Answer

No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1.

Likes 0

Dislikes 1

PSEG - PSEG Energy Resources and Trade LLC, 6, Neglia Joseph

Response

Daniel Gacek - Exelon - 1

Answer

No

Document Name

Comment

Exelon is choosing to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer No

Document Name

Comment

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

Answer No

Document Name

Comment

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer No

Document Name

Comment

Alliant Energy supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Michael Whitney - Northern California Power Agency - 3

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| reference NCPA Chris Carnesi's comments | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The NSRF appreciates the work accomplished so far in the drafting of R2 and its parts. We also appreciate the SDT's efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT consider alternative requirement language e.g. that from EOP-008-2, Part 1.6, as a model as the language from R1 may not be a "best fit."</p> <p>Additional:</p> <p>a. The NSRF recommends language that clearly allows entities to use redundant capabilities or multiple communications systems or architectures to address communications link availability so as not to leave any ambiguity with respect to the language in CIP-002-5.1a. Control Centers are defined in CIP-002-5.1a, a standard which does not allow redundant system designs and architectures as controls to meet compliance obligations. In Order 866, NERC appears to identify redundancy as necessary to meet the Order's data exchange infrastructure (See P 20 of Order 866), and FERC recognized in Order 866 that redundant communication links support the availability topic requested by FERC (See P 21 of Order 866). The NSRF recommends the SDT include language in CIP-012-2 that recognizes redundant systems as a solution to the issue of availability.</p> <p>b. The NSRF does not wish for "availability" in R2 to be defined as it is a simple term and defined by Merriam-Webster as "the quality or state of being available". Or in other words, being accessible when needed.</p> <p>c. The draft language in R2.1 and R2.2 requires entities to identify "how" ("Identification of how") which requires Entities to establish a process to meet the "how" and can result in Entities confusion about adherence to the language as it requires a process of "how" without regard to existing configurations, documentation, processes or systems design and architectures. The SDT should consider a more concise and simple language choice to clarify the deliverable as while allowing entities the flexibility of implementation.</p> <p>d. Because FERC Order 866 describes the data in IRO-010 and TOP-003 which at a minimum is needed to be available, "monitoring" does not need to be defined within Real-time monitoring.</p> <p>e. The NSRF views R2.3 as being redundant for the following reasons;</p> <p>-It is duplicative of R1.3 which already establishes lines of responsibility among different owners of the Control Centers in question. Further, R2.1 and R2.2 already address availability and restoration. We ask the SDT to clarify what is intended to be shown/proven/demonstrated by the requirements in R2.3 and consider amend or strike the existing R2.3 language.</p> | |

-Because R2.1 and R2.2 only states between (applicable) Control Centers regardless of ownership, R.2.3 is not required because Control Centers owned and operated by different Responsible Entities are already included in R2.1 and R2.2. R.2.2 clearly states a restoration process is required between Control Centers regardless of whom owns or operates the Control Center.

Likes 1 Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Angela Wheat - Southwestern Power Administration - 1

Answer No

Document Name

Comment

While the Requirement specifies the data type to be protected, it does not specifically identify “data paths” or “data flows” yet the Rationale states that these paths and/or flows, “data exchange infrastructure”, are the intended focus to address availability of data. Specifically referring to data exchange infrastructure for transmitting this data type, as done with communication links, would be consistent.

Protection of data exchange infrastructure is appropriately placed in the CIP Standards, which could support retirement of TOP-001 R20/R21. Testing of infrastructure would be a reasonable control to assure functionality under CIP-012 as determined and designed by the entity’s plan and more in keeping with a risk-based approach than a prescriptive requirement.

R2.3 is redundant in that applicable Control Centers must meet R2, which inherently requires coordination and communication. However, if the Drafting Team elects to keep R2.3, alternate language has been provided.

R2 The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data exchange infrastructure used for transmitting Real-time Assessment and Real-time monitoring data between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:

2.1. Identification of how the Responsible Entity has provided for the continuity of data flow across communications links and data exchange infrastructure subject to R2;

2.2. Identification of how the Responsible Entity has addressed the restoration of applicable data flow across links and data exchange infrastructure subject to R2 to maintain continuity of operations in the Responsible Entity’s plan; and

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing continuity of applicable data flow across communications links and data exchange infrastructure subject to R2.

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| Exelon is aligning with EEI in response to this question, | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Nurul Abser - NB Power Corporation - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| The effort to measure, evaluate an assess the 'availability' of communication links would be quite burdensome on us (the entity) as well as our partners as a link works in two directions and both entities share responsibility on maintaining it. In addition, "availability" implies some degree of analysis that calculates a measurable value which is compared to a target – neither of which is identified in the SAR. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>AEPCO agrees with ACES comments and feels that this new requirement does not address any risk to the BES. Availability of communications links between Control Centers are often out of the control of Registered Entities, thus the reason for the exceptions in CIP-002 through CIP-011 and CIP-013. Availability of communication links are more often out of the control of a Registered Entity and Registered Entities are at the mercy of communication providers from an availability perspective, and having a plan stating "Control Centers use redundant links and utilize multiple carriers and/or mediums" does not address any risks to the BES. This requirement creates more administrative and compliance burden than protecting the BES.</p> <p>While availability of data is part of cybersecurity's CIA triad, downed communication links between Control Centers or any other link for that matter, does not make data unavailable and therefore we do not feel this is a cybersecurity issue. If Control Center data links were to become unavailable in any way, the issue would be investigated, and only if it was determined to be a cybersecurity incident would fall into the scope of CIP-008: Incident Reporting and Response planning, thus this requirement is not needed.</p> | |

AEPCO also agrees with ACES comments and believes that R2.3 is redundant to R2.1 due to the other Responsible Entity's Control Centers being in scope of R2 and is therefore unnecessary.

AEPCO has signed on to ACES comments.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer No

Document Name

Comment

MPC agrees with comments from Duke.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer No

Document Name

Comment

FERC Order No. 866 does not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data. The underscored language is different from what the Commission directed and what is contained in the proposed requirement. Moreover, the Commission acknowledged in the order that the “redundancy of communication links cannot always be guaranteed” (see P35); responsible entities should therefore plan for both recovery of compromised communication links and use of backup communications. To remedy this issue, we suggest the following modification to Requirement R2 and its subparts:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) **that provide protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall include:

2.1 Identification of how the Responsible Entity has provided **protections** for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers; **and**

2.2 Identification of how the Responsible Entity has addressed communications and data **availability** (*strike flow and replace with availability because the order specifically directed availability*) restoration in the Responsible Entity's plan; and (*strike to maintain continuity of operations because this statement makes no sense in the context of restoration of communications.*)

2.3 If the Control Centers are owned or operated by different Responsible Entities, **those entities shall jointly identify and record each entity's** responsibilities for providing **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring.

Likes 0

Dislikes 0

Response

larry brusseau - Corn Belt Power Cooperative - 1

Answer

No

Document Name

[Project 2020-04 Comment_Form_MRO NSRF_CIP-012.docx](#)

Comment

I agree with the NSRF's comments for #1 as uploaded.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

N&ST is concerned that as written, R2 could be construed as requiring a Responsible Entity to achieve 100% availability of communication links and the data they carry, something FERC Order 866 concedes cannot always be guaranteed.

N&ST suggests the following, alternate wording: "The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate threats to the availability of communications links and Real-time Assessment and Real-time monitoring data communicated between Control Centers. The Responsible Entity is not required to include oral communications in its plan."

Parts 2.1 through 2.3 should be modified to maintain consistency with this language.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

No

Document Name

Comment

Reclamation recommends the SDT ensure that, where applicable, the requirements for electronic communications are aligned to the existing requirements for interpersonal communication identified in COM-001-3:

- Have electronic communication capability.
- Where technically feasible, designate alternative electronic communication capability in the event of a failure of the primary communication capability.
- Where applicable, test the alternate method of electronic communication.

The Technical Rationale states that CIP-012 R2 is meant to align with TOP-001 and IRO-002 requirements for data at the primary Control Center. Reclamation recommends the SDT use the same wording as the referenced TOP and IRO standards.

Reclamation also recommends the SDT review the paragraph under CIP-012 Technical Rationale Figure 3. "Station Alpha and Entity A's TOP Control Center subject to CIP-012 without the exemption" does not align with the description in Figure 3 that states, "This communication is exempt from CIP-012."

Reclamation recommends the SDT add "Availability" to the NERC Glossary of Terms as it relates to intra-Control Center communication links (i.e., between Control Centers owned by the same registered entity) and inter-Control Center communications (i.e., between Control Centers owned by different registered entities, specifically between GOP/RC, GOP/TOP, and GOP/BA Control Centers).

Reclamation identifies that when using the plain meaning of the terms "access," "use," and "in transit," it may not make sense to mandate that encrypted data be accessible and usable while in transit. The purpose of encryption is to ensure data is not available during transmittal. Data needs to be accessible and usable at both Control Centers, but not while it is being transmitted from one Control Center to another.

Reclamation does not recommend a NERC definition for monitoring. This term, uncapitalized, should continue to be used with its common definition.

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

No

Document Name

Comment

Tri-State does not agree with the proposed language and see several distinct issues: 1) the term availability is ambiguous and difficult to measure for literal implementation. For example, is a 30-minute outage acceptable? 2) We do not believe that communication links should be included in the requirements, and instead focus solely on the data. This will provide maximum flexibility to the entity in how they comply with the requirement. Additionally, the inclusion of communication links implies that an entity must have dual circuit/redundant communication paths or that those circuits must be high availability. 3) Most of the time, entities must use an outside network (AT&T, Verizon, etc.) for communication between Control Centers. Thus, the availability, redundancy, and restoration plans of most communication links between control centers are out of the entity's control. 4) There does not appear to be flexibility for risk-based decision-making, nor flexibility in solutions to address when there is an outage.

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1)

Answer

No

Document Name

Comment

The ISO/RTO Council Standards Review Committee (IRC SRC)^[1] supports the SDT's efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT adopt the following proposed modifications as the language from R1 may not be a "best fit." (Note: The "Recommended language" for Part 2.1 below is loosely modeled after that of another requirement, that in EOP-008-2, Part 1.6.)

In addition, we recommend the SDT consider the following in crafting the language in standard:

- Explicit language that allows (but does not require) Responsible Entities to use redundant, diverse routing or backup communication capability as one action taken to provide for availability and recovery

Recommended language:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links *used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring*. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. *The actions taken to provide for the availability and recovery of communication links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring, for which the use of redundant, diverse routing or backup communication capability is allowed but not required.*

2.2. *Identification of the roles for personnel involved in implementing the Responsible Entity's plan.*

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links *used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring*.

^[1] For purposes of these comments, the IRC SRC includes the following entities: IESO, ISO-NE, MISO, NYISO, PJM and SPP.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer

No

Document Name

Comment

Availability is outside of most entities' control because of outsourcing communications between locations. Also, IRO-010, TOP-003, and COM Standards address availability already. Previously industry gave this feedback. We recommend this SDT supports the earlier industry feedback.

The SDT should use the same language as R1, i.e., talk only about the data and not communication links. We suggest the following wording:

The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.

R1 makes reference to communications "between any applicable Control Centers", while the proposed R2 is a more general "between Control Centers". Overall, this revision should clearly state that these requirements are only applicable to communications between "applicable" Control Centers.

NOTE: the summary of R2 in the Technical Rationale document states "Between applicable Control Centers"

Likes 0

Dislikes 0

Response

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer

No

Document Name

Comment

We agree that conceptually the new requirement and parts meet the FERC directive to provide availability of the data and communication links. However, we feel that the lead-in sentence to the parts "the plan shall include" should be edited to the "the plan shall".

R2.1 can be edited to read, including the lead-in statement:

"The plan shall:

2.1. Address how the Responsible Entity provides availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers”

R2.2 can be edited to read, including the lead in statement:

“The plan shall:

2.2. Address communications and data flow restoration to maintain continuity of operations in the Responsible Entity’s plan”

This language could allow more flexibility to describe the manner in which each objective is achieved.

We also recommend removing R2.3, there are other reliability requirements that address an entity’s obligation to keep the data and communication links available.

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer

No

Document Name

Comment

Consider including verbiage from the technical rationale within the requirements’ language or include the technical rationale as part of the standard. For example, from the draft R2 language “...provide for the availability of communications links and data used for Real-time assessment and Real-time monitoring...” is unclear, while from the technical rationale “These availability measures can be achieved via varied solutions including, but not limited to, redundant communication links and data paths. When identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” is much more descriptive and more clearly explains what the requirement is trying to achieve.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer

No

Document Name

Comment

Concerning the second part of the FERC directive in 866 on incident response & continuity of operations we ask for clarification because in our opinion new R2 requirement does not appear to us to meet the FERC directives.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

No

Document Name

Comment

Southern does not agree with the proposed language as written. The language “provide for the availability of communications links and data” indicates there are two separate and distinct objects of the availability objective; the comm links and the data. This implies that an entity’s plan must cover not only the data-in-motion between the Control Centers, but also the production (and potentially consumption) of the data by systems within the Control Centers; an area already covered by the requirements in IRO-002, IRO-010, EOP-008, and TOP-003 standards.

It also seems that “communications links and data” is the antecedent of the “while being transmitted” phrase, but comm links are not transmitted.

Southern suggests an approach that allows entities the flexibility to focus on either the data-in-motion or the comm links the data traverses. Essentially it is a change from a “comm links AND data” construct to a “comm links OR data” construct as follows:

The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of:

- Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; or
- Communications links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers.

The Responsible Entity is not required to include oral communications in its plan...

This allows the entity to choose either a data-centric or comm link-centric view to meet the same objective of providing for the availability of the data-in-motion while being transmitted between Control Centers.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| OPG supports NPCC RSC's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>PacifiCorp agrees that conceptually the new requirement and parts meet the the FERC directive to provide for the availability of the data and communication links. However, we feel that the the requirement should be more objective based and include "protections for the availability" as suggested in FERC order 866 and the lead in sentence to the parts "the plan shall include" should be edited to the "the plan shall". Also, by adding "applicable" to R2, maintains consistent Control Center scoping between requirements R1 and R2.</p> <p>R2 could be edited to read:</p> <p>"R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) that address protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall:"</p> <p>Then R2.1 could be edited to read, including the lead in statement:</p> <p>"The plan shall: 2.1. Address how the Responsible Entity provides protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers"</p> <p>R2.2 could be edited to read, including the lead in statement:</p> <p>"The plan shall: 2.2. Address availability restoration of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers"</p> <p>We feel this language would allow more flexibility to describe the manner in which each objective is achieved.</p> <p>We also recommend removing R2.3, the protections for the availability and coordination between Entities would be covered by implementing R2.2.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2**Answer** No**Document Name****Comment**

ERCOT interprets Order 866 to mean that FERC would like to see a proactive obligation to promote availability of communications links and data between control centers through redundancy and/or service level agreements, for example. As written, ERCOT has concerns as to whether the draft standard addresses the specific directives in the FERC Order. As such, ERCOT proposes a requirement to address FERC's proactive perspective. Further, ERCOT agrees with the SDT and the comments of the ISO/RTO Standards Review Committee that the standard should require a plan to provide for the continuity of data if the primary communication link is unavailable or compromised and that coordination of responsibility between Control Centers should be required. ERCOT offers the language below as one way to address these three related concepts.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to promote the availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring. This does not include oral communications. The plan(s) shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. Measures the Responsible Entity will take to promote availability of communication links and data transmitted between Control Centers used for Real-time Assessment and Real-time monitoring. Examples include, but are not limited to, contracted service levels and redundant or backup communication capabilities.

2.2. An Operating Process to recover unavailable or compromised communication links between Control Centers, including:

2.2.1. The use of redundant or backup communication capability to maintain data availability between Control Centers;

2.2.2. Actions taken to restore communications links and data flow;

2.2.3. Methods of identifying the duration of data loss, if any, related to an incident involving loss of communication links between Control Centers; and

2.2.4. Roles and responsibilities of personnel implementing the Responsible Entity's Operating Process.

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for availability of communications links between Control Centers.

Likes 0

Dislikes 0

Response**Russell Noble - Cowlitz County PUD - 3****Answer** No**Document Name****Comment**

Cowlitz agrees with the spirit of the requirement, but finds the use of "availability" too vague. Currently the standard only addresses Control Center (CC) data communication with another CC that exists. However, the new proposed requirement implies data communication must exist between Control Centers with no criteria on how each responsible entity should identify who the communication links must be made available to, or if each responsible entity should identify those CCs where data is required. Current wording will create enforcement and monitoring uncertainty.

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer

No

Document Name

[CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx](#)

Comment

Likes 0

Dislikes 0

Response

Glenn Barry - Los Angeles Department of Water and Power - 5

Answer

Yes

Document Name

Comment

Although the SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866, the requirement may be better placed under a TOP standard. This requirement does not address Cyber Infrastructure Protection.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Yes

Document Name

Comment

FE would have preferred language similar to TOP-001 R20 - "shall have data exchange capabilities with redundant and diversely routed data exchange infrastructure."

Likes 0

Dislikes 0

Response

Bruce Reimer - Manitoba Hydro - 1

Answer

Yes

Document Name

Comment

We appreciate the work accomplished so far in the drafting of R2 and its parts

but we recommend removing "how" language in R2.1 and R2.2 and suggest the following wording:

"2.1. Identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring

2.2. Identify restoration and continuity of operations to maintain and restore available communications links and data transmitted between Control Centers; "

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Dan Bamber - ATCO Electric - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Benjamin Winslett - Georgia System Operations Corporation - 3,4****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Scott McGough - Georgia System Operations Corporation - 3,4****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3

Answer Yes

Document Name

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| No | |
| <p>NCPA agrees that other entity statements that the draft language does not clearly define the term "availability". While we generally agree that availability is part of the cyber security triad, this language is targeted only to the communication links, which reside outside the scope of the protected BES Cyber Systems and is considered more of an operational concern than what the prior CIP standards address with regards to infrastructure protection.</p> <p>Further, redundancy is a large part of any solution to increase availability, however redundancy has been specifically excluded from the evaluation criteria when defining BES Cyber Systems in CIP-002. This appears to be inconsistent with the objective messaging of the prior standards.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

2. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Russell Noble - Cowlitz County PUD - 3

Answer No

Document Name

Comment

The modification creates compliance uncertainty and therefore cost efficiency is lost.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer No

Document Name

Comment

We have no basis to determine the cost effectiveness of implementing this standard. But we feel that changing R2 to be more objective based would allow flexibility to implement the requirements in a manner that is cost effective to the entity.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer No

Document Name

Comment

We have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer No

Document Name

Comment

Per the comment to #1, we suggest availability is already covered by other Standards.

The SDT is forcing the entities to invest in at least two means (communication links and data) to achieve its goal of data availability. The SDT should allow the entities the flexibility to ensure the availability of the data, in whichever means deemed sufficient by the entity.

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer No

Document Name

Comment

As currently drafted, the requirements seem to imply that data and communication paths be available all the time. This would require high availability and redundancy of both data and communication paths, which would most certainly be very costly. We feel there are other methods to ensure reasonable availability of data without mandating high availability and redundancy of communication links.

Additionally, high availability across communication links that an entity does not own end to end would likely require redundant network links/paths. R1 would apply to all redundant links as well, so they'd all have to be protected with encryption or the like. The hardware, separate conduit, software, service, and labor costs for redundancy would be significant.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

No

Document Name

Comment

Prior to proposing additional modifications, Reclamation also recommends each SDT take additional time to completely identify the scope to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Reclamation recommends the SDT take particular care to coordinate CIP-012 changes with existing drafting teams for existing related standards to ensure consistency and avoid duplication, specifically, Project 2016-02 and Project 2019-03. This will help to minimize churn among standard versions, reduce the risk that standards will conflict with one another, and better align the standards.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

N&ST believes that as written, the draft "Technical Rationale" document strongly implies that Responsible Entities should employ redundant communication links between Control Centers to address R2. In some suburban and rural areas, this could be prohibitively expensive, of only marginal incremental benefit to availability (no options for path diversity), or both. While we agree that redundant links should be considered, we recommend the Technical Rationale document be revised to acknowledge this may not be a viable approach to mitigating availability threats in all cases.

N&ST notes, further, that while FERC Order 866 suggests it might be possible for a Responsible Entity to establish availability-related service level agreements with one or more network service providers, the Technical Rationale document makes no mention of this option.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

No

Document Name

Comment

MPC agrees with comments from Duke.

Likes 0

Dislikes 0

Response

Nurul Abser - NB Power Corporation - 1

Answer

No

Document Name

Comment

The effort to measure, evaluate and assess the 'availability' of communication links would be quite burdensome on us (the entity) as well as our partners as a link works in two directions and both entities share responsibility on maintaining it. In addition, "availability" implies some degree of analysis that calculates a measurable value which is compared to a target – neither of which is identified in the SAR.

Likes 0

Dislikes 0

Response

Michael Whitney - Northern California Power Agency - 3

Answer

No

Document Name

Comment

reference NCPA Chris Carnesi's comments

Likes 0

Dislikes 0

Response

Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3

Answer No

Document Name

Comment

The proposed prescriptive language of the three subparts creates an administrative burden of obtaining evidence that does not improve reliability of the Bulk Electric System.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer No

Document Name

Comment

NPCC: Per the comment to #1, we suggest availability is already covered by other Standards

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer No

Document Name

Comment

Per the comment to #1, availability is already covered by other Standards (IRO-010, TOP-003 and COM-001 Standards). Including availability in CIP-012 introduces an additional requirement for a compliance program to carefully review and maintain all plans/procedures related to standards

mentioning availability to avoid potential non-compliance due to possible conflicts in requirements or applicability of measures involved to address availability. This could involve duplication of effort and increase administrative burden beyond what is required to ensure power system reliability in this case.

If Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document), “timely” could have a cost associated depending on what timely is defined (or understood/expected as). We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer No

Document Name

Comment

The proposed prescriptive language of the three subparts creates an administrative burden of obtaining evidence that does not improve reliability of the Bulk Electric System.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

It is unclear at this time what costs BC Hydro would incur, especially with respect to agreements with third parties and agreements required to implement R2.3. The ambiguity of "availability" could result in costs beyond what is needed to fulfill the intent.

Likes 0

Dislikes 0

Response

Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| <p>SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets the security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Daniela Atanasovski - APS - Arizona Public Service Co. - 1</p> | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>AZPS does not agree with the proposed modifications of CIP-012-2 being cost effective based on the response provided for question #1.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Teresa Krabe - Lower Colorado River Authority - 1,5</p> | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments</p> | |

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>PG&E cannot agree the modifications are cost effective since the work to complete the implementation of CIP-012-1 is still ongoing and any work to implement CIP-012-2 modifications cannot be started until the full scope of those modifications is known. PG&E would have preferred having an "Unknown" option to select for Question 2 since that would have been a more accurate response.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power

Answer No

Document Name

Comment

The proposed modifications are not cost effective. In order to provide redundant communication between control centers with no single points of failure, as specified in the Technical Rational, two separate carrier networks would be needed. There are limited carriers who can provide this service, so if two communication carriers need to be contracted, it will be difficult to secure them. Additionally, requiring a second carrier doubles the compliance cost with limited benefits to reliability.

Likes 1 Snohomish County PUD No. 1, 3, Chaney Holly

Dislikes 0

Response

Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE

Answer No

Document Name

Comment

CEHE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Implementation and maintenance of redundant links to all facilities within scope of the CIP-012-2 standard would be extremely costly. Dedicated equipment and personnel would be required to maintain and preserve the integrity of the links to comply with the standard.

Likes 0

Dislikes 0

Response

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer No

Document Name

Comment

Duke Energy does not agree that the cost impact is not clear. The addition of technical controls to monitor continuous data flow, as implied by the Technical Rational as being necessary for compliance, presents an uncertain cost and impact and therefore we cannot agree that it is cost effective at this time.

Likes 0

Dislikes 0

Response

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer No

Document Name

Comment

To be effective, it is going to take money, resources and planning to implement, and monitoring both from the primary entity to the register entity, and the primary Control Center and backup Control Center.

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer No

Document Name [CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx](#)

Comment

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Once the requirement R2 has been clearly defined and established the implementation can be accomplished in a cost effective manner.

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Increasing availability and security generally comes with increased cost, but Black Hills Corporation doesn't think the standard is requesting anything out of profile

Likes 0

Dislikes 0

Response

larry brusseau - Corn Belt Power Cooperative - 1

Answer Yes

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1)

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Angela Wheat - Southwestern Power Administration - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer

Yes

Document Name

Comment

Likes 1

Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker

| | |
|------------------------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Marcus Moor - Everygy - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thomas ROBBEN - Everygy - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Allen Klassen - Everygy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

Dislikes 0

Response

Derek Brown - Evergy - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bruce Reimer - Manitoba Hydro - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Oliver Burke - Entergy - Entergy Services, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Scott McGough - Georgia System Operations Corporation - 3,4

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Benjamin Winslett - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Dan Bamber - ATCO Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glenn Barry - Los Angeles Department of Water and Power - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG)****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Gladys DeLaO - CPS Energy - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

No response.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC

Answer

Document Name

Comment

No

Based on how the draft language is written we don't know what is determined to be acceptable "availability" and is difficult to discern future increases in associated costs.

Likes 0

Dislikes 0

Response

3. The SDT is proposing a 24-month implementation plan. Do you agree with the proposed timeframe? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

BPA recommends a 36-month implementation plan to allow for comprehensive planning, development, allocation of personnel, RFP / vendor vetting, contract procurement, identifying and purchasing goods, execution of equipment and testing to support implementation of CIP-012-2.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

At this time BC Hydro is unable to support the proposed 24-month implementation plan since, without plans in place, the timeframe required for implementation is currently unknown.

Likes 0

Dislikes 0

Response

Michael Whitney - Northern California Power Agency - 3

Answer No

Document Name

Comment

reference NCPA Chris Carnesi's comments

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer No

Document Name

Comment

It is difficult to judge at this point whether 24 months would be sufficient, as what would be required for compliance is not clear. Please note that it appears a solution to R2 may increase an entity's scope for R1. Therefore the implementation plan should also consider additional time for new R1 scope.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports NPCC RSC's comments.

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer No

Document Name [CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx](#)

Comment

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer Yes

Document Name

Comment

PG&E agrees with the 24-month Implementation Plan. PG&E would recommend the SDT consider allowing for an earlier adoption option as part of the Implementation Plan similar to what the Project 2019-02 BES Cyber System Information Access Management SDT placed in their Implementation Plan.

Likes 0

Dislikes 0

Response

Daniela Atanasovski - APS - Arizona Public Service Co. - 1

Answer Yes

Document Name

Comment

AZPS agrees with the 24-month implementation plan at this time.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer Yes

Document Name

Comment

We agree with the proposed 24-month implementation plan.

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer Yes

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3.

Likes 0

Dislikes 0

Response

Derek Brown - Evergy - 5

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| NPCC: We agree with the proposed 24-month implementation plan. Request clarification on unplanned changes. What is the implementation plan for unplanned changes? | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Allen Klassen - Eversource - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Thomas ROBBEN - Eversource - 6 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Marcus Moor - Evergy - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Alliant Energy supports the 24-month implementation plan. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |

The NSRF supports the 24 month implementation plan.

Likes 1

Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEl supports a 24-month Implementation Plan.

Likes 0

Dislikes 0

Response

larry brusseau - Corn Belt Power Cooperative - 1

Answer

Yes

Document Name

Comment

I supports the 24 month implementation plan.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer

Yes

Document Name

Comment

We agree with the proposed 24-month implementation plan.

Request clarification on unplanned changes. What is the implementation plan for unplanned changes?

Likes 0

Dislikes 0

Response

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer

Yes

Document Name

Comment

NV Energy believes the 24 month implementation timeline is appropriate.

Likes 0

Dislikes 0

Response

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer

Yes

Document Name

Comment

Seems reasonable with the 24 month implementation allowing for potential contract modifications when vendor provided evidence may be required.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Yes

Document Name

Comment

Southern agrees with the 24-month implementation plan.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Yes

Document Name

Comment

We believe 24 months is an appropriate timeframe to implement the new requirement.

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer

Yes

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG)

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glenn Barry - Los Angeles Department of Water and Power - 5

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Dan Bamber - ATCO Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes | 0 |

Dislikes 0

Response

Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Scott McGough - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 6, Group Name OKGE

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Oliver Burke - Entergy - Entergy Services, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

JT Kuehne - AEP - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bruce Reimer - Manitoba Hydro - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Daniel Gacek - Exelon - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Cynthia Lee - Exelon - 5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Angela Wheat - Southwestern Power Administration - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Nurul Abser - NB Power Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

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| Document Name | |
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| Comment | |
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| | |
|-------|---|
| Likes | 0 |
|-------|---|

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|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

Karie Barczak - DTE Energy - Detroit Edison Company - 3

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

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|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1)

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

David Jendras - Ameren - Ameren Services - 3

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Russell Noble - Cowlitz County PUD - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC

Answer

Document Name

Comment

No

Likes 0

Dislikes 0

Response

4. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Document Name

Comment

Some implementations of CIP-012 R1 are including the use of third party providers to establish and manage the communication links to maintain integrity and confidentiality of the data transported on the communication links. Part of the third party's obligation will be to maintain availability of the communication links. How the third party approaches communications link availability may not be visible to the Responsible Entity, therefore a requirement to "identify" how this is done might be outside our ability legally or otherwise to obtain.

For Example: At some point in the restoration process when the communication link goes down, the Responsible Entity might have an obligation to call a service desk to open up an emergency repair ticket with the Thrid Party provider. From there the restoration responsibility is transferred. The only information the Responsible Entity would have to audit is a time stamp when the "network" went down, and documentation of the call or email to the Thrid Party's service desk. Then possibly a timestamp when the "network" is restored if the right technology is implemented to capture this. We don't believe this is the intent of the SDT to create an audit of the administrative dealings between the Resonsible Entity and third party service provider. However, describing this process in the Responsible Entity's CIP-012 Plan, would demonstrate how the Responsible Entity addresses the suggested R2.2 language in Question 1 above. Any documented correspondence between the Third Party and Responsible Entity could be used to demonstrate implementation of R2.2.

However, where the Responsible Entity manages and operates the infrastructure to support CIP-012 requirements, then we believe adding more details to "addressing" how the Responsible Entity is protecting communication links availability makes more sense, but still not being required to "identify" the specific components and operations of how that communications infrastructure works to accomplish this

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5**Answer****Document Name****Comment**

OPG supports NPCC RSC's comments.

Likes 0

Dislikes 0

Response**Kevin Salsbury - Berkshire Hathaway - NV Energy - 5****Answer****Document Name****Comment**

Some implementations of CIP-012- R1 are including the use of third party providers to establish, manage and maintain integrity and confidentiality of the data transported on the communication links. The third party's obligation will be to maintain availability of the communication links, therefore, how the third party approaches communications link availability may not be visible to the Responsible Entity. So a requirement to "identify" how this is done might be outside our ability legally or otherwise to obtain.

At some point in the process when the communication link goes down, the Responsible Entity might have an obligation to call a service desk to open up an emergency repair ticket with the Third Party provider. Then from there responsibility is transferred. The only information we'd have to audit is a time stamp when the "network" went down, and documentation of the call or email to the Third Party's service desk. Then a timestamp when the "network" is restored. We don't believe this is the intent of the SDT to create an audit of the administrative dealings between the Responsible Entity and third party service provider.

However, where the Responsible Entity manages and operates the infrastructure to support CIP-012 requirements, then we believe "addressing" how the Responsible Entity is maintaining communication links availability makes more sense, but not be required to "identify" the components and operations of how that communications infrastructure works to accomplish this.

NV Energy also would like to provide the O&P requirements that do address to some extent the availability of communication paths to interconnected Entities:

TOP-001-5

R20. Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

R21. Each Transmission Operator shall test its primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Transmission Operator shall initiate action within two hours to restore redundant functionality.

R23. Each Balancing Authority shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Balancing Authority's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Transmission Operator, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.

R24. Each Balancing Authority shall test its primary Control Center data exchange capabilities specified in Requirement R23 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Balancing Authority shall initiate action within two hours to restore redundant functionality.

IRO-002-7

R2. Each Reliability Coordinator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Reliability Coordinator's primary Control Center, for the exchange of Real-time data with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for performing its Real-time monitoring and Real-time Assessments.

R3. Each Reliability Coordinator shall test its primary Control Center data exchange capabilities specified in Requirement R2 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Reliability Coordinator shall initiate action within two hours to restore redundant functionality.

EOP-008-2

R1. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. This Operating Plan for backup functionality shall include:

1.1. The location and method of implementation for providing backup functionality.

1.2. A summary description of the elements required to support the backup functionality, These elements shall include:

1.2.1. Tools and applications to ensure that System Operators have situational awareness of the BES.

1.2.2. Data exchange capabilities.

1.2.3. Interpersonal Communications.

1.2.4. Power source(s).

1.2.5. Physical and cyber security.

1.3. An Operating Process for keeping the backup functionality consistent with the primary control center.

1.4. Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.

1.5. A transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.

1.6. An Operating process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2. The Operating process shall include:

1.6.1. A list of all entities to notify when there is a change in operating locations.

1.6.2. Actions to manage the risk to the BES during the transition from primary to backup functionality, as well as during outages of the primary or backup functionality.

1.6.3 Identificaiton of the roles for personnel involved during the initiation and implementation of the Operating Plan for bakup functionality.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer

Document Name

Comment

Request clarification/example of a CIP Exceptional Circumstance for R2 since this requirement seems focused on contingencies.

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Document Name

Comment

As detailed above, high availability would likely require redundancy. To keep costs manageable for the industry, we suggest allowing a non-encrypted redundant link for high availability when the primary link is down and/or under emergency situations.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Document Name

Comment

Reclamation recommends that CIP-012 include requirements to review, test, use, and update the required plans similar to CIP-008/CIP-009 requirements. The requirement to implement a plan may convey these things, but is vague and could be confusing. Reclamation recommends the SDT modify CIP-012 to follow the predictable approach of:

R1 – Identify risks that could allow unauthorized disclosure, unauthorized modifications, or unacceptable availability.

R2 – Identify controls to minimize risks to acceptable levels.

R3 – Document a plan to implement and maintain controls identified in R2.

R4 – Annually (not to exceed 15 months) test and validate the R3 plan and controls.

It is not clear how a CIP Exceptional Circumstance would impact the mitigation of the risk of unauthorized disclosure or modification of Real-time Assessment and Real-time monitoring data; therefore, Reclamation recommends that a provision for CIP Exceptional Circumstances is not necessary in CIP-012.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

N&ST noted that during the May 18, 2021 SDT CIP-012 webinar, a question was asked about whether “endpoint” devices, such as ICCP servers and nodes, would be in scope for R2. An SDT representative responded by saying he did not believe so. N&ST agrees with this opinion but strongly believes this exclusion should be made explicit in R2. The last sentence could be modified to say,

“The Responsible Entity is not required to include (1) oral communications, or (2) endpoint devices such as ICCP servers and nodes in its plan.”

Likes 0

Dislikes 0

Response

larry brusseau - Corn Belt Power Cooperative - 1

Answer

Document Name

[Project 2020-04 Comment_Form_MRO NSRF_CIP-012.docx](#)

Comment

I agree with the NSRF's comments for #4 as uploaded.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Document Name

Comment

MPC agrees with comments from Duke.

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

Answer

Document Name

Comment

R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3?

"4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center."

We'll need to make sure we understand that "exclusion" so that we can provide clear guidance each time we are asked about it.

2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers?

There are some concerns around what "data" is. The protections for the availability of communications links..." isn't a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.

Likes 0

Dislikes 0

Response

Angela Wheat - Southwestern Power Administration - 1

Answer

Document Name

Comment

The Technical Rationale states (PDF pg 5, top paragraph) that, "the SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both..." However, this language uses "or" while R2 uses "and". The use of "and" is understood to indicate that all elements must be addressed. It is clear that links and data (exchange infrastructure) are separate so stating that the Requirement's intent is satisfied by only protecting one or the other (or both) is confusing.

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer

Document Name

Comment

Suggested Language with R2.3 removed.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring The Responsible Entity is not required to include oral communications in its plan. The plan shall: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. Identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;

2.2. Identify restoration and continuity of operations to maintain and restore available communications links and data transmitted between Control Centers.

Suggested Language with R2.3 remaining

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links used to transmit data between Control Centers and data used for the purpose of Real-time Assessment and Real-time monitoring. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. The actions taken to provide for the availability and recovery of communication links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring, for which the use of redundant, diversely routed or backup communication capability is allowed but not required.

2.2. Identification of the roles for personnel involved in implementing the Responsible Entity’s plan.

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring.

COMMENTS ON TECHNICAL RATIONALE

NSRF Member Recommended Technical Rational (TR) - for the following items and also requiring ERO approval of the TR in order to assist applicable Entities in complying with these proposed changes. This is part of the SDT’s compliance outreach.

a. That “communication links” are the medium (copper wire pairs, fiber lines, etc.) in which data is transmitted between Control Centers, and that the “data” is the set of information that is needed for Real-time Assessments and Real-time monitoring.

b. The TR should clearly address the applicability proposed in R1 and R2 to clearly state that the required plan addresses Real-time Assessment data between Control Centers (as in R1) and not data ingress or egress non-Control Center locations – such as from field devices communicated to Control Centers, notwithstanding, GOP Control Centers.

Likes 1 Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Michael Whitney - Northern California Power Agency - 3

Answer

Document Name

Comment

reference NCPA Chris Carnesi’s comments

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| Alliant Energy supports the comments submitted by the MRO NSRF. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | |
| Document Name | |
| Comment | |
| R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3? | |
| <i>"4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center."</i> | |
| We'll need to make sure we understand that "exclusion" so that we can provide clear guidance each time we are asked about it. | |
| · 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers? | |
| There are some concerns around what "data" is. The protections for the availability of communications links..." isn't a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Cynthia Lee - Exelon - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3? | |

“4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.”

We'll need to make sure we understand that “exclusion” so that we can provide clear guidance each time we are asked about it.

· 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers?

There are some concerns around what “data” is. The protections for the availability of communications links...” isn't a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.

Likes 0

Dislikes 0

Response

Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker

Answer

Document Name

Comment

No additional comments.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3?

“4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.”

We'll need to make sure we understand that “exclusion” so that we can provide clear guidance each time we are asked about it.

· 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers?

There are some concerns around what “data” is. The protections for the availability of communications links...” isn’t a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.

Likes 0

Dislikes 0

Response

Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3

Answer

Document Name

Comment

Please consider adding examples of acceptable protections to the measure or Technical Rationale, especially when encryption isn’t an available option.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Document Name

Comment

Request clarification / example of a CIP Exceptional Circumstance for R2 since this Requirement seems focused on contingencies

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer

Document Name

Comment

Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document). We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer

Document Name

Comment

Please consider adding examples of acceptable protections to the measure or Technical Rationale, especially when encryption isn't an available option.

Likes 0

Dislikes 0

Response

Daniela Atanasovski - APS - Arizona Public Service Co. - 1

Answer

Document Name

Comment

AZPS has no additional comments for the standard drafting team to consider.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

Document Name

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

LCRA is concerned that this requirement is subjective which may yield inconsistent audits. The Technical Rationale document notes that “when identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” Yet, there is not any indication on what level of risk reduction or availability achieved is sufficient. Does the desired result need to achieve a certain metric associated with undefined term “availability”?

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

Document Name

Comment

PG&E appreciates the work of the CIP-012-2 SDT and has no additional comments at this time.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer

Document Name

Comment

LCRA is concerned that this requirement is subjective, which may yield inconsistent audits. The Technical Rationale document notes that “when identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” Yet, there is not any indication on what level of risk reduction or availability achieved is sufficient. Does the desired result need to achieve a certain metric associated with undefined term “availability”?

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power

Answer

Document Name

Comment

FERC Order No. 866 specifies that Requirements are needed to ensure availability between Control Centers, but Entities do not have control of communication systems or lines outside of their footprint. Tacoma Power recommends that the scope of CIP-012 R2 be limited to the infrastructure Entities control within its own footprint, similar to TOP-001. However, this would then exacerbate the double jeopardy between TOP-001 and CIP-012.

Likes 1

Snohomish County PUD No. 1, 3, Chaney Holly

Dislikes 0

Response

Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD

Answer

Document Name

Comment

CHPD recommends that the drafting team add language that clarifies CIP-012-2 monitoring is intended to be the successful data flow between control centers, and the content or completeness of that data is not the focus of R2.

In addition, CHPD recommends removal of “restoration” from requirement R2.2. Restoration of data does not apply to communication links, and restoration of data is most likely associated with BES systems or BES cyber assets (e.g., SCADA servers, RTUs, etc.) covered by CIP-009.

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6**Answer****Document Name****Comment**

We ask the SDT to consider adding additional bounds around the use of “availability”. In current form, there is significant room for interpretation as to the desired state of “availability”. Specifically in R2.2, “data flow restoration to maintain continuity of operations” seems to imply that the design of availability would require a zero-defect solution such that there would be zero impact to operations. This seems counter to current thresholds established in CIP-002 (15-minute impact) and/or other Ops & Planning criteria.

Similarly, with regard to documentation, we ask that the SDT provide and/or incorporate the language of the standard into expected components documentations. If there are specific components desired, it would be helpful to lay out in a manner similar to the Baseline requirements of CIP-010 R1.1.

Likes 0

Dislikes 0

Response**Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter****Answer****Document Name****Comment**

N/A

Likes 0

Dislikes 0

Response**Oliver Burke - Entergy - Entergy Services, Inc. - 1****Answer****Document Name****Comment**

No additional comments.

Likes 0

Dislikes 0

Response

Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1

Answer

Document Name

Comment

n/a

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE noticed the Technical Rationale for Reliability Standard CIP-012-2 defines Availability, in accordance with NIST, as “*Ensuring timely and reliable access to and use of information*” (page 12). While Texas RE agrees with the definition provided in the Technical Rational, Texas RE believes that the term “Availability” should likewise be specifically defined within the requirement language itself. Texas RE recommends the SDT incorporate the proposed language Technical Rationale directly into the CIP-012-2 Requirement R2 as follows:

“The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. **Availability is defined as ensuring timely and reliable access to and use of information.** The Responsible Entity is not required to include oral communications in its plan.”

Texas RE notes that this approach is similar to how the SDT incorporated the definition of “Access” developed in Project 2019-02 BCSI Access Management into the proposed CIP-004-X standard language.

Additionally, Texas RE noticed “control centers” in the Overview of availability section of the Technical Rational is not capitalized. Texas RE recommends the term be capitalized since it is defined in the NERC Glossary of Terms.

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer

Document Name

Comment

Additional information should be referenced in the technical rationale document discussing the relationships between CIP-012-2, TOP-001-5, and IRO-002-7.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer

Document Name

Comment

The SDT stated in the 5/18/2021 webinar that R2 possibly could only apply to a primary Control Center and not a backup Control Center. This does not seem consistent with the definition of Control Center as a backup Control Center is still a Control Center and would be in scope of CIP-012 if applicable data is traversing the communication links to another Control Center (primary or backup).

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

BPA believes that availability related to CIP-012 would best be included under the CIP-009 standard which already incorporates strategies, plans and details of bringing BES Systems back online under Recovery Plans. If instead the SDT intends for redundancy to accomplish the goal of availability, BPA believes that would best be accomplished by expanding the scope of redundancy required under TOP-001 R20/R23 and IRO-001 R2 to include "between Control Centers." Under either option, BPA recommends these standards be expanded instead of having different standards with very similar requirements.

Likes 0

Dislikes 0

Response

Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG)

Answer

Document Name

Comment

The SSRG recommends the drafting team consider the COM Standards be included in the [CIP-012-1 Technical Rationale](#), where alignment with other standards is discussed (see Page 4 of the Technical Rationale at “Alignment with IRO and TOP standards”).

The SSRG recommends the drafting team review the alignment with other standards section where TOP-001-4 R32 is referenced. The current version should be TOP-001-5 and there is no R32, and R22 is identified as “Reserved.” This is most likely a typo from a previous Technical Rationale drafting team.

The SSRG would like to thank the drafting team for their efforts.

Likes 0

Dislikes 0

Response

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer

Document Name

Comment

Duke Energy additional comment is as follows: the technical rationale describes monitoring for when data is ‘unavailable and is no longer updating’. While ‘heartbeat monitoring and monitoring” is presented as an option, it is the only option presented which may push auditors to only accept this. Furthermore, notification methods also seem to be intended to be required, however operational systems may have the capability to operate effectively with temporarily data loss or occasional malfunction of a field sensor or RTU which are out of the scope of CIP-012. It would help to make clear that CIP-012 monitoring is limited to successful data flow between control centers, and the content or completeness of that data is not the subject of R2.

Likes 0

Dislikes 0

Response

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer

Document Name

Comment

If an entity owns the entire physical and logical communication path from its own primary Control Center to its own backup Control Center and it is not encrypted, does this satisfy the requirement for R2? Does the entity have to encrypt from the primary Control Center to the backup Control Center? This might be an example within the Guidelines and Technical Basis.

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer

Document Name

Comment

CPS Energy does not have any additional comments.

Likes 0

Dislikes 0

Response

Consideration of Comments

| | |
|-----------------------------------|--|
| Project Name: | 2020-04 Modifications to CIP-012 |
| Comment Period Start Date: | 4/26/2021 |
| Comment Period End Date: | 6/9/2021 |
| Associated Ballots: | 2020-04 Modifications to CIP-012 CIP-012-2 IN 1 ST 2020-04 Modifications to CIP-012 Implementation Plan IN 1 OT |

There were 75 sets of responses, including comments from approximately 178 different people from approximately 115 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Vice President of Engineering and Standards, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

1. The SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree with the proposed R2 language? If not please provide comments and suggested requirement language.

2. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

3. The SDT is proposing a 24-month implementation plan. Do you agree with the proposed timeframe? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

4. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|-----------------|------------|-------------|---|------------------------|--------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| Midcontinent ISO, Inc. | Bobbi Welch | 2 | MRO,RF,SERC | ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1) | Bobbi Welch | MISO | 2 | RF |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Kathleen Goodman | ISONE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Michael Del Viscio | PJM | 2 | RF |
| | | | | | Charles Yeung | SPP | 2 | MRO |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |

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|----------------------|---------------|-----------|---|------------------------------|----------------|---|---|------|
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | Marc Donaldson | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |
| | | | | | Ozan Ferrin | Tacoma Public Utilities (Tacoma, WA) | 5 | WECC |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,NA - Not Applicable,RF,SERC,Texas RE,WECC | ACES Standard Collaborations | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |

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|-----|-----------------|-------------|-----|----------|-------------------|--|-------|------|
| | | | | | Jennifer Bray | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| | | | | | Ryan Strom | Buckeye Power, Inc. | 5 | RF |
| | | | | | Scott Brame | NC Electric Membership Corporation | 3,4,5 | SERC |
| MRO | Kendra Buesgens | 1,2,3,4,5,6 | MRO | MRO NSRF | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Christopher Bills | City of Independence Power & Light | 4 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 1 | MRO |
| | | | | | Jamie Monette | Allete - Minnesota Power, Inc. | 1 | MRO |
| | | | | | Jodi Jensen | Western Area Power Administration - Upper Great Plains East (WAPA) | 1,6 | MRO |
| | | | | | John Chang | Manitoba Hydro | 1,3,6 | MRO |

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|-------------------|---|---------|-----|
| Larry Heckert | Alliant Energy Corporation Services, Inc. | 4 | MRO |
| Marc Gomez | Southwestern Power Administration | 1 | MRO |
| Matthew Harward | Southwest Power Pool, Inc. | 2 | MRO |
| LaTroy Brumfield | American Transmission Company, LLC | 1 | MRO |
| Bryan Sherrow | Kansas City Board Of Public Utilities | 1 | MRO |
| Terry Harbour | MidAmerican Energy | 1,3 | MRO |
| Jamison Cawley | Nebraska Public Power | 1,3,5 | MRO |
| Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| Jeremy Voll | Basin Electric Power Cooperative | 1,3,5 | MRO |

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|---------------------------------------|---------------------|---|----------|--|------------------|---------------------------------------|---------|-----|
| | | | | | Joe DePoorter | Madison Gas and Electric | 4 | MRO |
| | | | | | David Heins | Omaha Public Power District | 1,3,5,6 | MRO |
| Southwest Power Pool, Inc. (RTO) | Kimberly Van Brimer | 2 | MRO,WECC | Southwest Power Pool Standards Review Group (SSRG) | Kim Van Brimer | SPP | 2 | MRO |
| | | | | | Jim Williams | SPP | 2 | MRO |
| | | | | | Matt Harward | SPP | 2 | MRO |
| | | | | | Shannon Mickens | SPP | 2 | MRO |
| | | | | | Alan Wahlstrom | SPP | 2 | MRO |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Ann Carey | FirstEnergy - FirstEnergy Solutions | 6 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 4 | RF |

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|--|-----------------|---------|---------------------------|-------------------|-----------------|--|---|------|
| Duke Energy | Masuncha Bussey | 1,3,5,6 | FRCC,MRO,RF,SERC,Texas RE | Duke Energy | Laura Lee | Duke Energy | 1 | SERC |
| | | | | | Dale Goodwine | Duke Energy | 5 | SERC |
| | | | | | Greg Cecil | Duke Energy | 6 | RF |
| | | | | | Lee Schuster | Duke Energy | 3 | SERC |
| Public Utility District No. 1 of Chelan County | Meaghan Connell | 5 | | CHPD | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | Ginette Lacasse | Public Utility District No. 1 of Chelan County | 1 | WECC |
| | | | | | Glen Pruitt | Public Utility District No. 1 of Chelan County | 6 | WECC |
| | | | | | Meaghan Connell | Public Utility District No. 1 Chelan County | 5 | WECC |
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |

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| | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | Ron Carlsen | Southern Company - Southern Company Generation | 6 | SERC |
| | | | | | Jim Howell | Southern Company - Southern Company Services, Inc. - Gen | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC Regional Standards Committee | Guy V. Zito | Northeast Power Coordinating Council | 10 | NPCC |

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|--------------------|---|---|------|
| Randy MacDonald | New Brunswick Power | 2 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |
| Alan Adamson | New York State Reliability Council | 7 | NPCC |
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |
| David Kiguel | Independent | 7 | NPCC |
| Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |

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|-------------------|--|---|------|
| Shivaz Chopra | New York Power Authority | 5 | NPCC |
| Deidre Altobell | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Cristhian Godoy | Con Ed - Consolidated Edison Co. of New York | 6 | NPCC |
| Nurul Abser | NB Power Corporation | 1 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |
| Michael Ridolfino | Central Hudson Gas and Electric | 1 | NPCC |
| Vijay Puran | NYSPS | 6 | NPCC |

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| ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| Sean Cavote | PSEG - Public Service Electric and Gas Co. | 1 | NPCC |
| Brian Robinson | Utility Services | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Jim Grant | NYISO | 2 | NPCC |
| John Pearson | ISONE | 2 | NPCC |
| John Hastings | National Grid USA | 1 | NPCC |
| Michael Jones | National Grid USA | 1 | NPCC |
| Nicolas Turcotte | Hydro-Quebec TransEnergie | 1 | NPCC |
| Chantal Mazza | Hydro-Quebec | 2 | NPCC |
| Michele Tondalo | United Illuminating Co. | 1 | NPCC |

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|--|-------------|---|--------|----------|-----------------|--|---|---------------------|
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Dominion - Dominion Resources, Inc. | Sean Bodkin | 6 | | Dominion | Connie Lowe | Dominion - Dominion Resources, Inc. | 3 | NA - Not Applicable |
| | | | | | Lou Oberski | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| | | | | | Larry Nash | Dominion - Dominion Virginia Power | 1 | NA - Not Applicable |
| | | | | | Rachel Snead | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | 6 | SPP RE | OKGE | Sing Tay | OGE Energy - Oklahoma | 6 | MRO |
| | | | | | Terri Pyle | OGE Energy - Oklahoma Gas and Electric Co. | 1 | MRO |

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|--|-----------------|----|--|----------|-----------------|--|----|------|
| | | | | | Donald Hargrove | OGE Energy - Oklahoma Gas and Electric Co. | 3 | MRO |
| | | | | | Patrick Wells | OGE Energy - Oklahoma Gas and Electric Co. | 5 | MRO |
| Western Electricity Coordinating Council | Steven Rueckert | 10 | | WECC CIP | Steve Rueckert | WECC | 10 | WECC |
| | | | | | Morgan King | WECC | 10 | WECC |
| | | | | | Deb McEndaffer | WECC | 10 | WECC |
| | | | | | Tom Williams | WECC | 10 | WECC |

1. The SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree with the proposed R2 language? If not please provide comments and suggested requirement language.

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer No

Document Name

Comment

Part 2.2 is inconsistent with the language in the other Requirements. Dominion Energy recommends making the language consistent as follows: Identification of how the Responsible Entity has addressed communication links and data restoration to maintain continuity of operations in the Responsible Entity's plan.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the language to address the data in motion and not the data at rest.

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer No

Document Name

Comment

This requirement reads as redundant to TOP-001-5 R20 – R24. In satisfying TOP-001-5 R20 & R24, you indirectly satisfy CIP-012 R2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has been charged with addressing the FERC directive. FERC order 866, P27 is FERC response to industry comment from the NOPR which states TOP-001-5 R20 is duplicative in the control center, not between control centers. Order 866 was issued to address the issue between control centers.

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer No

Document Name

Comment

Duke Energy does not agree with the changes as proposed. The existing wording may be confusing regarding applicability of the term “availability” to links vs to data. We recommend these be presented separately for clarity. Furthermore, we recommend removal of ‘restoration’ from the requirement, as there may be alternate means in a plan where full restoration is not immediately needed. Also, data interruption can come in many forms, including partial data loss or data loss from sources, such as RTUs, outside the scope of CIP-012, so requirements to restore all such data may be over-reaching.

Duke Energy proposes the following wording to address the specific handling of links vs data;

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring that is transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:

- 2.1. Identification of how the Responsible Entity has provided for the availability of the communications links;
- 2.2. Identification of how the Responsible Entity has addressed the risk of data interruption to maintain continuity of operations; and
- 2.3. Identification of the responsibilities of each Responsible Entity for providing availability of communications links and data that is transmitted between Control Centers owned or operated by different Responsible Entities.

Examples of 2.2 evidence may include :

- a data interruption response plan with roles and responsibilities or

| | |
|---|--|
| <ul style="list-style-type: none"> • alternate data transfer or communication methods or • Other plans addressing how to mitigate the impact on operations | |
| Likes 1 | Minnkota Power Cooperative Inc., 1,5, Fuhrman Andy |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan. | |
| Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG) | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The SPP Standards Review Group (SSRG) recommends the drafting team consider that entities should be able to utilize <i>redundancy capabilities</i> or <i>multiple communication avenues</i> if one data link is unavailable.</p> <p>CIP-012-1 falls under the umbrella of CIP-002-5.1a, which does not allow for use of redundant systems to satisfy requirements.</p> <p>In Order 866, NERC appears to identify redundancy as necessary to data exchange infrastructure (See P 20 of Order 866), and FERC recognized in Order 866 that redundant communication links help support availability (See P 21 of Order 866). The SSRG requests that the drafting team include language in CIP-012-1 that recognizes redundant systems as capable of meeting the availability requirements in a plan.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your comment. The SDT does not agree with the statement that [CIP-002-5.1a](#), does not allow for use of redundant systems to satisfy requirements. CIP-012 is addressing availability and not vulnerabilities.

Please see the Technical Rationale for the consideration that went into the drafting of this version of the draft Standard. See the Implantation Guidance for example approaches to meet the Requirements. The examples in the IG, though, are not the only ways an entity can achieve compliance and entities may choose alternative approaches that better fit their individual situations.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

“Availability” is too ambiguous a term to be used in this requirement. The current interpretation of “availability” is more in line with the amount of uptime and downtime utilization of the links between control centers. BPA recommends the term “availability” be replaced with “redundant links or backup links” to clarify the intent of CIP-012-2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The concept of availability is dependent upon the data that is the subject of the availability. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The word availability is currently being used as that was the term included in FERC Order 866 and the SAR.

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer No

Document Name

Comment

While including a requirement for Control Centers owned or operated by different Responsible Entities makes sense for the R1.3 security objective, it does not for R2.3. One entities communication link would only be relevant to their individual provider of that link and not another entity. This appears to simply require an agreement that each entity will ensure they have redundant communication links.

The inclusion of ‘in the Responsible Entity’s plan’ in R2.2 seems duplicative as it is already included in R2, ‘The plan shall include:’

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT removed the language “communication links” to focus the requirement back on data.

The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1.

Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1

Answer No

Document Name

Comment

PNMR believes this requirement is unnecessary as IRO and TOP requirements address availability. If the intent is to cover the backup control centers, then SDT should revise IRO and TOP to scope in the back-up controls rather than a new requirement for CIP-012. Additionally, PNMR agrees with comments made by Duke Energy, SSRG, and Los Angeles Department of Water and Power.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability but is focused on data exchange infrastructure within the primary control center, it does not address data in motion between other control centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer No

Document Name

Comment

ATC supports the comments of EEI

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 6, Group Name OKGE

Answer No

Document Name

Comment

OKGE supports comments provided by EEI.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Oliver Burke - Entergy - Entergy Services, Inc. - 1

Answer No

Document Name

Comment

The addition of "availability" appears to overlap with the "redundancy and diverse routing requirements already established for TOP-001-5 - R24. Is the distinction between the infrastructure (e.g. switches, routers, firewalls) vs. the underlying communication infrastructure (e.g. fiber, ethernet)?

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability but is focused on data exchange infrastructure within the primary control center, it does not address data in motion between other control centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Answer No

Document Name

Comment

AEP supports the comments that EEI has provided. Please see below for EEI’s comments:

FERC Order No. 866 does not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data. The underscored language is different from what the Commission directed and what is contained in the proposed requirement. Moreover, the Commission acknowledged in the order that the “redundancy of communication links cannot always be guaranteed” (see P35); responsible entities should therefore plan for both recovery of compromised communication links and use of backup communications. To remedy this issue, we suggest the following modification to Requirement R2 and its subparts:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) **that** provide **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall include:

2.1 Identification of how the Responsible Entity has provided **protections** for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers; **and**

2.2 Identification of how the Responsible Entity has addressed communications and data **availability** (*strike flow and replace with availability because the order specifically directed availability*) restoration in the Responsible Entity’s plan; and (*strike to maintain continuity of operations because this statement makes no sense in the context of restoration of communications.*)

2.3 If the Control Centers are owned or operated by different Responsible Entities, **those entities shall jointly identify and record each entity’s** responsibilities for providing **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring.

Likes 0

| | |
|--|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1 which addresses protections, measures, and availability. | |
| Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE | |
| Answer | No |
| Document Name | |
| Comment | |
| CenterPoint Energy Houston Electric, LLC (CEHE) does not agree with the proposed language. The terminology “real-time assessment and real-time monitoring data” is not clear as to what data is included. CEHE proposes that the SDT incorporate and reference language from the FERC Order - i.e. “With this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data identified under Reliability Standards TOP-003-3 and IRO-010-2.” Adding a reference to the requirement specifying that the data is “the same data identified under Reliability Standards TOP-003-3 and IRO-010-2” would provide clarity on the terminology “real-time assessment and real-time monitoring data.” | |
| Additionally, CEHE supports EEI’s comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. This language is already approved in R1 but the team has added clarifying language to the IG. In addition, please see the response to EEI. | |
| Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD | |
| Answer | No |
| Document Name | |

Comment

As mentioned in FERC Order No. 866, CHDP shares the Commission’s concern that Reliability Standard CIP–012–1 does not adequately identify the types of data covered by its requirements and recommends that the term “Real-time monitoring” be defined in the Reliability Standard or the NERC Glossary.

In addition, “availability” as proposed in CIP-012-2 is too ambiguous. To clarify the intent of CIP-012-2, CHPD suggests the term “availability” be replaced with more specific wording such as “redundant communication links with diverse equipment and paths”. If “availability” of data remains in the standard, provide guidance on how to establish “availability of data.”

CHPD recommends including language in CIP-012-2 that recognizes redundant systems as meeting the availability requirements. If the drafting team intends redundancy to accomplish the goal of availability, CHPD recommends considering expanding the scope of redundancy requirements under TOP-001-5 to include “between Control Centers.” In general, CHPD recommends similar requirements be consolidated under one standard instead of having similar requirements scattered among various standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. The data being referenced being referred to as “Real-Time Assessment and Real-time monitoring data” is in other, already approved O&P Standards such as TOP-001, TOP-003 and IRO-010. The team has added clarifying language to the IG. Availability is also addressed in IG to help clarify (using NIST language). TOP-001 covers your own Control Center but not between Control Centers. FERC directed the SDT to modify CIP-012, specifically.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power

Answer

No

Document Name

Comment

Tacoma Power is concerned on utilizing the terminology “availability” in the Requirement language. Responsible Entities do not have complete control over portions of the communication system outside of the entities’ footprint. Responsible Entities cannot assure the availability of communication carrier networks, even if contract language specifies the availability.

Tacoma Power recommends amending the language in the Requirement to specify that entities only need to ensure availability up to the connection to the common carrier and provide demarcation of what parts of the system are under the Entities’ control.

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|---------|---|
| Likes 1 | Snohomish County PUD No. 1, 3, Chaney Holly |
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| Dislikes 0 | |
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Response

Thank you for your comment. The team has provided clarifying language on availability in the attached IG. The team has modified the language to require availability protections and measures for recovery.

Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 – RF

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| Answer | No |
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| Document Name | |
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Comment

Southern Indiana Gas and Electric (SIGE) does not agree with the proposed language. The terminology “real-time assessment and real-time monitoring data” is not clear as to what data is included. SIGE proposes that the SDT incorporate and reference language from the FERC Order - i.e. “With this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data identified under Reliability Standards TOP-003-3 and IRO-010-2.” Adding a reference to the requirement specifying that the data is “the same data identified under Reliability Standards TOP-003-3 and IRO-010-2” would provide clarity on the terminology “real-time assessment and real-time monitoring data.”

Additionally, SIGE supports EEI’s comments

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| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. “Real-Time Assessment and Real-time monitoring data” is already approved in other O&P Standards such as TOP-001, TOP-003 and IRO-010 but the team has added clarifying language to the IG. Availability is also addressed in IG to help clarify (using NIST language). TOP-001 covers your own Control Center but not between Control Centers. FERC directed the team to modify CIP-012, specifically. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| LCRA understands the intent of R2 is to reduce the risk that communication links are unavailable between applicable Control Centers; however, LCRA is uncertain what the desired output is based upon how R2 is currently written. Furthermore, the ambiguity around this risk-based requirement could yield inconsistent interpretations across Registered Entities and Regional Entities. By not defining the term “availability” the subjectivity of the requirement is unsatisfactory. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The requirement language has been modified from the initial draft. In addition, a discussion on availability can be found in the IG to help clarify. | |
| Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | No |
| Document Name | |

Comment

PG&E agrees with the response provided by EEI when EEI indicated FERC Order No. 866 did not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data.

PG&E supports the suggested modifications provided by EEI as part of their submission for this command and ballot.

Likes 0

Dislikes 0

Response

Thank you for your comments, please see the response to EEI.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA understands the intent of R2 is to reduce the risk that communication links are unavailable between applicable Control Centers; however, LCRA is uncertain what the desired output is based upon how R2 is currently written. Furthermore, the ambiguity around this risk-based requirement could yield inconsistent interpretations across Registered Entities and Regional Entities. By not defining the term “availability” the subjectivity of the requirement is unsatisfactory.

Likes 0

Dislikes 0

Response

Thank you for your comment. The requirement language has been modified from the initial draft. In addition, a discussion on availability can be found in the IG to help clarify.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>ACES feels that this new requirement does not address any risk to the BES. Availability of communications links between Control Centers are often out of the control of Registered Entities, thus the reason for the exceptions in CIP-002 through CIP-011 and CIP-013. Availability of communication links are more often out of the control of a Registered Entity and Registered Entities are at the mercy of communication providers from an availability perspective, and having a plan stating “Control Centers use redundant links and utilize multiple carriers and/or mediums” does not address any risks to the BES. This requirement creates more administrative and compliance burden than protecting the BES.</p> <p>While availability of data is part of cybersecurity’s CIA triad, downed communication links between Control Centers or any other link for that matter, does not make data unavailable and therefore we do not feel this is a cybersecurity issue. If Control Center data links were to become unavailable in any way, the issue would be investigated, and only if it was determined to be a cybersecurity incident would fall into the scope of CIP-008: Incident Reporting and Response planning, thus this requirement is not needed.</p> <p>ACES also believes that R2.3 is redundant to R2.1 due to the other Responsible Entity’s Control Centers being in scope of R2 and is therefore unnecessary.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. FERC Order 866 instructed the team to modify CIP-012 to provide for availability protections of communication links. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language.</p> | |
| Daniela Atanasovski - APS - Arizona Public Service Co. - 1 | |
| Answer | No |
| Document Name | |

Comment

AZPS is in agreeance with EEI comments regarding the proposed addition of R2 not being in the scope of FERC Order No.866. The focus is on providing **protections** regarding availability of the communication links and data instead of providing the availability of communications links and data. The focus should be on the protections of the availability of links and data to make sure the responsible entity can plan for both recovery of compromised communication links and the use of backup communications.

Suggested Alterations: addition of “protections” within the standard when speaking to availability.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6

Answer

No

Document Name

Comment

Southern Indiana Gas and Electric (SIGE) does not agree with the proposed language. The terminology "real-time" assessment and real-time monitoring data" is not clear as what data is included. SIGE proposes that the SDT incorporate and reference language from the FERC Order 0 i.e. "Witth this understanding, we are satisfied that the data protected under Reliability Standard CIP-012-1 is the same data indentified under Reliability Standard TOP-003-3 and IRO-10-2." Adding a reference to the requirement specifying that the data is "the same data identified under Relliability Standars TOP-003-3 and IRO-010-2" would provide clarity on the terminology "real-time assessment and real-time monitoring data." Additionally, SIGE supports EEI's comments.

Likes 0

Dislikes 0

Response

Thank you for your comments. This language is already approved in other standards such as TOP-001, TOP-003 and IRO-010 but the team has added clarifying language to the IG.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

This draft of the requirement implies redundancy, which does not align with existing CIP standards, particularly CIP 002-5.1a. As availability is the purview of operations, it would be better suited to IRO and TOP standards.

BC Hydro recommends removing this requirement from CIP-012 and revise IRO and TOP standards to address this need instead.

Likes 0

Dislikes 0

Response

Thank you for your comment. FERC Order 866 instructed the team to modify CIP-012.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer No

Document Name

Comment

FERC Order 866 directed NERC to develop modification to require “protections” regarding availability of communication links and data communicated between bulk electric system Control Centers.

R2 should be modified to: 1) include the term “protections;” 2) be objective based; and 3) less prescriptive. The following is suggested:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) **that** provide **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall address:

2.1 Methods of protection

2.2 Restoration plans

It is not necessary to have a separate part specifically for identification of responsibilities of Control Centers owned or operated by different Responsible Entities, since those would be covered by 2.1. This could be included in the technical rationale as an example of a possible protection.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. The SDT has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language.

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document), We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Possible overlap with other approved standards; IRO-010, TOP-003 and COM-001 Standards address availability already. R2 adds layer of complication/possible conflicts with already approved reliability standards. Including availability in CIP-012 introduces an additional requirement for a compliance program to carefully review and maintain all plans/procedures related to standards mentioning availability to avoid potential non-compliance due to possible conflicts in requirements or applicability of measures involved to address availability. This could involve duplication of effort and increase administrative burden beyond what is required to ensure power system reliability in this case.

Likes 0

Dislikes 0

Response

The SDT thanks you for your comment. The SDT has added information about the word “timely” to the IG. FERC Order 866 instructed the team to modify CIP-012. In addition the draft language has been modified to fit into the structure of already approved R1 language.

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Derek Brown - Evergy – 5

Answer No

Document Name

Comment

Eergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Leonard Kula - Independent Electricity System Operator - 2

Answer No

Document Name

Comment

IESO supports the comments submitted by IRC as well as NPCC

The IRC SRC supports the SDT’s efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT adopt the following proposed modifications as the language from R1 may not be a “best fit.” (Note: The “Recommended language” for Part 2.1 below is loosely modeled after that of another requirement, that in EOP-008-2, Part 1.6.)

Recommended language:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring . The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. An Operating Process describing the actions to be taken to recover compromised communication links and data used for Real-time Assessment and Real-time monitoring, including:

2.1.1 The use of redundant or backup communication capability to maintain availability during the restoration period.

2.1.2. Identification of the roles for personnel involved in implementing the Operating Process.

2.2. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring.

NPCC: Availability is outside of most entities' control because of outsourcing communications between locations. Also, IRO-010, TOP-003 and COM Standards address availability already. Previously industry gave this feedback. We recommend this SDT support the earlier industry feedback.

Likes 0

Dislikes 0

Response

Thank you for your comments. The SDT has consolidated language into R1 which the team believes addresses the concerns raised. The team believes the proposed language in the second draft would allow for the suggested approach in this language. Please see the implementation guidance for more information regarding the alignment between CIP-012 and the O&P Standards. The team asserts that planning for restoration, and identification of responsibility regarding availability is within an entities control. In addition, FERC Order 866 directed modifications to CIP-012.

Allen Klassen - Evergy – 1

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1.

Likes 0

| | |
|---|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Please see response to EEI. | |
| Thomas ROBBEN - Evergy – 6 | |
| Answer | No |
| Document Name | |
| Comment | |
| Evergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Please see response to EEI. | |
| Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3 | |
| Answer | No |
| Document Name | |
| Comment | |
| Comments: FERC Order 866 directed NERC to develop modification to require “protections” regarding availability of communication links and data communicated between bulk electric system Control Centers. | |
| R2 should be modified to: 1) include the term “protections;” 2) be objective based; and 3) less prescriptive. The following is suggested: | |
| R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) that provide protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being | |

transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall address:

2.1 Methods of protection

2.2 Restoration plans

It is not necessary to have a separate part specifically for identification of responsibilities of Control Centers owned or operated by different Responsible Entities, since those would be covered by 2.1. This could be included in the technical rationale as an example of a possible protection.

This less prescriptive and objective-based language meets the FERC Order and provides entities flexibility to define protections under their plan that will be used to meet the requirement.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

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|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1. This new language includes the term “protections” and the SDT asserts it is more objective and less prescriptive. Please see the implementation guidance for discussion regarding restoration plans and methods of protection.

Marcus Moor - Evergy – 3

| | |
|---------------|----|
| Answer | No |
|---------------|----|

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| Document Name | |
|----------------------|--|

Comment

Evergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1.

| | | |
|--|----|--|
| Likes | 0 | |
| Dislikes | 1 | PSEG - PSEG Energy Resources and Trade LLC, 6, Neglia Joseph |
| Response | | |
| Thank you for your comments. Please see response to EEI. | | |
| Daniel Gacek - Exelon – 1 | | |
| Answer | No | |
| Document Name | | |
| Comment | | |
| Exelon is choosing to align with EEI in response to this question. | | |
| Likes | 0 | |
| Dislikes | 0 | |
| Response | | |
| Thank you for your comments. Please see response to EEI. | | |
| Kinte Whitehead - Exelon – 3 | | |
| Answer | No | |
| Document Name | | |
| Comment | | |
| Exelon is aligning with EEI in response to this question. | | |
| Likes | 0 | |
| Dislikes | 0 | |
| Response | | |

Thank you for your comments. Please see response to EEI.

Cynthia Lee - Exelon – 5

Answer No

Document Name

Comment

Exelon is aligning with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see response to EEI.

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer No

Document Name

Comment

Alliant Energy supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to MRO NSRF.

Michael Whitney - Northern California Power Agency - 3

Answer No

| | |
|--|--|
| Document Name | |
| Comment | |
| | reference NCPA Chris Carnesi's comments |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | Thank you for your comment. Please see response to NCPA. |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name | MRO NSRF |
| Answer | No |
| Document Name | |
| Comment | |
| | <p>The NSRF appreciates the work accomplished so far in the drafting of R2 and its parts. We also appreciate the SDT's efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT consider alternative requirement language e.g. that from EOP-008-2, Part 1.6, as a model as the language from R1 may not be a "best fit."</p> <p>Additional:</p> <p>a. The NSRF recommends language that clearly allows entities to use redundant capabilities or multiple communications systems or architectures to address communications link availability so as not to leave any ambiguity with respect to the language in CIP-002-5.1a. Control Centers are defined in CIP-002-5.1a, a standard which does not allow redundant system designs and architectures as controls to meet compliance obligations. In Order 866, NERC appears to identify redundancy as necessary to meet the Order's data exchange infrastructure (See P 20 of Order 866), and FERC recognized in Order 866 that redundant communication links support the availability topic requested by FERC (See P 21 of Order 866). The NSRF recommends the SDT include language in CIP-012-2 that recognizes redundant systems as a solution to the issue of availability.</p> |

- b. The NSRF does not wish for “availability” in R2 to be defined as it is a simple term and defined by Merriam-Webster as “the quality or state of being available”. Or in other words, being accessible when needed.
- c. The draft language in R2.1 and R2.2 requires entities to identify “how” (“Identification of how”) which requires Entities to establish a process to meet the “how” and can result in Entities confusion about adherence to the language as it requires a process of “how” without regard to existing configurations, documentation, processes or systems design and architectures. The SDT should consider a more concise and simple language choice to clarify the deliverable as while allowing entities the flexibility of implementation.
- d. Because FERC Order 866 describes the data in IRO-010 and TOP-003 which at a minimum is needed to be available, “monitoring” does not need to be defined within Real-time monitoring.
- e. The NSRF views R2.3 as being redundant for the following reasons;
 - It is duplicative of R1.3 which already establishes lines of responsibility among different owners of the Control Centers in question. Further, R2.1 and R2.2 already address availability and restoration. We ask the SDT to clarify what is intended to be shown/proven/demonstrated by the requirements in R2.3 and consider amend or strike the existing R2.3 language.
 - Because R2.1 and R2.2 only states between (applicable) Control Centers regardless of ownership, R.2.3 is not required because Control Centers owned and operated by different Responsible Entities are already included in R2.1 and R2.2. R.2.2 clearly states a restoration process is required between Control Centers regardless of whom owns or operates the Control Center.

| | | |
|----------|---|--|
| Likes | 1 | Lincoln Electric System, 1, Johnson Josh |
| Dislikes | 0 | |

Response

Thank you for your comment.
 A-B. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1. The team believes the proposed language in the second draft would allow for the suggested approach in this language. The concept of availability is dependent upon the data that is the subject of the availability. The SDT maintains to the NIST definition which is referenced in the

Technical Rationale is acceptable. The word availability is currently being used as that was the term included in FERC Order 866 and the SAR. Please see the implementation guidance for more examples which address redundancy and availability.

C. In redrafting the language into the new proposed language, the identification of how was replaced with identification of protections and measures.

D. The intent of the SDT is to continue using the phrase real-time assessment and real-time monitoring and not trying to change the intent of the previously approved R1 language or that in any other standards.

E. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1 which the SDT asserts addresses the duplicative nature of the previously propose R2.3.

Angela Wheat - Southwestern Power Administration - 1

| | |
|----------------------|----|
| Answer | No |
| Document Name | |

Comment

While the Requirement specifies the data type to be protected, it does not specifically identify “data paths” or “data flows” yet the Rationale states that these paths and/or flows, “data exchange infrastructure”, are the intended focus to address availability of data. Specifically referring to data exchange infrastructure for transmitting this data type, as done with communication links, would be consistent.

Protection of data exchange infrastructure is appropriately placed in the CIP Standards, which could support retirement of TOP-001 R20/R21. Testing of infrastructure would be a reasonable control to assure functionality under CIP-012 as determined and designed by the entity’s plan and more in keeping with a risk-based approach than a prescriptive requirement.

R2.3 is redundant in that applicable Control Centers must meet R2, which inherently requires coordination and communication. However, if the Drafting Team elects to keep R2.3, alternate language has been provided.

R2 The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data exchange infrastructure used for transmitting Real-time Assessment and Real-time monitoring data between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include:

- 2.1. Identification of how the Responsible Entity has provided for the continuity of data flow across communications links and data exchange infrastructure subject to R2;
- 2.2. Identification of how the Responsible Entity has addressed the restoration of applicable data flow across links and data exchange infrastructure subject to R2 to maintain continuity of operations in the Responsible Entity’s plan; and
- 2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing continuity of applicable data flow across communications links and data exchange infrastructure subject to R2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The focus of this SDT is on the availability of RTA and RTM data. The SDT asserts that the new proposed combined R1 language supports that and asserts that it is in alignment with the TOP and IRO Standards. The Implementation Guidance provides examples of different ways an entity may meet the requirements.

TOP-001 R20/21 focused is on data exchange infrastructure within the *primary* Control Center which may affect an entity’s implementation of CIP-012. The SDT has also been directed to address the availability of RTA and RTM data between other Control Centers.

In regards to the previously proposed R2.3, the SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1 language which the SDT asserts addresses the duplicative nature of the former R2.3.

Becky Webb - Exelon - 6

Answer No

Document Name

Comment

Exelon is aligning with EEI in response to this question,

| | |
|---|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to EEI. | |
| Nurul Abser - NB Power Corporation - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| The effort to measure, evaluate and assess the 'availability' of communication links would be quite burdensome on us (the entity) as well as our partners as a link works in two directions and both entities share responsibility on maintaining it. In addition, "availability" implies some degree of analysis that calculates a measurable value which is compared to a target – neither of which is identified in the SAR. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The word availability is currently being used as that was the term included in FERC Order 866 and the SAR. Please see the implementation guidance for more examples which address availability. | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| AEPCO agrees with ACES comments and feels that this new requirement does not address any risk to the BES. Availability of communications links between Control Centers are often out of the control of Registered Entities, thus the reason for the exceptions in CIP-002 through CIP- | |

011 and CIP-013. Availability of communication links are more often out of the control of a Registered Entity and Registered Entities are at the mercy of communication providers from an availability perspective, and having a plan stating “Control Centers use redundant links and utilize multiple carriers and/or mediums” does not address any risks to the BES. This requirement creates more administrative and compliance burden than protecting the BES.

While availability of data is part of cybersecurity’s CIA triad, downed communication links between Control Centers or any other link for that matter, does not make data unavailable and therefore we do not feel this is a cybersecurity issue. If Control Center data links were to become unavailable in any way, the issue would be investigated, and only if it was determined to be a cybersecurity incident would fall into the scope of CIP-008: Incident Reporting and Response planning, thus this requirement is not needed.

AEPCO also agrees with ACES comments and believes that R2.3 is redundant to R2.1 due to the other Responsible Entity’s Control Centers being in scope of R2 and is therefore unnecessary.

AEPCO has signed on to ACES comments.

| | |
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| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. FERC Order 866 directed the SDT to modify CIP-012 to address availability and restoration of availability. The SDT asserts that some restoration elements can be covered in other recovery and incident response plans that you may reference in your CIP-012 plan. The team asserts that planning for restoration, and identification of responsibility regarding availability is within an entities control. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1 which the SDT asserts addresses the duplicative nature of the previously proposed R2.3.

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

| | |
|---------------|----|
| Answer | No |
| Document Name | |

Comment

MPC agrees with comments from Duke.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to Duke.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer No

Document Name

Comment

FERC Order No. 866 does not require entities to “provide for the availability of communications links and data” but rather to provide protections regarding the availability of those communication links and data. The underscored language is different from what the Commission directed and what is contained in the proposed requirement. Moreover, the Commission acknowledged in the order that the “redundancy of communication links cannot always be guaranteed” (see P35); responsible entities should therefore plan for both recovery of compromised communication links and use of backup communications. To remedy this issue, we suggest the following modification to Requirement R2 and its subparts:

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) **that** provide **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. This plan shall include:

- 2.1** Identification of how the Responsible Entity has provided **protections** for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers; **and**
- 2.2** Identification of how the Responsible Entity has addressed communications and data **availability** (*strike flow and replace with availability because the order specifically directed availability*) restoration in the Responsible Entity’s plan; and (*strike to maintain continuity of operations because this statement makes no sense in the context of restoration of communications.*)
- 2.3** If the Control Centers are owned or operated by different Responsible Entities, **those entities shall jointly identify and record each entity’s** responsibilities for providing **protections for the** availability of communications links and data used for Real-time Assessment and Real-time monitoring.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1 which addresses protections, measures, and availability.

larry brusseau - Corn Belt Power Cooperative - 1

Answer

No

Document Name

[Project 2020-04 Comment_Form_MRO NSRF_CIP-012.docx](#)

Comment

I agree with the NSRF's comments for #1 as uploaded.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to MRO NSRF.

| | |
|---|----|
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>N&ST is concerned that as written, R2 could be construed as requiring a Responsible Entity to achieve 100% availability of communication links and the data they carry, something FERC Order 866 concedes cannot always be guaranteed.</p> <p>N&ST suggests the following, alternate wording: “The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate threats to the availability of communications links and Real-time Assessment and Real-time monitoring data communicated between Control Centers. The Responsible Entity is not required to include oral communications in its plan.”</p> <p>Parts 2.1 through 2.3 should be modified to maintain consistency with this language.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The use of the NIST definition of availability addresses the concern about achieving 100% availability of communication links. The team also incorporated the language “to mitigate the risks” which the team asserts does not require 100% availability. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1.</p> | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | No |
| Document Name | |
| Comment | |

Reclamation recommends the SDT ensure that, where applicable, the requirements for electronic communications are aligned to the existing requirements for interpersonal communication identified in COM-001-3:

- Have electronic communication capability.
- Where technically feasible, designate alternative electronic communication capability in the event of a failure of the primary communication capability.
- Where applicable, test the alternate method of electronic communication.

The Technical Rationale states that CIP-012 R2 is meant to align with TOP-001 and IRO-002 requirements for data at the primary Control Center. Reclamation recommends the SDT use the same wording as the referenced TOP and IRO standards.

Reclamation also recommends the SDT review the paragraph under CIP-012 Technical Rationale Figure 3. “Station Alpha and Entity A’s TOP Control Center subject to CIP-012 without the exemption” does not align with the description in Figure 3 that states, “This communication is exempt from CIP-012.”

Reclamation recommends the SDT add “Availability” to the NERC Glossary of Terms as it relates to intra-Control Center communication links (i.e., between Control Centers owned by the same registered entity) and inter-Control Center communications (i.e., between Control Centers owned by different registered entities, specifically between GOP/RC, GOP/TOP, and GOP/BA Control Centers).

Reclamation identifies that when using the plain meaning of the terms “access,” “use,” and “in transit,” it may not make sense to mandate that encrypted data be accessible and usable while in transit. The purpose of encryption is to ensure data is not available during transmittal. Data needs to be accessible and usable at both Control Centers, but not while it is being transmitted from one Control Center to another.

Reclamation does not recommend a NERC definition for monitoring. This term, uncapitalized, should continue to be used with its common definition.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT has proposed new language in this second draft which combines the previously suggested R2 into the already approved R1. The SDT has reviewed the TR to ensure that it is aligned with the language as written in the standard. Regarding “Figure 3”, clarifying language has been added to the TR to better reflect that the example shows a communications line that is exempt from CIP-012 via the 4.2.3 exemption. While the team has not added availability to the NERC glossary of terms, the team supports the use of the industry used NSIT definition in the IG and TR.

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer No

Document Name

Comment

Tri-State does not agree with the proposed language and see several distinct issues: 1) the term availability is ambiguous and difficult to measure for literal implementation. For example, is a 30-minute outage acceptable? 2) We do not believe that communication links should be included in the requirements, and instead focus solely on the data. This will provide maximum flexibility to the entity in how they comply with the requirement. Additionally, the inclusion of communication links implies that an entity must have dual circuit/redundant communication paths or that those circuits must be high availability. 3) Most of the time, entities must use an outside network (AT&T, Verizon, etc.) for communication between Control Centers. Thus, the availability, redundancy, and restoration plans of most communication links between control centers are out of the entity's control. 4) There does not appear to be flexibility for risk-based decision-making, nor flexibility in solutions to address when there is an outage.

Likes 0

Dislikes 0

Response

Thank you for your comment. The use of the NIST definition of availability addresses the concern about outage time acceptability regarding communication links. 1. The team also incorporated the language “to mitigate the risks” which the team asserts does not require 100% availability.

2 and 4. In the new combined language within the existing approved R1 language the SDT asserts that the revised language should address this concern.

3. The team asserts that planning for restoration, and identification of responsibility regarding availability is within an entities control.

Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1)

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>The ISO/RTO Council Standards Review Committee (IRC SRC)[1] supports the SDT’s efforts to model the proposed language for requirement R2 after an existing requirement, R1. That said, we recommend the SDT adopt the following proposed modifications as the language from R1 may not be a “best fit.” (Note: The “Recommended language” for Part 2.1 below is loosely modeled after that of another requirement, that in EOP-008-2, Part 1.6.)</p> <p>In addition, we recommend the SDT consider the following in crafting the language in standard:</p> <ul style="list-style-type: none"> • Explicit language that allows (but does not require) Responsible Entities to use redundant, diverse routing or backup communication capability as one action taken to provide for availability and recovery <p>Recommended language:</p> <p>R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links <i>used to transmit data between Control Centers for the purpose of</i> Real-time Assessment and Real-time monitoring. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]</p> <p>2.1. <i>The actions taken to provide for the availability and recovery of communication links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring, for which the use of redundant, diverse routing or backup communication capability is allowed but not required.</i></p> | |

2.2. *Identification of the roles for personnel involved in implementing the Responsible Entity’s plan.*

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links *used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring.*

[1] For purposes of these comments, the IRC SRC includes the following entities: IESO, ISO-NE, MISO, NYISO, PJM and SPP.

| | |
|-------|---|
| Likes | 0 |
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| | |
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| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback. The SDT has combined the language into R1 and believes that the suggested modifications to 2.1 is covered in the newly proposed R1.1. The SDT asserts that the R2.3 suggestions are covered in the rewriting in the subparts to include transmission of Real-time Assessment and Real-time monitoring data.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

Availability is outside of most entities’ control because of outsourcing communications between locations. Also, IRO-010, TOP-003, and COM Standards address availability already. Previously industry gave this feedback. We recommend this SDT supports the earlier industry feedback.

The SDT should use the same language as R1, i.e., talk only about the data and not communication links. We suggest the following wording:

The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.

R1 makes reference to communications “between any applicable Control Centers”, while the proposed R2 is a more general “between Control Centers”. Overall, this revision should clearly state that these requirements are only applicable to communications between “applicable” Control Centers.

NOTE: the summary of R2 in the Technical Rationale document states “Between applicable Control Centers”

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| Likes | 0 |
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| Dislikes | 0 |
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Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1. The team has also modified the language to emphasize data and not communication links. Please see the Implementation Guidance for a discussion about timely and availability. The responsible entity has the flexibility to define availability through the IRO and TOP standards which also address this topic.

The Technical Rationale has been updated to reflect the current proposed language.

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

We agree that conceptually the new requirement and parts meet the FERC directive to provide availability of the data and communication links. However, we feel that the lead-in sentence to the parts “the plan shall include” should be edited to the “the plan shall”.

R2.1 can be edited to read, including the lead-in statement:

“The plan shall:

2.1. Address how the Responsible Entity provides availability of communications links and dta used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers”

R2.2 can be edited to read, including the lead in statement:

“The plan shall:

2.2. Address communications and data flow restoration to maintain continuity of operations in the Responsible Entity’s plan”

This language could allow more flexibility to describe the manner in which each objective is achieved.

We also recommend removing R2.3, there are other reliability requirements that address an entity’s obiligation to keep the data and communication links available.

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| Likes | 0 |
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| Dislikes | 0 |
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Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which has previously been approved. In addition, TOP and IRO do address availability but is focused on data exchange infrastructure within the primary control center, it does not address data in motion between other control centers.

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
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Comment

Consider including verbiage from the technical rationale within the requirements’ language or include the technical rationale as part of the standard. For example, from the draft R2 language “...provide for the availability of communications links and data used for Real-time assessment and Real-time monitoring...” is unclear, while from the technical rationale “These availability measures can be achieved via varied solutions including, but not limited to, redundant communication links and data paths. When identifying the methods used to provide

availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” is much more descriptive and more clearly explains what the requirement is trying to achieve.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 to make it clear. The SDT cannot go further to prescribe solutions. That information is addressed in Implementation Guidance.

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

Concerning the second part of the FERC directive in 866 on incident response & continuity of operations we ask for clarification because in our opinion new R2 requirement does not appear to us to meet the FERC directives.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 to make it clear. Part 1.2 specifically addresses recovery and the SDT asserts that the language meets the FERC Order 866.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer No

Document Name

Comment

Southern does not agree with the proposed language as written. The language “provide for the availability of communications links and data” indicates there are two separate and distinct objects of the availability objective; the comm links and the data. This implies that an entity’s plan must cover not only the data-in-motion between the Control Centers, but also the production (and potentially consumption) of the data by systems within the Control Centers; an area already covered by the requirements in IRO-002, IRO-010, EOP-008, and TOP-003 standards.

It also seems that “communications links and data” is the antecedent of the “while being transmitted” phrase, but comm links are not transmitted.

Southern suggests an approach that allows entities the flexibility to focus on either the data-in-motion or the comm links the data traverses. Essentially it is a change from a “comm links AND data” construct to a “comm links OR data” construct as follows:

The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of:

- Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; or
- Communications links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers.

The Responsible Entity is not required to include oral communications in its plan...

This allows the entity to choose either a data-centric or comm link-centric view to meet the same objective of providing for the availability of the data-in-motion while being transmitted between Control Centers.

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|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1. The team has also modified the language to emphasize data and not communication links. The SDT asserts that the inclusion of transmit and transmission of data address the concern about overlap with other standards regarding communication links as well as the fact that they are not being transmitted. A Responsible Entity must identify how the availability objective is met. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Please see the draft implementation guidance for additional details.

Constantin Chitescu - Ontario Power Generation Inc. - 5

| | |
|---------------|----|
| Answer | No |
|---------------|----|

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|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

OPG supports NPCC RSC's comments.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

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|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. Please see response to NPPC.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

PacifiCorp agrees that conceptually the new requirement and parts meet the the FERC directive to provide for the availability of the data and communication links. However, we feel that the the requirement should be more objective based and include "protections for the availability" as suggested in FERC order 866 and the lead in sentence to the parts "the plan shall include" should be edited to the "the plan shall". Also, by adding "applicable" to R2, maintains consistent Control Center scoping between requirements R1 and R2.

R2 could be edited to read:

“R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) that address protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall:”

Then R2.1 could be edited to read, including the lead in statement:

“The plan shall: 2.1. Address how the Responsible Entity provides protections for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers”

R2.2 could be edited to read, including the lead in statement:

“The plan shall: 2.2. Address availability restoration of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers”

We feel this language would allow more flexibility to describe the manner in which each objective is achieved.

We also recommend removing R2.3, the protections for the availability and coordination between Entities would be covered by implementing R2.2.

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| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which was previous approved. The draft language now includes identification of security and availability protections.

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

ERCOT interprets Order 866 to mean that FERC would like to see a proactive obligation to promote availability of communications links and data between control centers through redundancy and/or service level agreements, for example. As written, ERCOT has concerns as to whether the draft standard addresses the specific directives in the FERC Order. As such, ERCOT proposes a requirement to address FERC's proactive perspective. Further, ERCOT agrees with the SDT and the comments of the ISO/RTO Standards Review Committee that the standard should require a plan to provide for the continuity of data if the primary communication link is unavailable or compromised and that coordination of responsibility between Control Centers should be required. ERCOT offers the language below as one way to address these three related concepts.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to promote the availability of communications links between Control Centers and data used for Real-time Assessment and Real-time monitoring. This does not include oral communications. The plan(s) shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

2.1. Measures the Responsible Entity will take to promote availability of communication links and data transmitted between Control Centers used for Real-time Assessment and Real-time monitoring. Examples include, but are not limited to, contracted service levels and redundant or backup communication capabilities.

2.2. An Operating Process to recover unavailable or compromised communication links between Control Centers, including:

2.2.1. The use of redundant or backup communication capability to maintain data availability between Control Centers;

2.2.2. Actions taken to restore communications links and data flow;

2.2.3. Methods of identifying the duration of data loss, if any, related to an incident involving loss of communication links between Control Centers; and

2.2.4. Roles and responsibilities of personnel implementing the Responsible Entity's Operating Process.

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for availability of communications links between Control Centers.

Likes 0

Dislikes 0

Response

Thank you for your response. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1. The provided suggested language above includes elements of a plan that the requirement language would allow a responsible entity to have in place but may not be applicable to every entities configuration. Please see implementation guidance for examples in which these elements can be addressed in your plan.

Russell Noble - Cowlitz County PUD - 3

Answer No

Document Name

Comment

Cowlitz agrees with the spirit of the requirement, but finds the use of "availability" too vague. Currently the standard only addresses Control Center (CC) data communication with another CC that exists. However, the new proposed requirement implies data communication must exist between Control Centers with no criteria on how each responsible entity should identify who the communication links must be made available to, or if each responsible entity should identify those CCs where data is required. Current wording will create enforcement and monitoring uncertainty.

Likes 0

Dislikes 0

Response

Thank you for your comment. The concept of availability is dependent upon the data that is the subject of the availability. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The word availability is currently being used as that was the

term included in FERC Order 866 and the SAR. Please see the Implementation Guidance for a discussion of Control Centers and the exclusions within CIP-012 in the reference model.

sean erickson - Western Area Power Administration - 1

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|---|
| Document Name | CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx |
|----------------------|---|

Comment

Thank you for your comment. Thank you for your response. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which was already approved which has eliminated the “how” language.

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| Likes | 0 |
|-------|---|

| | |
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| Dislikes | 0 |
|----------|---|

Response

Glenn Barry - Los Angeles Department of Water and Power - 5

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

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|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Although the SDT revised CIP-012-1 and added R2 to meet the directives outlined in FERC Order No. 866, the requirement may be better placed under a TOP standard. This requirement does not address Cyber Infrastructure Protection.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

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| Dislikes | 0 |
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Response

Thank you for your comment. The SDT has been charged with addressing the FERC directive. FERC order 866, P27 is FERC response to industry comment from the NOPR which states TOP-001-5 R20 is duplicative in the control center, not between control centers. Order 866 was issued to address the issue between control centers.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

FE would have preferred language similar to TOP-001 R20 - "shall have data exchange capabilities with redundant and diversely routed data exchange infrastructure."

Likes 0

Dislikes 0

Response

Thank you for your response. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1. Please see the Implementation Guidance for a discussion on redundancy and diversity.

Bruce Reimer - Manitoba Hydro - 1

Answer Yes

Document Name

Comment

We appreciate the work accomplished so far in the drafting of R2 and its parts

but we recommend removing "how" language in R2.1 and R2.2 and suggest the following wording:

“2.1. Identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring

2.2. Identify restoration and continuity of operations to maintain and restore available communications links and data transmitted between Control Centers; “

Likes 0

Dislikes 0

Response

Thank you for your response. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which was already approved which has eliminated the “how” language.

Gladys DeLaO - CPS Energy - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Stacy Lee - City of College Station - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dan Bamber - ATCO Electric - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Scott McGough - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| No | |
| NCPA agrees that other entity statements that the draft language does not clearly define the term "availability". While we generally agree that availability is part of the cyber security triad, this language is targeted only to the communication links, which reside outside the scope of | |

the protected BES Cyber Systems and is considered more of an operational concern than what the prior CIP standards address with regards to infrastructure protection.

Further, redundancy is a large part of any solution to increase availability, however redundancy has been specifically excluded from the evaluation criteria when defining BES Cyber Systems in CIP-002. This appears to be inconsistent with the objective messaging of the prior standards.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The concept of availability is dependent upon the data that is the subject of the availability. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The word availability is currently being used as that was the term included in FERC Order 866 and the SAR. Please see the Implementation Guidance for on redundancy and diversity.

2. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Russell Noble - Cowlitz County PUD - 3

Answer No

Document Name

Comment

The modification creates compliance uncertainty and therefore cost efficiency is lost.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer No

Document Name

Comment

We have no basis to determine the cost effectiveness of implementing this standard. But we feel that changing R2 to be more objective based would allow flexibility to implement the requirements in a manner that is cost effective to the entity.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes the new proposed R1 is objective based.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to NPCC RSC.

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer No

Document Name

Comment

We have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>Per the comment to #1, we suggest availability is already covered by other Standards.</p> <p>The SDT is forcing the entities to invest in at least two means (communication links and data) to achieve its goal of data availability. The SDT should allow the entities the flexibility to ensure the availability of the data, in whichever means deemed sufficient by the entity.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Please see the response to question 1. In addition, the team has modified the language to require availability protections and measures for recovery.</p> | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>As currently drafted, the requirements seem to imply that data and communication paths be available all the time. This would require high availability and redundancy of both data and communication paths, which would most certainly be very costly. We feel there are other methods to ensure reasonable availability of data without mandating high availability and redundancy of communication links.</p> <p>Additionally, high availability across communication links that an entity does not own end to end would likely require redundant network</p> | |

links/paths. R1 would apply to all redundant links as well, so they'd all have to be protected with encryption or the like. The hardware, separate conduit, software, service, and labor costs for redundancy would be significant.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language.

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer No

Document Name

Comment

Prior to proposing additional modifications, Reclamation also recommends each SDT take additional time to completely identify the scope to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Reclamation recommends the SDT take particular care to coordinate CIP-012 changes with existing drafting teams for existing related standards to ensure consistency and avoid duplication, specifically, Project 2016-02 and Project 2019-03. This will help to minimize churn among standard versions, reduce the risk that standards will conflict with one another, and better align the standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. These comments have been passed onto NERC Standards staff.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>N&ST believes that as written, the draft “Technical Rationale” document strongly implies that Responsible Entities should employ redundant communication links between Control Centers to address R2. In some suburban and rural areas, this could be prohibitively expensive, of only marginal incremental benefit to availability (no options for path diversity), or both. While we agree that redundant links should be considered, we recommend the Technical Rationale document be revised to acknowledge this may not be a viable approach to mitigating availability threats in all cases.</p> <p>N&ST notes, further, that while FERC Order 866 suggests it might be possible for a Responsible Entity to establish availability-related service level agreements with one or more network service providers, the Technical Rationale document makes no mention of this option.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language</p> <p>The technical rationale document is written to explain the rationale behind the drafted language in the standard. In addition, the Implementation Guidance provides examples of how an entity could comply with the standard but does not cover all possible options. Please see the Implementation Guidance for a discussion on redundancy and diversity. An entity is free to pursue options outside of the IG that fit their unique circumstances.</p> | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | No |
| Document Name | |
| Comment | |

| | |
|---|----|
| MPC agrees with comments from Duke. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment, please see response to Duke. | |
| Nurul Abser - NB Power Corporation - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| The effort to measure, evaluate and assess the ‘availability’ of communication links would be quite burdensome on us (the entity) as well as our partners as a link works in two directions and both entities share responsibility on maintaining it. In addition, “availability” implies some degree of analysis that calculates a measurable value which is compared to a target – neither of which is identified in the SAR. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The word availability is currently being used as that was the term included in FERC Order 866 and the SAR. Please see the implementation guidance for more examples which address availability. | |
| Michael Whitney - Northern California Power Agency - 3 | |
| Answer | No |
| Document Name | |
| Comment | |

| | |
|--|----|
| reference NCPA Chris Carnesi's comments | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment, please see response to NCPA. | |
| Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3 | |
| Answer | No |
| Document Name | |
| Comment | |
| The proposed prescriptive language of the three subparts creates an administrative burden of obtaining evidence that does not improve reliability of the Bulk Electric System. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The team has modified the draft language to fit within the already approved R1 language and maintains it does not create an administrative burden. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | No |
| Document Name | |
| Comment | |

NPCC: Per the comment to #1, we suggest availability is already covered by other Standards

Likes 0

Dislikes 0

Response

Thank you for your comment. The team asserts that planning for restoration, and identification of responsibility regarding availability is within an entities control. In addition, FERC Order 866 directed modifications to CIP-012 to cover availability.

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer No

Document Name

Comment

Per the comment to #1, availability is already covered by other Standards (IRO-010, TOP-003 and COM-001 Standards). Including availability in CIP-012 introduces an additional requirement for a compliance program to carefully review and maintain all plans/procedures related to standards mentioning availability to avoid potential non-compliance due to possible conflicts in requirements or applicability of measures involved to address availability. This could involve duplication of effort and increase administrative burden beyond what is required to ensure power system reliability in this case.

If Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document), “timely” could have a cost associated depending on what timely is defined (or understood/expected as). We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has added information about the word “timely” to the Implementation Guidance - specifically it’s alignment with existing and approved O&P Standards. FERC Order 866 instructed the team to modify CIP-012. In addition, the draft language has been modified to fit into the structure of already approved R1 language.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer No

Document Name

Comment

The proposed prescriptive language of the three subparts creates an administrative burden of obtaining evidence that does not improve reliability of the Bulk Electric System.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to fit within the already approved R1 language and maintains it does not create an administrative burden.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

It is unclear at this time what costs BC Hydro would incur, especially with respect to agreements with third parties and agreements required to implement R2.3. The ambiguity of "availability" could result in costs beyond what is needed to fulfill the intent.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections.

Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6

Answer No

Document Name

Comment

SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets the security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language.

Daniela Atanasovski - APS - Arizona Public Service Co. - 1

Answer No

Document Name

Comment

AZPS does not agree with the proposed modifications of CIP-012-2 being cost effective based on the response provided for question #1.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to question 1.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA’s perspective regarding uncertainty of outputs.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to question 1.

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer No

Document Name

Comment

PG&E cannot agree the modifications are cost effective since the work to complete the implementation of CIP-012-1 is still ongoing and any work to implement CIP-012-2 modifications cannot be started until the full scope of those modifications is known. PG&E would have preferred having an “Unknown” option to select for Question 2 since that would have been a more accurate response.

Likes 0

Dislikes 0

Response

Thank you for your comment.

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to question 1.

Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer No

Document Name

Comment

SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power

Answer No

Document Name

Comment

The proposed modifications are not cost effective. In order to provide redundant communication between control centers with no single points of failure, as specified in the Technical Rational, two separate carrier networks would be needed. There are limited carriers who can provide this service, so if two communication carriers need to be contracted, it will be difficult to secure them. Additionally, requiring a second carrier doubles the compliance cost with limited benefits to reliability.

Likes 1 Snohomish County PUD No. 1, 3, Chaney Holly

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language. Please see the Implementation Guidance for a discussion on redundancy and diversity.

Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE

Answer No

Document Name

Comment

CEHE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R2 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for an entity to design a solution that meets security goals and is cost effective. This allows varied interpretations, which may result in compliance risks.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language. Please see the Implementation Guidance for a discussion on redundancy and diversity.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Implementation and maintenance of redundant links to all facilities within scope of the CIP-012-2 standard would be extremely costly. Dedicated equipment and personnel would be required to maintain and preserve the integrity of the links to comply with the standard.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to focus on availability protections. The draft has also been modified to fit within the already approved R1 language. Please see the Implementation Guidance for a discussion on redundancy and diversity.

Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| Duke Energy does not agree that the cost impact is not clear. The addition of technical controls to monitor continuous data flow, as implied by the Technical Rational as being necessary for compliance, presents an uncertain cost and impact and therefore we cannot agree that it is cost effective at this time. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The draft has also been modified to fit within the already approved R1 language. Please see the Implementation Guidance for examples regarding redundancy and diversity. | |
| Joshua Andersen - Salt River Project - 1,3,5,6 - WECC | |
| Answer | No |
| Document Name | |
| Comment | |
| To be effective, it is going to take money, resources and planning to implement, and monitoring both from the primary entity to the register entity, and the primary Control Center and backup Control Center. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| sean erickson - Western Area Power Administration - 1 | |
| Answer | No |

| | |
|---|---|
| Document Name | CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Once the requirement R2 has been clearly defined and established the implementation can be accomplished in a cost effective manner. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |

Increasing availability and security generally comes with increased cost, but Black Hills Corporation doesn't think the standard is requesting anything out of profile

Likes 0

Dislikes 0

Response

Thank you for your comment.

larry brusseau - Corn Belt Power Cooperative - 1

Answer Yes

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |

| | |
|---|--|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Angela Wheat - Southwestern Power Administration - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 1 | Lincoln Electric System, 1, Johnson Josh |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Marcus Moor - Evergy - 3 | |
| Answer | Yes |

| | |
|-----------------------------------|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thomas ROBBEN - Evergy - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Allen Klassen - Evergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Derek Brown - Evergy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Bruce Reimer - Manitoba Hydro - 1 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| JT Kuehne - AEP - 6 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Oliver Burke - Entergy - Entergy Services, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| | |
| Scott McGough - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Benjamin Winslett - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Dan Bamber - ATCO Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Glenn Barry - Los Angeles Department of Water and Power - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

| | |
|--|-----|
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | |
| Document Name | |
| Comment | |
| No response. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |

| Comment | |
|--|---|
| Texas RE does not have comments on this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your response. | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| No | |
| Based on how the draft language is written we don't know what is determined to be acceptable "availability" and is difficult to discern future increases in associated costs. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT has added information about availability to the Implementation Guidance - specifically it's alignment with existing and approved O&P Standards. | |

3. The SDT is proposing a 24-month implementation plan. Do you agree with the proposed timeframe? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

BPA recommends a 36-month implementation plan to allow for comprehensive planning, development, allocation of personnel, RFP / vendor vetting, contract procurement, identifying and purchasing goods, execution of equipment and testing to support implementation of CIP-012-2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes that a 24 month implementation plan is appropriate.

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs.

Likes 0

| | |
|--|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to question 1. | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | No |
| Document Name | |
| Comment | |
| LCRA is unable to answer this question due to the inability to know what this requirement will entail. See the response to question 1 for additional details on LCRA's perspective regarding uncertainty of outputs. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to question 1. | |
| Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro | |
| Answer | No |
| Document Name | |
| Comment | |
| At this time BC Hydro is unable to support the proposed 24-month implementation plan since, without plans in place, the timeframe required for implementation is currently unknown. | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT believes that a 24 month implementation plan is appropriate.

Michael Whitney - Northern California Power Agency - 3

Answer No

Document Name

Comment

reference NCPA Chris Carnesi's comments

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to NCPA.

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer No

Document Name

Comment

It is difficult to judge at this point whether 24 months would be sufficient, as what would be required for compliance is not clear. Please note that it appears a solution to R2 may increase an entity's scope for R1. Therefore the implementation plan should also consider additional time for new R1 scope.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which has previously been approved and believes this addresses the concern above. The SDT believes that a 24 month implementation plan is appropriate.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to NPCC RSC comments.

sean erickson - Western Area Power Administration - 1

Answer No

Document Name [CIP-012 - 2020-04_Unofficial_Comment_Form_WAPA.docx](#)

Comment

Thank you for your comment.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E agrees with the 24-month Implementation Plan. PG&E would recommend the SDT consider allowing for an earlier adoption option as part of the Implementation Plan similar to what the Project 2019-02 BES Cyber System Information Access Management SDT placed in their Implementation Plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Entities are free to implement the requirements earlier if they desire. The SDT believes that implementing CIP-012-2 before its enforcement date does not violate CIP-012-1 and therefore language in the implementation plan allowing this is not necessary. The SDT asks that if a scenario exists that this entity is aware of which might violate CIP-012-1 please bring it to the SDT's attention. Implementing version 2 prior to its effective date, the SDT asserts those measures would be thought of as a best practice up until version's 2 enforcement date. | |
| Daniela Atanasovski - APS - Arizona Public Service Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees with the 24-month implementation plan at this time. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment.

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer Yes

Document Name

Comment

We agree with the proposed 24-month implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer Yes

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Derek Brown - Evergy - 5

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Energys supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to EEI. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| NPCC: We agree with the proposed 24-month implementation plan. Request clarification on unplanned changes. What is the implementation plan for unplanned changes? | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Planned and unplanned changes would be a change outside the scope of the current SAR that might require changes to CIP-002. The SDT does not believe that unplanned changes apply to CIP-012. However if this entity sees a scenario in which unplanned changes would be applicable please bring it to the attention of the SDT in the next comment period or industry webinar. | |
| Allen Klassen - Evergy - 1 | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to EEI. | |
| Thomas ROBBEN - Eversource - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to EEI. | |
| Marcus Moor - Eversource - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|--|
| Energy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 3. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to EEI. | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Alliant Energy supports the 24-month implementation plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The NSRF supports the 24 month implementation plan. | |
| Likes | 1 |
| | Lincoln Electric System, 1, Johnson Josh |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI supports a 24-month Implementation Plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| larry brusseau - Corn Belt Power Cooperative - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| I supports the 24 month implementation plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |

| | |
|---|-----|
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee | |
| Answer | Yes |
| Document Name | |
| Comment | |
| We agree with the proposed 24-month implementation plan. | |
| Request clarification on unplanned changes. What is the implementation plan for unplanned changes? | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Planned and unplanned changes would be a change outside the scope of the current SAR that might require changes to CIP-002. The SDT does not believe that unplanned changes apply to CIP-012. However if this entity sees a scenario in which unplanned changes would be applicable please bring it to the attention of the SDT in the next comment period or industry webinar. | |
| Kevin Salsbury - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| NV Energy believes the 24 month implementation timeline is appropriate. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |

Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Seems reasonable with the 24 month implementation allowing for potential contract modifications when vendor provided evidence may be required.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Southern agrees with the 24-month implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| We believe 24 months is an appropriate timeframe to implement the new requirement. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| None. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

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|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Joshua Andersen - Salt River Project - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

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|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Glenn Barry - Los Angeles Department of Water and Power - 5 | |

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|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kelsey Settle - Nova Scotia Power Inc. - NA - Not Applicable - NPCC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Stacy Lee - City of College Station - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

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|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Dan Bamber - ATCO Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Benjamin Winslett - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Scott McGough - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 6, Group Name OKGE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

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|--|-----|
| Response | |
| | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Oliver Burke - Entergy - Entergy Services, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| JT Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|---|-----|
| Eli Rivera - CenterPoint Energy Houston Electric, LLC - NA - Not Applicable - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Bryan Koyle - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Larry Rogers - Southern Indiana Gas and Electric Co. - 3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

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|--|-----|
| Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Bruce Reimer - Manitoba Hydro - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

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|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Angela Wheat - Southwestern Power Administration - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Nurul Abser - NB Power Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Becky Webb - Exelon - 6 | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Bobbi Welch - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee 2020-04 Modifications to CIP-012 (Draft 1) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Jendras - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

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|--|-----|
| Dislikes | 0 |
| Response | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Russell Noble - Cowlitz County PUD - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi - 3,4,5,6 - WECC | |

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|----------------------|--|
| Answer | |
| Document Name | |
| Comment | |
| No | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

4. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale document, if desired.

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Document Name

Comment

Some implementations of CIP-012 R1 are including the use of third party providers to establish and manage the communication links to maintain integrity and confidentiality of the data transported on the communication links. Part of the third party's obligation will be to maintain availability of the communication links. How the third party approaches communications link availability may not be visible to the Responsible Entity, therefore a requirement to "identify" how this is done might be outside our ability legally or otherwise to obtain.

For Example: At some point in the restoration process when the communication link goes down, the Responsible Entity might have an obligation to call a service desk to open up an emergency repair ticket with the Thrid Party provider. From there the restoration responsibility

is transferred. The only information the Responsible Entity would have to audit is a time stamp when the “network” went down, and documentation of the call or email to the Third Party’s service desk. Then possibly a timestamp when the “network” is restored if the right technology is implemented to capture this. We don’t believe this is the intent of the SDT to create an audit of the administrative dealings between the Responsible Entity and third party service provider. However, describing this process in the Responsible Entity’s CIP-012 Plan, would demonstrate how the Responsible Entity addresses the suggested R2.2 language in Question 1 above. Any documented correspondence between the Third Party and Responsible Entity could be used to demonstrate implementation of R2.2.

However, where the Responsible Entity manages and operates the infrastructure to support CIP-012 requirements, then we believe adding more details to “addressing” how the Responsible Entity is protecting communication links availability makes more sense, but still not being required to “identify” the specific components and operations of how that communications infrastructure works to accomplish this

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 and asserts this addresses the above mentioned concern. More information on this topic has been added to the draft implementation guidance and technical rationale.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG supports NPCC RSC’s comments.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to NPCC.

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5

Answer

Document Name

Comment

Some implementations of CIP-012- R1 are including the use of third party providers to establish, manage and maintain integrity and confidentiality of the data transported on the communication links. The third party's obligation will be to maintain availability of the communication links, therefore, how the third party approaches communications link availability may not be visible to the Responsible Entity. So a requirement to "identify" how this is done might be outside our ability legally or otherwise to obtain.

At some point in the process when the communication link goes down, the Responsible Entity might have an obligation to call a service desk to open up an emergency repair ticket with the Third Party provider. Then from there responsibility is transferred. The only information we'd have to audit is a time stamp when the "network" went down, and documentation of the call or email to the Third Party's service desk. Then a timestamp when the "network" is restored. We don't believe this is the intent of the SDT to create an audit of the administrative dealings between the Responsible Entity and third party service provider.

However, where the Responsible Entity manages and operates the infrastructure to support CIP-012 requirements, then we believe "addressing" how the Responsible Entity is maintaining communication links availability makes more sense, but not be required to "identify" the components and operations of how that communications infrastructure works to accomplish this.

NV Energy also would like to provide the O&P requirements that do address to some extent the availability of communication paths to interconnected Entities:

TOP-001-5

R20. Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

R21. Each Transmission Operator shall test its primary Control Center data exchange capabilities specified in Requirement R20 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Transmission Operator shall initiate action within two hours to restore redundant functionality.

R23. Each Balancing Authority shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Balancing Authority's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Transmission Operator, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and analysis functions.

R24. Each Balancing Authority shall test its primary Control Center data exchange capabilities specified in Requirement R23 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Balancing Authority shall initiate action within two hours to restore redundant functionality.

IRO-002-7

R2. Each Reliability Coordinator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Reliability Coordinator's primary Control Center, for the exchange of Real-time data with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for performing its Real-time monitoring and Real-time Assessments.

R3. Each Reliability Coordinator shall test its primary Control Center data exchange capabilities specified in Requirement R2 for redundant functionality at least once every 90 calendar days. If the test is unsuccessful, the Reliability Coordinator shall initiate action within two hours to restore redundant functionality.

EOP-008-2

R1. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. This Operating Plan for backup functionality shall include:

1.1. The location and method of implementation for providing backup functionality.

- 1.2. A summary description of the elements required to support the backup functionality, These elements shall include:
 - 1.2.1. Tools and applications to ensure that System Operators have situational awareness of the BES.
 - 1.2.2. Data exchange capabilities.
 - 1.2.3. Interpersoanl Communications.
 - 1.2.4. Power source(s).
 - 1.2.5. Physical and cyber security.
- 1.3. An Operating Process for keeping the backup functionality consistent with the primary control center.
- 1.4. Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.
- 1.5. A transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.
- 1.6. An Operating process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requiement R1, Part 1.2. The Operating process shall include:
 - 1.6.1. A list of all entities to notify when there is a change in operating locations.
 - 1.6.2. Actions to manage the risk to the BES during the transition from primary to backup functionality, as well as during outages of the primary or backup functionality.
 - 1.6.3. Identificaiton of the roles for personnel involved during the initiation and implementation of the Operating Plan for bakup functionality.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 and asserts this addresses the above mentioned concern. More information on this topic has been added to the draft implementation guidance and technical rationale.

The SDT has been charged with addressing the FERC directive. FERC order 866, P27 is FERC’s response to industry comments from the NOPR which states TOP-001-5 R20 is duplicative in the Control Center, not between Control Centers. Order 866 was issued to address the issue between Control Centers.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer

Document Name

Comment

Request clarification/example of a CIP Exceptional Circumstance for R2 since this requirement seems focused on contingencies.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which also includes CEC language which was previously approved. The SDT asserts that the combined language has elements that are more appropriate for a CEC scenario.

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Document Name

Comment

As detailed above, high availability would likely require redundancy. To keep costs manageable for the industry, we suggest allowing a non-encrypted redundant link for high availability when the primary link is down and/or under emergency situations.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the implementation guidance for more information. Version 1 included “except under CIP Exceptional Circumstances” phrasing within the Standard regarding the implementation of “the plan”, which version 2 has retained.

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Document Name

Comment

Reclamation recommends that CIP-012 include requirements to review, test, use, and update the required plans similar to CIP-008/CIP-009 requirements. The requirement to implement a plan may convey these things, but is vague and could be confusing. Reclamation recommends the SDT modify CIP-012 to follow the predictable approach of:

R1 – Identify risks that could allow unauthorized disclosure, unauthorized modifications, or unacceptable availability.

R2 – Identify controls to minimize risks to acceptable levels.

R3 – Document a plan to implement and maintain controls identified in R2.

R4 – Annually (not to exceed 15 months) test and validate the R3 plan and controls.

It is not clear how a CIP Exceptional Circumstance would impact the mitigation of the risk of unauthorized disclosure or modification of Real-time Assessment and Real-time monitoring data; therefore, Reclamation recommends that a provision for CIP Exceptional Circumstances is not necessary in CIP-012.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which SDT believes better reflects the risk mitigation approach described above. The SDT also believes that the combined R1 language, which includes previously approve CEC language, has elements that are more appropriate for a CEC scenario.</p> <p>Regarding testing, FERC stated in Order 866 that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The SDT believes that FERC’s emphasis is not on testing the redundancy but on recovery from failure of redundancy.</p> | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | |
| Document Name | |
| Comment | |
| <p>N&ST noted that during the May 18, 2021 SDT CIP-012 webinar, a question was asked about whether “endpoint” devices, such as ICCP servers and nodes, would be in scope for R2. An SDT representative responded by saying he did not believe so. N&ST agrees with this opinion but strongly believes this exclusion should be made explicit in R2. The last sentence could be modified to say,</p> <p>“The Responsible Entity is not required to include (1) oral communications, or (2) endpoint devices such as ICCP servers and nodes in its plan.”</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. The SDT has modified the draft language and the focus is on data in motion. The team maintains that how an entity implements CIP-012-2 would determine which devices are in scope. Oral communications was included in the approved CIP-012-1 and is not in the scope of this drafting team to modify.

larry brusseau - Corn Belt Power Cooperative - 1

Answer

Document Name

[Project 2020-04 Comment_Form_MRO NSRF_CIP-012.docx](#)

Comment

I agree with the NSRF's comments for #4 as uploaded.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to NSRF.

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Document Name

Comment

MPC agrees with comments from Duke.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to Duke.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Becky Webb - Exelon - 6

Answer

Document Name

Comment

R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3?

"4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center."

We'll need to make sure we understand that "exclusion" so that we can provide clear guidance each time we are asked about it.

- 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers?

There are some concerns around what “data” is. The protections for the availability of communications links...” isn’t a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.

Likes 0

Dislikes 0

Response

Thank you for your comment. Section A.4.2.3 language was approved in CIP-012-1 and was addressed in the Technical Rationale document drafted by the 2016-02 drafting team. In addition, it remains in the TR that accompanies this posting which is being updated by the 2020-04 team.

The team has modified the draft language to fit into R1. In the proposed draft, R1.2 addresses recovery, R1.4 now includes language about applying security and availability protections to data in motion, and ownership is not the focus of the requirement. Availability is defined as ensuring timely and reliable access to and use of information. This is based on a NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed; particularly in how the entity’s Control Center has identified its “timing needs” around RTA and RTM data with respect to the O&P Standards. Please see the draft implementation guidance for examples.

Angela Wheat - Southwestern Power Administration - 1

Answer

Document Name

Comment

The Technical Rationale states (PDF pg 5, top paragraph) that, “the SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both...” However, this language uses “or” while R2 uses “and”. The use of “and” is understood to indicate that all elements must be addressed. It is clear that links and data (exchange infrastructure) are separate so stating that the Requirement’s intent is satisfied by only protecting one or the other (or both) is confusing.

Likes 0

| | |
|---|---|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The team has modified the draft language to fit within the already approved R1 language. | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Suggested Language with R2.3 removed.</p> <p>R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring. The Responsible Entity is not required to include oral communications in its plan. The plan shall: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]</p> <p>2.1. Identify the available communications links and data transmitted between Control Centers and used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;</p> <p>2.2. Identify restoration and continuity of operations to maintain and restore available communications links and data transmitted between Control Centers.</p> <p>Suggested Language with R2.3 remaining</p> <p>R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links used to transmit data between Control Centers and data used for the purpose of Real-time Assessment and Real-time monitoring. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]</p> | |

2.1. The actions taken to provide for the availability and recovery of communication links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring, for which the use of redundant, diversely routed or backup communication capability is allowed but not required.

2.2. Identification of the roles for personnel involved in implementing the Responsible Entity’s plan.

2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links used to transmit data between Control Centers for the purpose of Real-time Assessment and Real-time monitoring.

COMMENTS ON TECHNICAL RATIONALE

NSRF Member Recommended Technical Rational (TR) - for the following items and also requiring ERO approval of the TR in order to assist applicable Entities in complying with these proposed changes. This is part of the SDT’s compliance outreach.

a. That “communication links” are the medium (copper wire pairs, fiber lines, etc.) in which data is transmitted between Control Centers, and that the “data” is the set of information that is needed for Real-time Assessments and Real-time monitoring.

b. The TR should clearly address the applicability proposed in R1 and R2 to clearly state that the required plan addresses Real-time Assessment data between Control Centers (as in R1) and not data ingress or egress non-Control Center locations – such as from field devices communicated to Control Centers, notwithstanding, GOP Control Centers.

| | |
|---------|--|
| Likes 1 | Lincoln Electric System, 1, Johnson Josh |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your comment. The team has modified the draft language to fit within the already approved R1 language that does not currently contain references to communication links.

In the Technical Rationale section “Alignment with IRO and TOP Standards”, the SDT speaks explicitly about what data and links are in scope for CIP-012-2. In addition, the TR contains a section “CIP-012 Exemption (4.2.3) for certain Control Centers” addressing communication which is exempt from CIP-012.

Michael Whitney - Northern California Power Agency - 3

Answer

Document Name

Comment

reference NCPA Chris Carnesi's comments

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to NCPA.

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Document Name

Comment

Alliant Energy supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to MRO NSRF.

Kinte Whitehead - Exelon - 3

Answer

Document Name

Comment

R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that’s not clear is.... what does the exemption mean that is listed in section A. 4.2.3?

“4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.”

We’ll need to make sure we understand that “exclusion” so that we can provide clear guidance each time we are asked about it.

· 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers?

There are some concerns around what “data” is. The protections for the availability of communications links...” isn’t a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

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|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. Section A.4.2.3 language was approved in CIP-012-1 and was addressed in the Technical Rationale document drafted by the 2016-02 drafting team. In addition, it remains in the TR that accompanies this posting which is being updated by the 2020-04 team.

The team has modified the draft language to fit into R1. In the proposed draft, R1.2 addresses recovery, R1.4 now includes language about applying security and availability protections to data in motion, and ownership is not the focus of the requirement. Availability is defined as ensuring timely and reliable access to and use of information. This is based on a NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed. Please see the draft implementation guidance for some examples.

Cynthia Lee - Exelon - 5

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| Answer | |
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|--|---|
| Document Name | |
| Comment | |
| <p>R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3?</p> <p><i>"4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center."</i></p> <p>We'll need to make sure we understand that "exclusion" so that we can provide clear guidance each time we are asked about it.</p> <ul style="list-style-type: none"> · 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers? <p>There are some concerns around what "data" is. The protections for the availability of communications links..." isn't a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Section A.4.2.3 language was approved in CIP-012-1 and was addressed in the Technical Rationale document drafted by the 2016-02 drafting team. In addition, it remains in the TR that accompanies this posting which is being updated by the 2020-04 team.</p> <p>The team has modified the draft language to fit into R1. In the proposed draft, R1.2 addresses recovery, R1.4 now includes language about applying security and availability protections to data in motion, and ownership is not the focus of the requirement. Availability is defined as ensuring timely and reliable access to and use of information. This is based on a NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed. Please see the draft implementation guidance for some examples.</p> | |
| <p>Byron Booker - Byron Booker On Behalf of: Lee Maurer, Oncor Electric Delivery, 1; - Byron Booker</p> | |

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|--|--|
| Answer | |
| Document Name | |
| Comment | |
| No additional comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>R1 speaks to Confidentiality and Integrity, while R2 relates to Availability to complete the CIA triad. One question that's not clear is.... what does the exemption mean that is listed in section A. 4.2.3?</p> <p><i>"4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center."</i></p> <p>We'll need to make sure we understand that "exclusion" so that we can provide clear guidance each time we are asked about it.</p> <ul style="list-style-type: none"> 2.3 - Who determines who takes ownership of the said communication links, when ownership is different between two control centers? <p>There are some concerns around what "data" is. The protections for the availability of communications links..." isn't a concern but what is implied by data availability? Are we defining the amount of data that can be available during the plan? There is a level of ambiguity there and more clarity would assist responsible entities when developing plans.</p> | |

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Section A.4.2.3 language was approved in CIP-012-1 and was addressed in the Technical Rationale document drafted by the 2016-02 drafting team. In addition, it remains in the TR that accompanies this posting which is being updated by the 2020-04 team.</p> <p>The team has modified the draft language to fit into R1. In the proposed draft, R1.2 addresses recovery, R1.4 now includes language about applying security and availability protections to data in motion, and ownership is not the focus of the requirement. Availability is defined as ensuring timely and reliable access to and use of information. This is based on a NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed. Please see the draft implementation guidance for some examples.</p> | |
| Darnez Gresham - Berkshire Hathaway Energy - MidAmerican Energy Co. - 3 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Please consider adding examples of acceptable protections to the measure or Technical Rationale, especially when encryption isn't an available option.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Please see the draft Implementation Guidance for examples.</p> | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | |
| Document Name | |

Comment

Request clarification / example of a CIP Exceptional Circumstance for R2 since this Requirement seems focused on contingencies

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the draft language for the second ballot based on industry feedback and combined the language into R1 which also includes CEC language which was previously approved. The SDT asserts that the combined language has elements that are more appropriate for a CEC scenario.

John Galloway - John Galloway On Behalf of: Michael Puscas, ISO New England, Inc., 2; - John Galloway

Answer

Document Name

Comment

Availability is defined as “Ensuring timely and reliable access to and use of information” (per Technical Rationale document). We request that the drafting team include in guidance or technical rationale some description of factors that should drive Responsible Entity definition of “timely” in the context of availability of data for RTA/RTM.

Likes 0

Dislikes 0

Response

Thank you for your comment. This is based on a NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed. Please see the draft implementation guidance for some examples. The timeliness of the data is addressed in the O&P standards as referenced in the Technical Rationale section “Alignment with IRO and TOP Standards”.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

| | |
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| Answer | |
| Document Name | |
| Comment | |
| Please consider adding examples of acceptable protections to the measure or Technical Rationale, especially when encryption isn't an available option. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see the draft Implementation Guidance for examples. | |
| Daniela Atanasovski - APS - Arizona Public Service Co. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| AZPS has no additional comments for the standard drafting team to consider. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations | |
| Answer | |
| Document Name | |

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

LCRA is concerned that this requirement is subjective which may yield inconsistent audits. The Technical Rationale document notes that “when identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” Yet, there is not any indication on what level of risk reduction or availability achieved is sufficient. Does the desired result need to achieve a certain metric associated with undefined term “availability”?

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT maintains it is beneficial to the responsibly entity to have flexibility in mitigating the risk posed by loss of availability of data. The timeliness of the data is addressed in the O&P standards as referenced in the Technical Rationale section “Alignment with IRO and TOP Standards”.

Michael Johnson - Michael Johnson On Behalf of: Ed Hanson, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

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|--|--|
| Answer | |
| Document Name | |
| Comment | |
| PG&E appreciates the work of the CIP-012-2 SDT and has no additional comments at this time. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| LCRA is concerned that this requirement is subjective, which may yield inconsistent audits. The Technical Rationale document notes that “when identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances.” Yet, there is not any indication on what level of risk reduction or availability achieved is sufficient. Does the desired result need to achieve a certain metric associated with undefined term “availability”? | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. The SDT maintains it is beneficial to the responsibly entity to have flexibility in mitigating the risk posed by loss of availability of data. The timeliness of the data is addressed in the O&P standards as referenced in the Technical Rationale section “Alignment with IRO and TOP Standards”. | |

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike, Group Name Tacoma Power

Answer

Document Name

Comment

FERC Order No. 866 specifies that Requirements are needed to ensure availability between Control Centers, but Entities do not have control of communication systems or lines outside of their footprint. Tacoma Power recommends that the scope of CIP-012 R2 be limited to the infrastructure Entities control within its own footprint, similar to TOP-001. However, this would then exacerbate the double jeopardy between TOP-001 and CIP-012.

Likes 1

Snohomish County PUD No. 1, 3, Chaney Holly

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to fit into already approved R1 language. In the proposed draft, R1.2 addresses recovery, R1.4 now includes language about applying security and availability protections to data in motion, and communication systems or line ownership is not the focus of the requirement. TOP-001 covers your own control center but not between control centers, FERC order 866 directed the team to modify CIP-012.

Meaghan Connell - Public Utility District No. 1 of Chelan County - 5, Group Name CHPD

Answer

Document Name

Comment

CHPD recommends that the drafting team add language that clarifies CIP-012-2 monitoring is intended to be the successful data flow between control centers, and the content or completeness of that data is not the focus of R2.

In addition, CHPD recommends removal of “restoration” from requirement R2.2. Restoration of data does not apply to communication links, and restoration of data is most likely associated with BES systems or BES cyber assets (e.g., SCADA servers, RTUs, etc.) covered by CIP-009.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to fit into already approved R1 language to address the mitigation of risk posed by loss of availability of data while being transmitted. The team has modified the language to require availability protections and measures for recovery of the links.

JT Kuehne - AEP - 6

Answer

Document Name

Comment

We ask the SDT to consider adding additional bounds around the use of “availability”. In current form, there is significant room for interpretation as to the desired state of “availability”. Specifically in R2.2, “data flow restoration to maintain continuity of operations” seems to imply that the design of availability would require a zero-defect solution such that there would be zero impact to operations. This seems counter to current thresholds established in CIP-002 (15-minute impact) and/or other Ops & Planning criteria.

Similarly, with regard to documentation, we ask that the SDT provide and/or incorporate the language of the standard into expected components documentations. If there are specific components desired, it would be helpful to lay out in a manner similar to the Baseline requirements of CIP-010 R1.1.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has modified the draft language to fit into already approved R1 language to address the mitigation of risk posed by loss of availability of data while being transmitted. The SDT is using the NIST definition of availability. Responsible entities have flexibility in determining how the availability component is addressed. Please see the draft implementation guidance for some examples. The timeliness of the data is addressed in the O&P standards as referenced in the Technical Rationale section “Alignment with IRO and TOP Standards”.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Oliver Burke - Entergy - Entergy Services, Inc. - 1

Answer

Document Name

Comment

No additional comments.

Likes 0

Dislikes 0

Response

Thank you for your response.

Aidan Gallegos - PNM Resources - Public Service Company of New Mexico - 1

Answer

Document Name

Comment

n/a

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE noticed the Technical Rationale for Reliability Standard CIP-012-2 defines Availability, in accordance with NIST, as *“Ensuring timely and reliable access to and use of information”* (page 12). While Texas RE agrees with the definition provided in the Technical Rational, Texas RE believes that the term *“Availability”* should likewise be specifically defined within the requirement language itself. Texas RE recommends the SDT incorporate the proposed language Technical Rationale directly into the CIP-012-2 Requirement R2 as follows:

“The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between

Control Centers. **Availability is defined as ensuring timely and reliable access to and use of information.** The Responsible Entity is not required to include oral communications in its plan.”

Texas RE notes that this approach is similar to how the SDT incorporated the definition of “Access” developed in Project 2019-02 BCSI Access Management into the proposed CIP-004-X standard language.

Additionally, Texas RE noticed “control centers” in the Overview of availability section of the Technical Rational is not capitalized. Texas RE recommends the term be capitalized since it is defined in the NERC Glossary of Terms.

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| Likes | 0 |
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| Dislikes | 0 |
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Response

Thank you for your comment. The concept of availability is dependent upon the data that is the subject of the availability. The SDT maintains to the NIST definition which is referenced in the Technical Rationale is acceptable. The SDT maintains that by not creating a NERC defined term, this leaves responsible entities with flexibility in determining what and how the availability component is addressed.

The capitalization issue has been corrected in the TR.

Anthony Jablonski - ReliabilityFirst - 10

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| Answer | |
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| Document Name | |
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Comment

Additional information should be referenced in the technical rationale document discussing the relationships between CIP-012-2, TOP-001-5, and IRO-002-7.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT maintains the section “Alignment with IRP and TOP Standards” is appropriate at this time. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | |
| Document Name | |
| Comment | |
| The SDT stated in the 5/18/2021 webinar that R2 possibly could only apply to a primary Control Center and not a backup Control Center. This does not seem consistent with the definition of Control Center as a backup Control Center is still a Control Center and would be in scope of CIP-012 if applicable data is traversing the communication links to another Control Center (primary or backup). | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see the reference model section of the draft implementation guidance for more discussion. | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| BPA believes that availability related to CIP-012 would best be included under the CIP-009 standard which already incorporates strategies, plans and details of bringing BES Systems back online under Recovery Plans. If instead the SDT intends for redundancy to accomplish the goal of availability, BPA believes that would best be accomplished by expanding the scope of redundancy required under TOP-001 R20/R23 and | |

IRO-001 R2 to include “between Control Centers.” Under either option, BPA recommends these standards be expanded instead of having different standards with very similar requirements.

Likes 0

Dislikes 0

Response

Thank you for your comments. FERC directed the team to modify CIP-012, specifically in Order 866.

The SDT recognizes that Responsible Entities may already have plans to address contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort. Please note, if Responsible Entity references other plans, they should also identify within their CIP-012 plan any components of an availability solution that fall outside of the scope of the referenced plan and ensure that those components are specifically addressed.

Kimberly Van Brimer - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name Southwest Power Pool Standards Review Group (SSRG)

Answer

Document Name

Comment

The SSRG recommends the drafting team consider the COM Standards be included in the [CIP-012-1 Technical Rationale](#), where alignment with other standards is discussed (see Page 4 of the Technical Rationale at “Alignment with IRO and TOP standards”).

The SSRG recommends the drafting team review the alignment with other standards section where TOP-001-4 R32 is referenced. The current version should be TOP-001-5 and there is no R32, and R22 is identified as “Reserved.” This is most likely a typo from a previous Technical Rationale drafting team.

The SSRG would like to thank the drafting team for their efforts.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. FERC directed the team to modify CIP-012, specifically in Order 866. Maintaining an appropriate alignment with TOP, IRO and the other O&P Standards has been a focus of the team in these edits. Please see the revised Implementation Guidance for updated references to the O&P Standards.</p> | |
| Masuncha Bussey - Duke Energy - 1,3,5,6 - MRO,Texas RE,SERC, Group Name Duke Energy | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Duke Energy additional comment is as follows: the technical rationale describes monitoring for when data is ‘unavailable and is no longer updating’. While ‘heartbeat monitoring and monitoring’ is presented as an option, it is the only option presented which may push auditors to only accept this. Furthermore, notification methods also seem to be intended to be required, however operational systems may have the capability to operate effectively with temporarily data loss or occasional malfunction of a field sensor or RTU which are out of the scope of CIP-012. It would help to make clear that CIP-012 monitoring is limited to successful data flow between control centers, and the content or completeness of that data is not the subject of R2.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. The SDT has updated the Technical Rationale and Implementation Guidance based on the most recent edits to the proposed Standard. The most recent revisions, based on industry comments, have shifted from a separate R2 requirement for availability to “rolling availability into” the existing, approved, R1 language.</p> | |

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer

Document Name

Comment

If an entity owns the entire physical and logical communication path from its own primary Control Center to its own backup Control Center and it is not encrypted, does this satisfy the requirement for R2? Does the entity have to encrypt from the primary Control Center to the backup Control Center? This might be an example within the Guidelines and Technical Basis.

Likes 0

Dislikes 0

Response

Thank you for your comments. The draft has been modified to fit within the already approved R1 language. Please see the Implementation Guidance for examples of how a Responsible Entity may achieve compliance with this Standard as well as the Technical Rationale for the drafting team's considerations in drafting this revision. Also keep in mind that CIP-012 not only covers an Entity's own Control Center to Control Center communications but also the transmission of Real-time Assessment and Real-time monitoring data to other Control Centers regardless of ownership.

Gladys DeLaO - CPS Energy - 1

Answer

Document Name

Comment

CPS Energy does not have any additional comments.

Likes 0

Dislikes 0

Response

Thank you for your response.

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through June 9, 2021
Ballot Pools Forming through May 25, 2021

[Now Available](#)

A 45-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Wednesday, June 9, 2021**.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

Ballot Pools

Ballot pools are being formed through **8 p.m. Eastern, Tuesday, May 25, 2021**. Registered Ballot Body members can join the ballot pools [here](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Initial ballots for the Standard and Implementation Plan, along with non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **May 31 - June 9, 2021**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/223)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 IN 1 ST

Voting Start Date: 5/31/2021 12:01:00 AM

Voting End Date: 6/9/2021 8:00:00 PM

Ballot Type: ST

Ballot Activity: IN

Ballot Series: 1

Total # Votes: 264

Total Ballot Pool: 293

Quorum: 90.1

Quorum Established Date: 6/9/2021 1:32:49 PM

Weighted Segment Value: 37.42

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 82 | 1 | 27 | 0.397 | 41 | 0.603 | 0 | 6 | 8 |
| Segment: 2 | 7 | 0.7 | 0 | 0 | 7 | 0.7 | 0 | 0 | 0 |
| Segment: 3 | 70 | 1 | 28 | 0.438 | 36 | 0.563 | 1 | 2 | 3 |
| Segment: 4 | 16 | 1 | 4 | 0.286 | 10 | 0.714 | 0 | 0 | 2 |
| Segment: 5 | 66 | 1 | 22 | 0.393 | 34 | 0.607 | 1 | 2 | 7 |
| Segment: 6 | 44 | 1 | 16 | 0.444 | 20 | 0.556 | 0 | 0 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.6 | 4 | 0.4 | 2 | 0.2 | 0 | 0 | 1 |
| Totals: | 293 | 6.3 | 101 | 2.358 | 150 | 3.942 | 2 | 11 | 29 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|----------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allele - Minnesota Power, Inc. | Jamie Monette | | Negative | Third-Party Comments |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Negative | Comments Submitted |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Negative | Third-Party Comments |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Negative | Third-Party Comments |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Negative | Comments Submitted |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Frank Pace | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Corey Walker | | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Affirmative | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Third-Party Comments |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Third-Party Comments |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Third-Party Comments |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Negative | Comments Submitted |
| 1 | Evergy | Allen Klassen | | Affirmative | N/A |
| 1 | Eversource Energy | Quintin Lee | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|-------------------|-------------|----------------------|
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Third-Party Comments |
| 1 | Great River Energy | Gordon Pietsch | | Negative | Third-Party Comments |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciufu | Negative | Third-Party Comments |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Third-Party Comments |
| 1 | IDACORP - Idaho Power Company | Mike Marshall | | Abstain | N/A |
| 1 | Imperial Irrigation District | Jesus Sammy Alcaraz | Denise Sanchez | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Negative | Third-Party Comments |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Negative | Third-Party Comments |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Third-Party Comments |
| 1 | NB Power Corporation | Nurul Abser | | Negative | Comments Submitted |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Negative | Comments Submitted |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Third-Party Comments |
| 1 | Oncor Electric Delivery | Lee Maurer | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------------|------------------|-------------|----------------------|
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Negative | Comments Submitted |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Aidan Gallegos | | Negative | Comments Submitted |
| 1 | Portland General Electric Co. | Brooke Jockin | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | None | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Negative | Third-Party Comments |
| 1 | Salt River Project | Chris Hofmann | | Negative | Comments Submitted |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Negative | Third-Party Comments |
| 1 | Sho-Me Power Electric Cooperative | Peter Dawson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | Negative | Comments Submitted |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Negative | Comments Submitted |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Negative | Comments Submitted |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Negative | Comments Submitted |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Bradley Collard | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Brandon Gleason | | Negative | Comments Submitted |
| 2 | Independent Electricity System Operator | Leonard Kula | | Negative | Comments Submitted |
| 2 | ISO New England, Inc. | Michael Puscas | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Comments Submitted |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Third-Party Comments |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|----------------------|------------------|-------------|----------------------|
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Negative | Comments Submitted |
| 3 | AEP | Kent Feliks | | Negative | Comments Submitted |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Negative | Comments Submitted |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Negative | Third-Party Comments |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Negative | Comments Submitted |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Negative | Comments Submitted |
| 3 | Black Hills Corporation | Josh Combs | | None | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Duan Gavel | | Negative | Third-Party Comments |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Negative | No Comment Submitted |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Cowlitz County PUD | Russell Noble | | Negative | Comments Submitted |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Negative | Comments Submitted |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Third-Party Comments |
| 3 | East Kentucky Power Cooperative | Patrick Woods | | Negative | Third-Party Comments |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Negative | Third-Party Comments |
| 3 | Eversource Energy | Marcus Moor | | Affirmative | N/A |
| 3 | Eversource Energy | Christopher McKinnon | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Negative | Comments Submitted |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Negative | Third-Party Comments |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Negative | Comments Submitted |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Negative | Third-Party Comments |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Negative | Third-Party Comments |
| 3 | National Grid USA | Brian Shanahan | | Negative | Third-Party Comments |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Negative | Comments Submitted |
| 3 | Omaha Public Power District | David Heins | | Negative | Third-Party Comments |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Negative | Comments Submitted |
| 3 | Platte River Power Authority | Richard Kiess | | Negative | Third-Party Comments |
| 3 | Portland General Electric Co. | Dan Zollner | | Abstain | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Negative | Third-Party Comments |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Negative | Comments Submitted |
| 3 | Puget Sound Energy, Inc. | Nicolas Pacholski | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|----------------------|
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Negative | Third-Party Comments |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Affirmative | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Negative | Third-Party Comments |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Negative | Third-Party Comments |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | Jennie Wike | Negative | Comments Submitted |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Negative | Comments Submitted |
| 3 | Wabash Valley Power Association | Susan Sosbe | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Negative | Third-Party Comments |
| 3 | Xcel Energy, Inc. | Nicholas Friebel | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Negative | Comments Submitted |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Negative | Third-Party Comments |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Negative | Third-Party Comments |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Negative | Third-Party Comments |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Third-Party Comments |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Negative | Third-Party Comments |
| 4 | Sacramento Municipal Utility District | Foung Mua | | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Third-Party Comments |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Negative | Comments Submitted |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beiffuss | | Negative | Third-Party Comments |
| | | Truong Le | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 5 | AEP | Thomas Foltz | | Negative | Comments Submitted |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Negative | Comments Submitted |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Negative | Third-Party Comments |
| 5 | Avista - Avista Corporation | Glen Farmer | | None | N/A |
| 5 | Basin Electric Power Cooperative | Colleen Peterson | | Negative | Third-Party Comments |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Negative | Comments Submitted |
| 5 | Black Hills Corporation | Sheila Suurmeier | | None | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | Negative | Third-Party Comments |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Negative | No Comment Submitted |
| 5 | Con Ed - Consolidated Edison Co. of New York | Avani Pandya | | Negative | Third-Party Comments |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Third-Party Comments |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Third-Party Comments |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | None | N/A |
| 5 | Evergy | Derek Brown | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Negative | Comments Submitted |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Third-Party Comments |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Qu?bec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |
| 5 | Lake and Electric | Becky Rinier | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Negative | Comments Submitted |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Manitoba Hydro | Yuguang Xiao | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Negative | Third-Party Comments |
| 5 | Muscatine Power and Water | Neal Nelson | | Negative | Third-Party Comments |
| 5 | National Grid USA | Elizabeth Spivak | | Negative | Third-Party Comments |
| 5 | NB Power Corporation | Rob Vance | | Negative | Comments Submitted |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Third-Party Comments |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Negative | Comments Submitted |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Third-Party Comments |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Ed Hanson | Michael Johnson | Negative | Comments Submitted |
| 5 | Platte River Power Authority | Tyson Archie | | Negative | Third-Party Comments |
| 5 | Portland General Electric Co. | Ryan Olson | | Abstain | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Negative | Third-Party Comments |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Negative | Comments Submitted |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Negative | Third-Party Comments |
| 5 | Sacramento Municipal Utility District | Nicole Goi | | Affirmative | N/A |
| 5 | Salt River Project | Thomas Johnson | | None | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------|------------------|-------------|----------------------|
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Negative | Comments Submitted |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | None | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Negative | Comments Submitted |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Negative | Third-Party Comments |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Justin Kuehne | | Negative | Comments Submitted |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | None | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Negative | Comments Submitted |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Negative | Third-Party Comments |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Negative | Comments Submitted |
| 6 | Bonneville Power Administration | Andrew Meyers | | Negative | Comments Submitted |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Negative | Third-Party Comments |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | None | N/A |
| 6 | Duke Energy | Greg Cecil | | Negative | Third-Party Comments |
| 6 | Evergy | Thomas ROBBEN | | Affirmative | N/A |
| 6 | Exelon | Becky Webb | | Negative | Comments Submitted |
| 6 | FirstEnergy - FirstEnergy Corporation | Ann Carey | | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | | Negative | Third-Party Comments |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Negative | Third-Party Comments |
| 6 | New York Power Authority | Shelly Dineen | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|----------------------|
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Negative | Comments Submitted |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Third-Party Comments |
| 6 | Platte River Power Authority | Sabrina Martz | | Negative | Third-Party Comments |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | Powerex Corporation | Raj Hundal | | None | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Negative | Third-Party Comments |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Negative | Comments Submitted |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Affirmative | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Negative | Comments Submitted |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Negative | Comments Submitted |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | None | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Negative | Third-Party Comments |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | None | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Negative | Comments Submitted |

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/223)

Ballot Name: 2020-04 Modifications to CIP-012 Implementation Plan IN 1 OT**Voting Start Date:** 5/31/2021 12:01:00 AM**Voting End Date:** 6/9/2021 8:00:00 PM**Ballot Type:** OT**Ballot Activity:** IN**Ballot Series:** 1**Total # Votes:** 257**Total Ballot Pool:** 288**Quorum:** 89.24**Quorum Established Date:** 6/9/2021 2:02:23 PM**Weighted Segment Value:** 68.64

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 80 | 1 | 42 | 0.7 | 18 | 0.3 | 0 | 10 | 10 |
| Segment: 2 | 7 | 0.6 | 4 | 0.4 | 2 | 0.2 | 0 | 1 | 0 |
| Segment: 3 | 69 | 1 | 42 | 0.724 | 16 | 0.276 | 2 | 5 | 4 |
| Segment: 4 | 16 | 1 | 7 | 0.538 | 6 | 0.462 | 0 | 1 | 2 |
| Segment: 5 | 65 | 1 | 34 | 0.642 | 19 | 0.358 | 1 | 4 | 7 |
| Segment: 6 | 43 | 1 | 25 | 0.714 | 10 | 0.286 | 0 | 1 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.4 | 4 | 0.4 | 0 | 0 | 0 | 2 | 1 |
| Totals: | 288 | 6 | 158 | 4.118 | 71 | 1.882 | 3 | 25 | 31 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allele - Minnesota Power, Inc. | Jamie Monette | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Negative | Third-Party Comments |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Abstain | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Frank Pace | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Affirmative | N/A |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Affirmative | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Third-Party Comments |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Third-Party Comments |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Third-Party Comments |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Negative | Comments Submitted |
| 1 | Evergy | Allen Klassen | | Affirmative | N/A |
| 1 | Eversource Energy | Quintin Lee | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|----------------------|
| 1 | Great River Energy | Gordon Pietsch | | Negative | Third-Party Comments |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciufu | Affirmative | N/A |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Affirmative | N/A |
| 1 | IDACORP - Idaho Power Company | Mike Marshall | | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Abstain | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Bruce Reimer | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Affirmative | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Third-Party Comments |
| 1 | Oncor Electric Delivery | Lee Maurer | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Affirmative | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | None | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | None | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Negative | Third-Party Comments |
| 1 | Salt River Project | Chris Hofmann | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | None | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Negative | Comments Submitted |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | None | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Negative | Comments Submitted |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Bradley Collard | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Brandon Gleason | | Negative | Comments Submitted |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | Michael Puscas | John Galloway | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Third-Party Comments |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Abstain | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Negative | Third-Party Comments |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Affirmative | N/A |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Abstain | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | None | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|----------------------|------------------|-------------|----------------------|
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Negative | No Comment Submitted |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Affirmative | N/A |
| 3 | Cowlitz County PUD | Russell Noble | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Negative | Comments Submitted |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Third-Party Comments |
| 3 | East Kentucky Power Cooperative | Patrick Woods | | Negative | Third-Party Comments |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | | Affirmative | N/A |
| 3 | Eversource Energy | Christopher McKinnon | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Negative | Third-Party Comments |
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Negative | Third-Party Comments |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|----------------------|
| 3 | Omaha Public Power District | David Heins | | Negative | Third-Party Comments |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Affirmative | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |
| 3 | Portland General Electric Co. | Dan Zollner | | Abstain | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Affirmative | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Nicolas Pacholski | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Negative | Comments Submitted |
| 3 | Santee Cooper | James Poston | | Affirmative | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Negative | Third-Party Comments |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Negative | Third-Party Comments |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | Jennie Wike | Negative | Comments Submitted |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Negative | Comments Submitted |
| 3 | Wabash Valley Power Association | Scott Berry | | None | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Negative | No Comment Submitted |
| 3 | Xcel Energy, Inc. | Nicholas Friebe | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Negative | Third-Party Comments |
| 4 | City Utilities of Springfield, Missouri | John Allen | | Abstain | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|----------------------|
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Third-Party Comments |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Negative | Third-Party Comments |
| 4 | Sacramento Municipal Utility District | Foung Mua | | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Third-Party Comments |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Negative | Comments Submitted |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Negative | Third-Party Comments |
| 5 | Avista - Avista Corporation | Glen Farmer | | None | N/A |
| 5 | Basin Electric Power Cooperative | Colleen Peterson | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Abstain | N/A |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | None | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | Negative | Third-Party Comments |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Negative | No Comment Submitted |
| 5 | Con Ed - Consolidated Edison Co. of New York | Avani Pandya | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Abstain | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Third-Party Comments |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Third-Party Comments |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Evergy | Derek Brown | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Third-Party Comments |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |
| 5 | Lakeland Electric | Becky Rinier | | Affirmative | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Affirmative | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Negative | Third-Party Comments |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NB Power Corporation | Rob Vance | | Negative | Comments Submitted |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Third-Party Comments |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Third-Party Comments |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Ed Hanson | Michael Johnson | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Affirmative | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Abstain | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|----------------------|
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Negative | Third-Party Comments |
| 5 | Sacramento Municipal Utility District | Nicole Goi | | Affirmative | N/A |
| 5 | Salt River Project | Thomas Johnson | | None | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Negative | Comments Submitted |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | None | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Negative | Comments Submitted |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Negative | Third-Party Comments |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Justin Kuehne | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | None | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Negative | Third-Party Comments |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Negative | Comments Submitted |
| 6 | Bonneville Power Administration | Andrew Meyers | | Negative | Comments Submitted |
| 6 | Cleco Corporation | Robert Hirchak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | None | N/A |
| 6 | Duke Energy | Greg Cecil | | Negative | Third-Party Comments |
| 6 | Evergy | Thomas ROBBEN | | Affirmative | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Ann Carey | | Affirmative | N/A |
| 6 | Great River Energy | Donna Stephenson | | Negative | Third-Party Comments |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipp | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Manitoba Hydro | Blair Mukanik | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|--------------------|
| 6 | New York Power Authority | Shelly Dineen | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Abstain | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Affirmative | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Negative | Comments Submitted |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Negative | Comments Submitted |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | Affirmative | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | None | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Abstain | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | None | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

Showing 1 to 288 of 288 entries

Previous 1 Next

BALLOT RESULTS

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll IN 1 NB**Voting Start Date:** 5/31/2021 12:01:00 AM**Voting End Date:** 6/9/2021 8:00:00 PM**Ballot Type:** NB**Ballot Activity:** IN**Ballot Series:** 1**Total # Votes:** 244**Total Ballot Pool:** 280**Quorum:** 87.14**Quorum Established Date:** 6/9/2021 2:37:26 PM**Weighted Segment Value:** 36.32

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 77 | 1 | 18 | 0.333 | 36 | 0.667 | 13 | 10 |
| Segment: 2 | 7 | 0.6 | 1 | 0.1 | 5 | 0.5 | 1 | 0 |
| Segment: 3 | 67 | 1 | 19 | 0.373 | 32 | 0.627 | 12 | 4 |
| Segment: 4 | 15 | 1 | 4 | 0.364 | 7 | 0.636 | 2 | 2 |
| Segment: 5 | 64 | 1 | 16 | 0.348 | 30 | 0.652 | 9 | 9 |
| Segment: 6 | 42 | 1 | 11 | 0.393 | 17 | 0.607 | 4 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 4 | 0.4 | 1 | 0.1 | 1 | 1 |
| Totals: | 280 | 6.1 | 73 | 2.31 | 128 | 3.79 | 43 | 36 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Abstain | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Negative | Comments Submitted |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|--------------------|
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Negative | Comments Submitted |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Negative | Comments Submitted |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Frank Pace | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Corey Walker | | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Comments Submitted |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Affirmative | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Comments Submitted |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Comments Submitted |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Comments Submitted |
| 1 | Entergy - Entergy Services, Inc. | Oliver Burke | | Negative | Comments Submitted |
| 1 | Evergy | Allen Klassen | | Affirmative | N/A |
| 1 | Eversource Energy | Quintin Lee | | Abstain | N/A |
| 1 | Exelon | Daniel Gacek | | Negative | Comments Submitted |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Abstain | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Comments Submitted |
| 1 | Great River Energy | Gordon Pietsch | | Negative | Comments Submitted |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciufio | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|--------------------|
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Comments Submitted |
| 1 | IDACORP - Idaho Power Company | Mike Marshall | | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Abstain | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Comments Submitted |
| 1 | NB Power Corporation | Nurul Abser | | Negative | Comments Submitted |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Comments Submitted |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Negative | Comments Submitted |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Comments Submitted |
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Negative | Comments Submitted |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | None | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | None | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Negative | Comments Submitted |
| 1 | Salt River Project | Chris Hofmann | | Negative | Comments Submitted |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|--------------------|
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Negative | Comments Submitted |
| 1 | Sho-Me Power Electric Cooperative | Peter Dawson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | Negative | Comments Submitted |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Negative | Comments Submitted |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Negative | Comments Submitted |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Negative | Comments Submitted |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Bradley Collard | | Abstain | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Brandon Gleason | | Negative | Comments Submitted |
| 2 | Independent Electricity System Operator | Leonard Kula | | Negative | Comments Submitted |
| 2 | ISO New England, Inc. | Michael Puscas | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Comments Submitted |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Comments Submitted |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Abstain | N/A |
| 3 | AEP | Kent Feliks | | Abstain | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Negative | Comments Submitted |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | W. Dwayne Preston | | Negative | Comments Submitted |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Jeremy Voll | | Negative | Comments Submitted |
| 3 | BC Hydro and Power Authority | Hootan Jarollahi | | Negative | Comments Submitted |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Negative | Comments Submitted |
| 3 | Black Hills Corporation | Josh Combs | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|----------------------|------------------|-------------|--------------------|
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Duan Gavel | | Negative | Comments Submitted |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Negative | Comments Submitted |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Comments Submitted |
| 3 | Cowlitz County PUD | Russell Noble | | Negative | Comments Submitted |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Comments Submitted |
| 3 | East Kentucky Power Cooperative | Patrick Woods | | Negative | Comments Submitted |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Negative | Comments Submitted |
| 3 | Evergy | Marcus Moor | | Affirmative | N/A |
| 3 | Eversource Energy | Christopher McKinnon | | Abstain | N/A |
| 3 | Exelon | Kinte Whitehead | | Negative | Comments Submitted |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Negative | Comments Submitted |
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Negative | Comments Submitted |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Negative | Comments Submitted |
| 3 | National Grid USA | Brian Shanahan | | Negative | Comments Submitted |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Comments Submitted |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|--------------------|
| 3 | Northern California Power Agency | Michael Whitney | | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Negative | Comments Submitted |
| 3 | Omaha Public Power District | David Heins | | Negative | Comments Submitted |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Affirmative | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Negative | Comments Submitted |
| 3 | Platte River Power Authority | Richard Kiess | | Abstain | N/A |
| 3 | Portland General Electric Co. | Dan Zollner | | Abstain | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Negative | Comments Submitted |
| 3 | Puget Sound Energy, Inc. | Nicolas Pacholski | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Negative | Comments Submitted |
| 3 | Santee Cooper | James Poston | | Abstain | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Negative | Comments Submitted |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Negative | Comments Submitted |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Negative | Comments Submitted |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | Marc Donaldson | Jennie Wike | Negative | Comments Submitted |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Negative | Comments Submitted |
| 3 | Wabash Valley Power Association | Susan Sosbe | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Negative | Comments Submitted |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Abstain | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|--------------------|
| 4 | City Utilities of Springfield, Missouri | John Allen | | Abstain | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Comments Submitted |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Negative | Comments Submitted |
| 4 | Sacramento Municipal Utility District | Foung Mua | | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Comments Submitted |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Negative | Comments Submitted |
| 4 | Utility Services, Inc. | Tracy MacNicol | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Negative | Comments Submitted |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Abstain | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Negative | Comments Submitted |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Negative | Comments Submitted |
| 5 | Avista - Avista Corporation | Glen Farmer | | None | N/A |
| 5 | Basin Electric Power Cooperative | Colleen Peterson | | Negative | Comments Submitted |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Negative | Comments Submitted |
| 5 | Black Hills Corporation | Sheila Suurmeier | | None | N/A |
| 5 | Bonneville Power Administration | Scott Winner | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | Negative | Comments Submitted |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Negative | Comments Submitted |
| 5 | Con Ed - Consolidated Edison Co. of New York | Avani Pandya | | Negative | Comments Submitted |
| 5 | Crowley County PD | Deanna Carlson | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|--------------------|
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Comments Submitted |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhuseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Comments Submitted |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | None | N/A |
| 5 | Eergy | Derek Brown | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Negative | Comments Submitted |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Comments Submitted |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Hydro-Qu?bec Production | Carl Pineault | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |
| 5 | Lakeland Electric | Becky Rinier | | Affirmative | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Anthony Stevens | | Negative | Comments Submitted |
| 5 | Muscatine Power and Water | Neal Nelson | | Negative | Comments Submitted |
| 5 | National Grid USA | Elizabeth Spivak | | Negative | Comments Submitted |
| 5 | NB Power Corporation | Rob Vance | | Negative | Comments Submitted |
| 5 | Nebraska Public Power District | Ronald Bender | | Abstain | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Comments Submitted |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Comments Submitted |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Negative | Comments Submitted |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Affirmative | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Comments Submitted |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|--------------------|
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Ed Hanson | Michael Johnson | Negative | Comments Submitted |
| 5 | Platte River Power Authority | Tyson Archie | | Abstain | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Abstain | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Negative | Comments Submitted |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Negative | Comments Submitted |
| 5 | Sacramento Municipal Utility District | Nicole Goi | | Affirmative | N/A |
| 5 | Salt River Project | Thomas Johnson | | None | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Abstain | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Negative | Comments Submitted |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | None | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Negative | Comments Submitted |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | None | N/A |
| 6 | AEP | Justin Kuehne | | Abstain | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | None | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Negative | Comments Submitted |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Negative | Comments Submitted |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Negative | Comments Submitted |
| 6 | Bonneville Power Administration | Andrew Meyers | | Negative | Comments Submitted |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Negative | Comments Submitted |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | None | N/A |
| 6 | Duke Energy | Greg Cecil | | Negative | Comments Submitted |
| 6 | Evergy | Thomas ROBBEN | | Affirmative | N/A |
| 6 | Exelon | Becky Webb | | Negative | Comments Submitted |
| 6 | FirstEnergy - FirstEnergy Corporation | Ann Carey | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|--------------------|
| 6 | Great River Energy | Donna Stephenson | | Negative | Comments Submitted |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Negative | Comments Submitted |
| 6 | New York Power Authority | Shelly Dineen | | None | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Sing Tay | | Negative | Comments Submitted |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Comments Submitted |
| 6 | Platte River Power Authority | Sabrina Martz | | Abstain | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | Powerex Corporation | Raj Hundal | | None | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Negative | Comments Submitted |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Negative | Comments Submitted |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Negative | Comments Submitted |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | None | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Negative | Comments Submitted |
| 4 | North Western Energy Company | Gerry Dunbar | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

Showing 1 to 280 of 280 entries

Previous 1 Next

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 55-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |

| Anticipated Actions | Date |
|--|---------------|
| 55-day formal comment period with ballot | November 2021 |
| 45-day formal comment period with ballot | March 2021 |
| 10-day final ballot | June 2021 |
| Board adoption | August 2021 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1.** Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of methods to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1; and
 - 1.4.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.
- M1.** Evidence may include, but is not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|---|---|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | |

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is ~~the initial~~ an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|--|
| Standards Committee approved Standard Authorization Request (SAR) for posting | 03/18/20 |
| SAR posted for comment | 04/08/20 |
| 45-day formal comment period with ballot | 04/26/21 <u>April 26 – June 9, 2021</u> |

| Anticipated Actions | Date |
|--|---------------|
| 45-day formal comment period with ballot | November 2021 |
| 45-day formal comment period with ballot | March 2021 |
| 10-day final ballot | June 2021 |
| Board adoption | August 2021 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure-~~and~~, unauthorized modification, ~~and loss~~ of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]

- 1.1. Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure ~~and~~, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers;
 - 1.2. Identification of ~~where the Responsible Entity applied security protection methods to be used for transmitting the recovery of communication links used to transmit~~ Real-time Assessment and Real-time monitoring data between Control Centers; ~~and;~~
 - 1.3. Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1; and
 - ~~1.3.1.4.~~ If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security ~~protection and availability protection(s)~~ to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.
- M1. Evidence may include, but is not limited to, documented plan(s) that meet the security mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).
- ~~R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]~~
- ~~2.1. Identification of how the Responsible Entity has provided for the availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers;~~
 - ~~2.2. Identification of how the Responsible Entity has addressed communications and data flow restoration to maintain continuity of operations in the Responsible Entity's plan; and~~
 - ~~2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links and data used for Real-time Assessment and Real-time monitoring while being transmitted between Control Centers.~~
- ~~M2. Evidence may include, but is not limited to, documented plan(s) that meet the security objective of Requirement R2 and documentation demonstrating the implementation of the plan(s).~~

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|----------------|---------------------------|--|--|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement <u>three or more</u> any Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |
| R2. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement any Part of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | |

Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communications links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

Unofficial Comment Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2020-04 Modifications to CIP-012** by **8 p.m. Eastern, January 24, 2022**.

Additional information is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Alison Oswald](#) (via email), or at 404-446-9668.

Background Information

In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

Questions

1. The SDT revised CIP-012-1 R1 to address the comments received during initial ballot and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree that the proposed language in R1 addresses security and availability as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

2. Do you believe that you can demonstrate compliance with R1.3 to identify where your availability protections are applied? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

3. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

- Yes
 No

Comments:

4. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

- Yes
 No

Comments:

5. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Comments:

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

November 2021

RELIABILITY | RESILIENCE | SECURITY



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Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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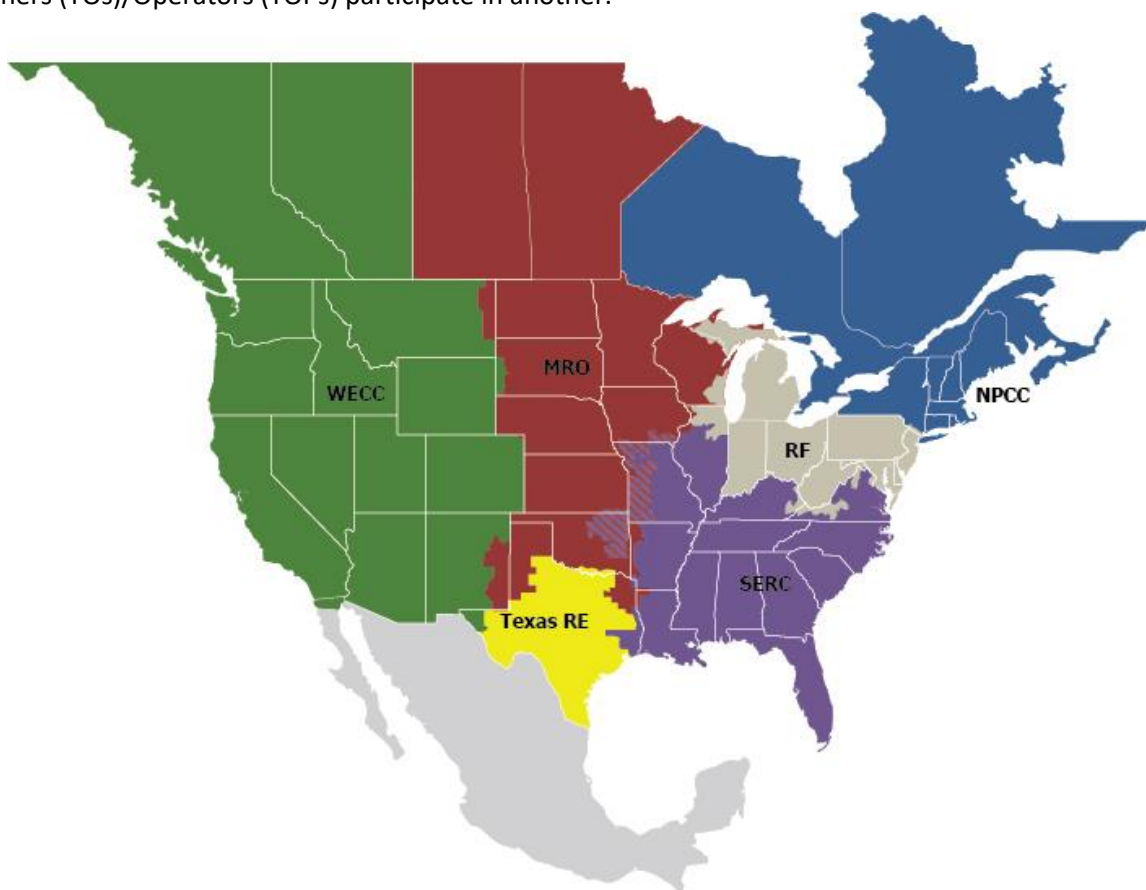
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the standard drafting team's (SDT's) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communications links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed CIP-012-2 Requirement R2.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 and CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort.

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their BA or TOP Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this particular scenario, which is described in further detail below.

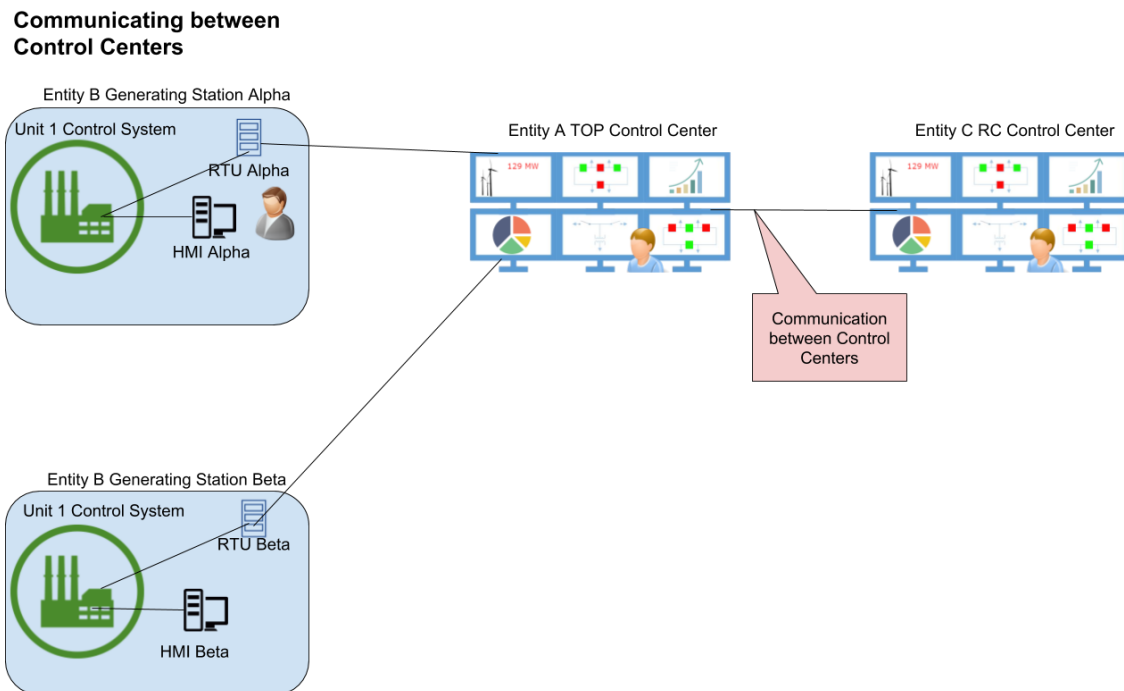


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

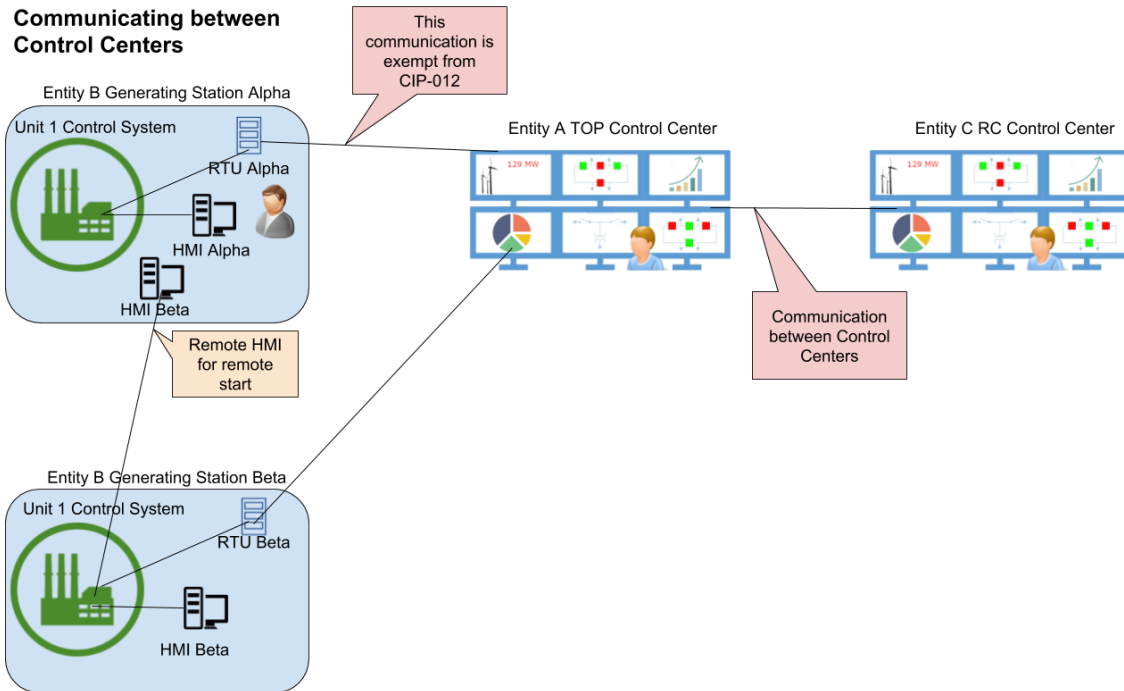


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual-classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

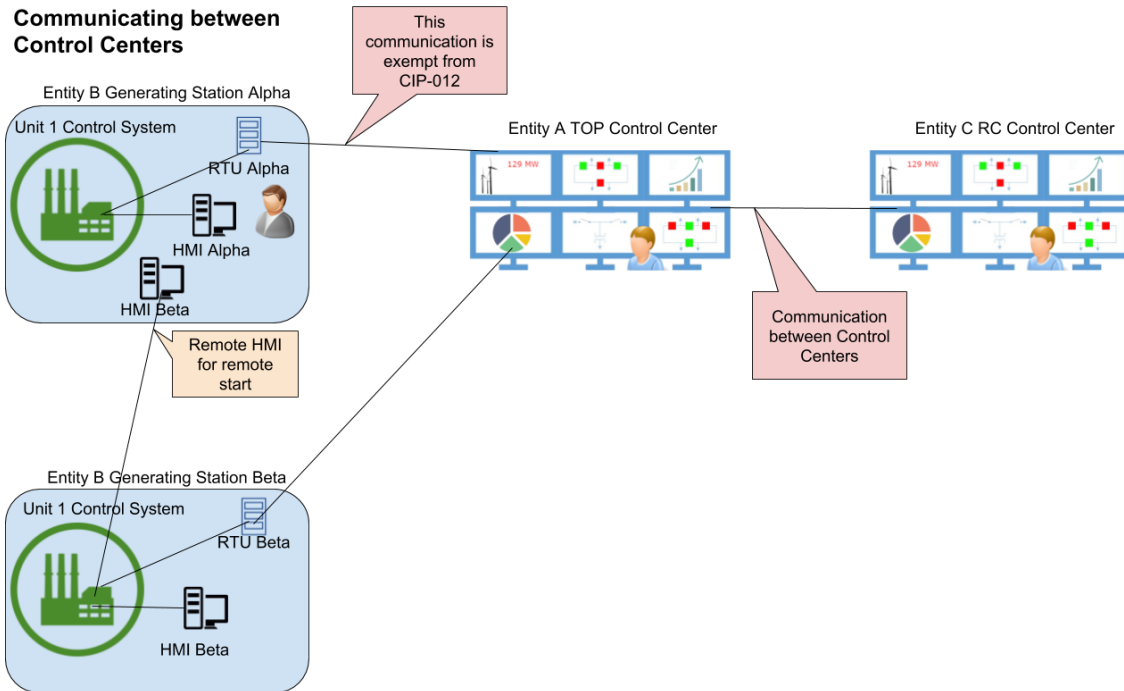


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A's TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that "operating personnel" within the substation could use to impact an adjacent substation. It is also clear that in the criteria for TOs and GOPs, the "two or more locations" is not a precise enough filter for defining what a Control Center truly is. The SDT's attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT's SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard, which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset's status. Throughout this scenario, or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

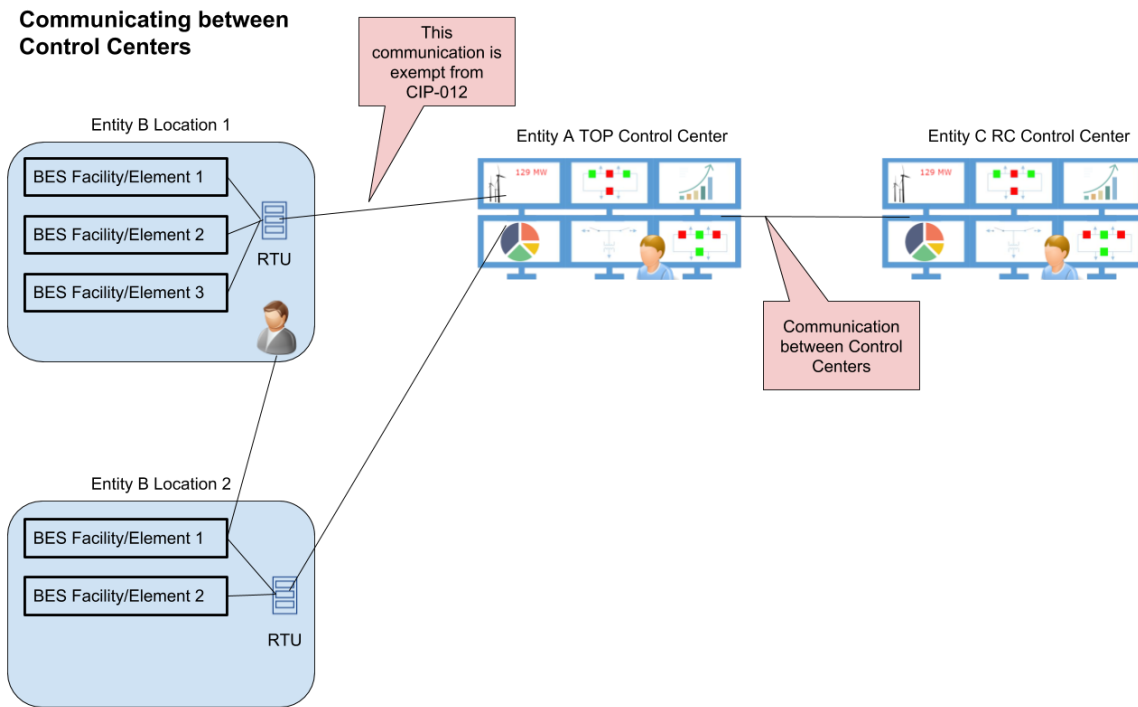


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time Monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** *The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1** *Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;*
 - 1.2** *Identification of methods to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;*
 - 1.3** *Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1; and*
 - 1.4** *If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.*

General Considerations of Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security and availability protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers.

Part 1.2 addresses the need to identify measures to recover communications links. An important element of data communications is the availability of the communication links themselves. Communications links are the medium by which the data is transmitted between Control Centers (e.g. fiber, copper lines, satellite, etc.). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.3 requires the identification of where protections are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan.

Part 1.4 addresses requirements for each side of the data transfer when they are owned or managed by different Responsible Entities. Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity) transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴
- Availability is defined as, “Ensuring timely and reliable access to and use of information”⁵

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operating and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under “Availability” from [44 U.S.C., Sec. 3542 \(b\)\(1\)\(C\)](#)

individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.3 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.4.

Control Center Ownership

The CIP-012 Standard Requirements address protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. They also cover the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

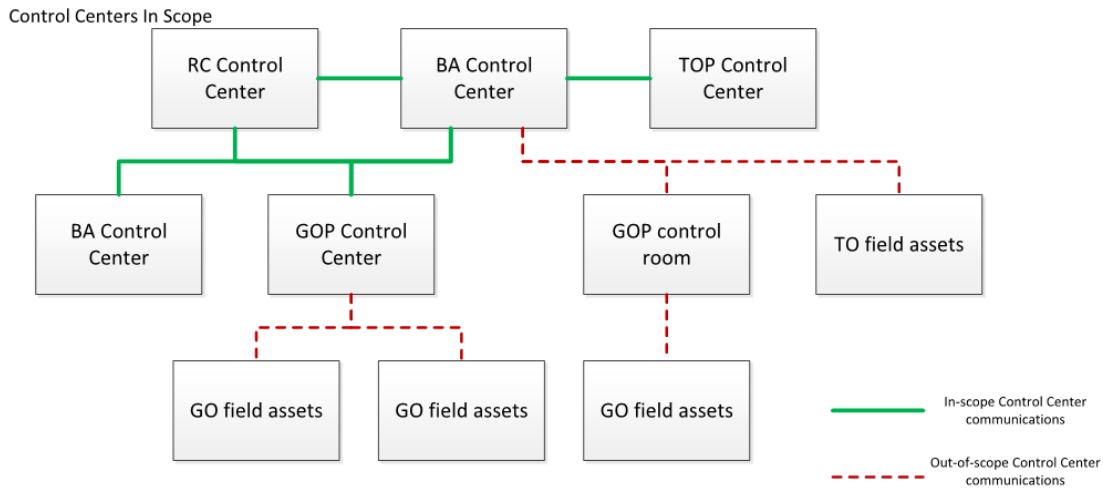


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.4 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.4 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence, which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1, 1.2 and 1.3 of the plan should correlate to the documented responsibilities in Part 1.4 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

April November 2021

RELIABILITY | ACCOUNTABILITY



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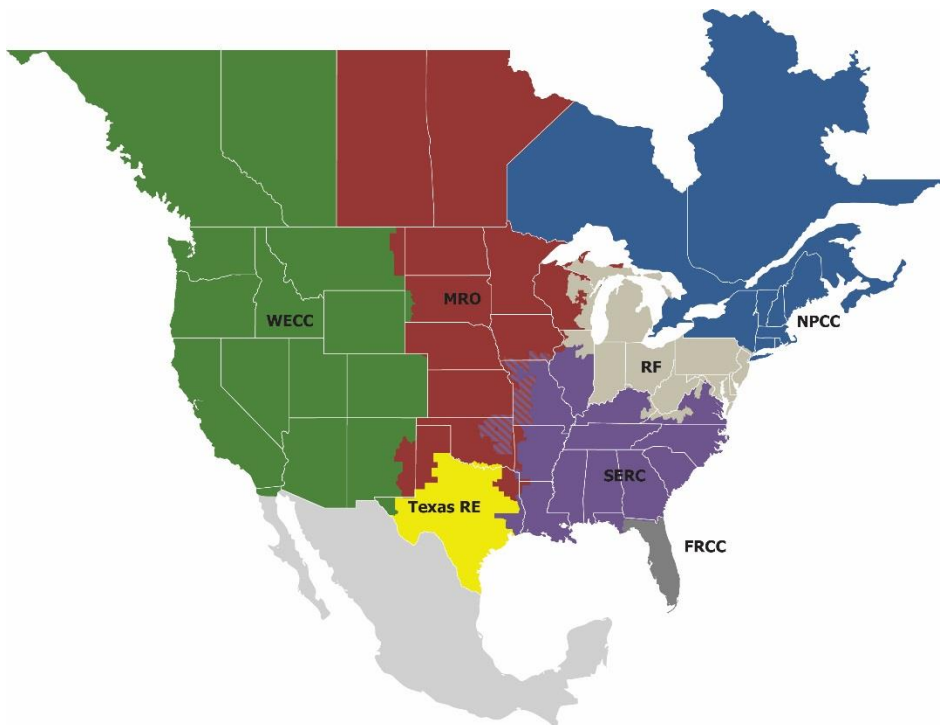
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Preface

The vision for the Electric Reliability Organization (ERO) Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the seven Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

The North American BPS is divided into seven RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Region while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--|
| FRCC | Florida Reliability Coordinating Council |
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | Western Electricity Coordinating Council |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012-~~1~~. It ~~will~~provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the SDT's intent in drafting the requirements. This Technical Rationale and Justification for CIP-012-~~1~~ is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communications links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, ~~or~~and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006-~~6~~ Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-~~contained~~addressed in CIP-006-~~6~~ Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 standard drafting team (SDT) developed CIP-012-2 Requirement R2.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

their CIP-008 and CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to satisfy the security objectives mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Their communications-Communication from these assets to their BA or TOP Control Centers, however, are-is not included in the intended scope of CIP-012. This is because the communications- do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this particular scenario which is described in further detail below.

Communicating between Control Centers

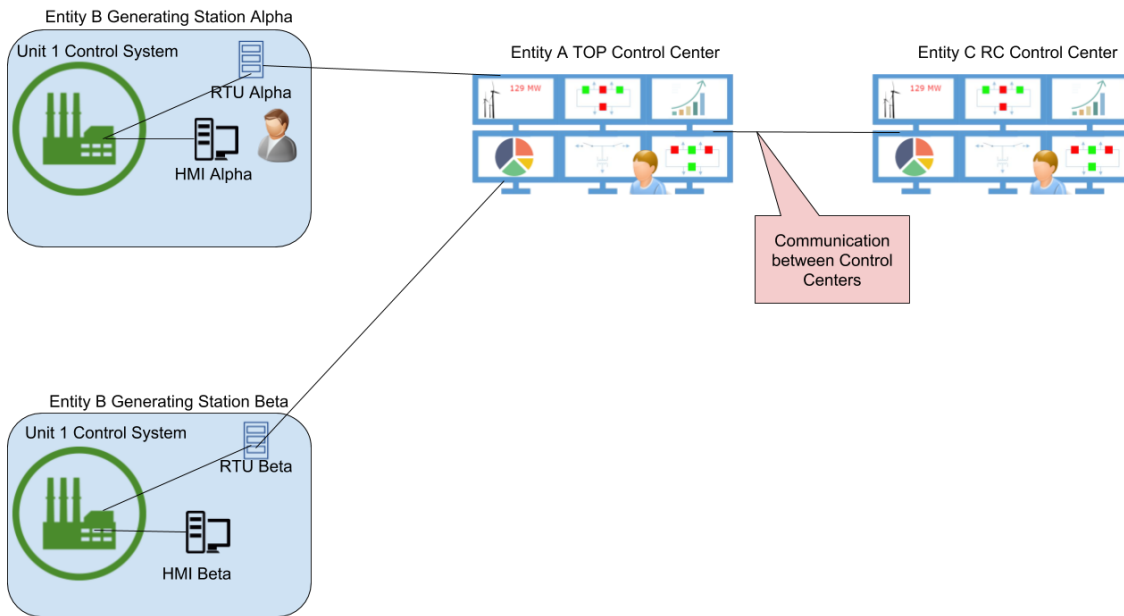
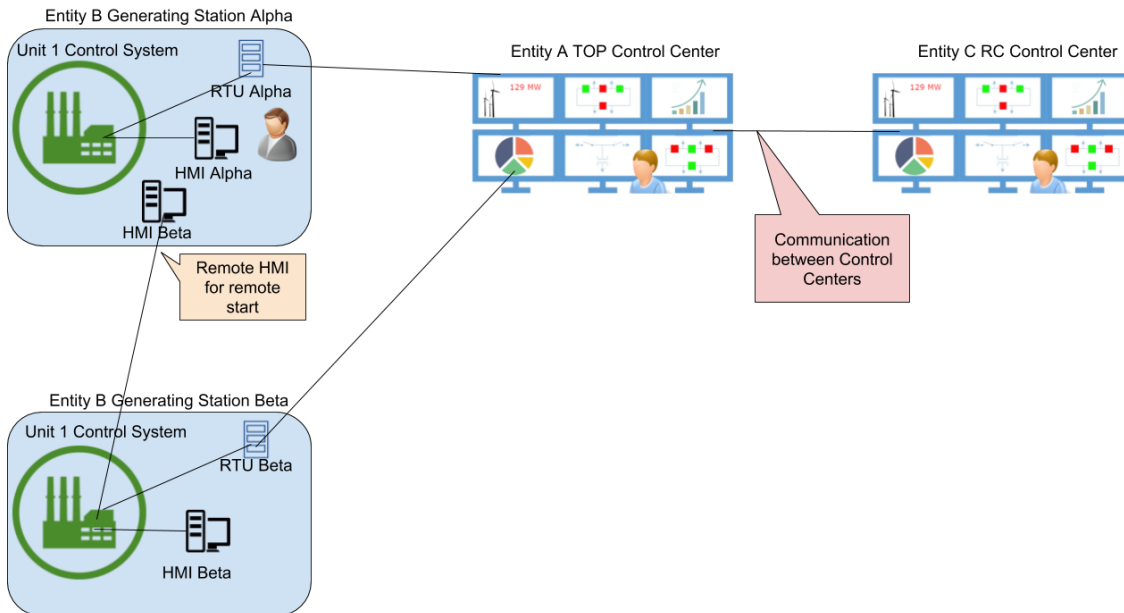


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating -(in this instance Entity C's RC Control Center and Entity A's TOP Control Center)-. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers



Communicating between Control Centers

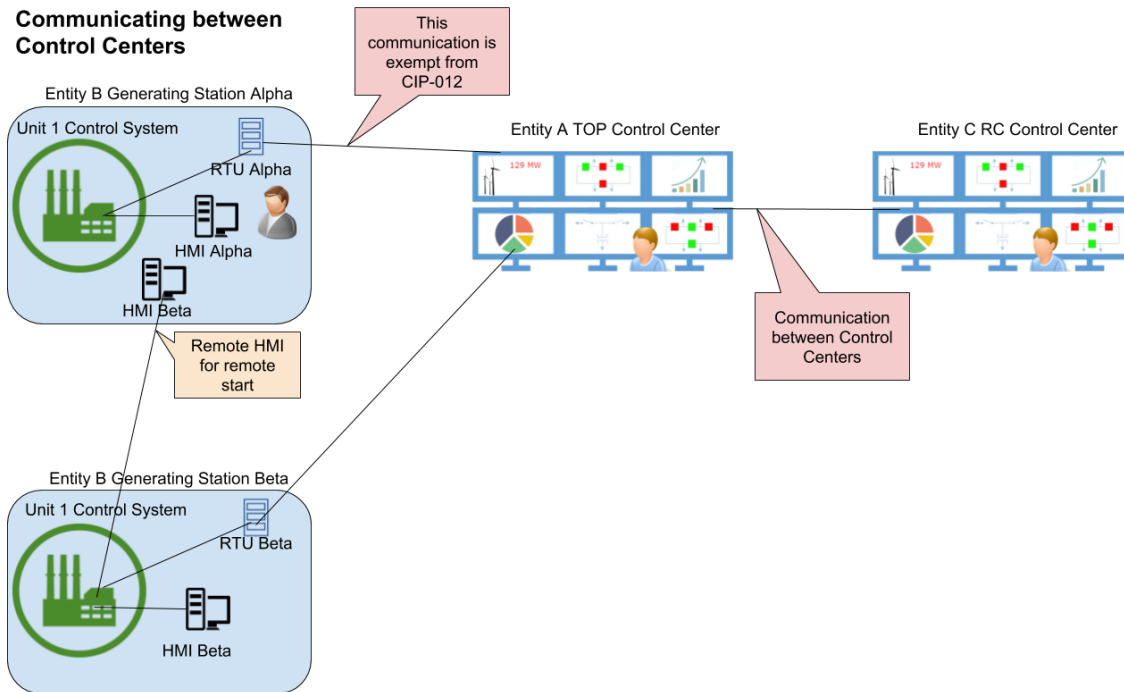


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of ... a Generator Operator for generation Facilities at two or more locations” bBecause stations Alpha and Beta are two different plant locations. Station Alpha can now be dual-classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

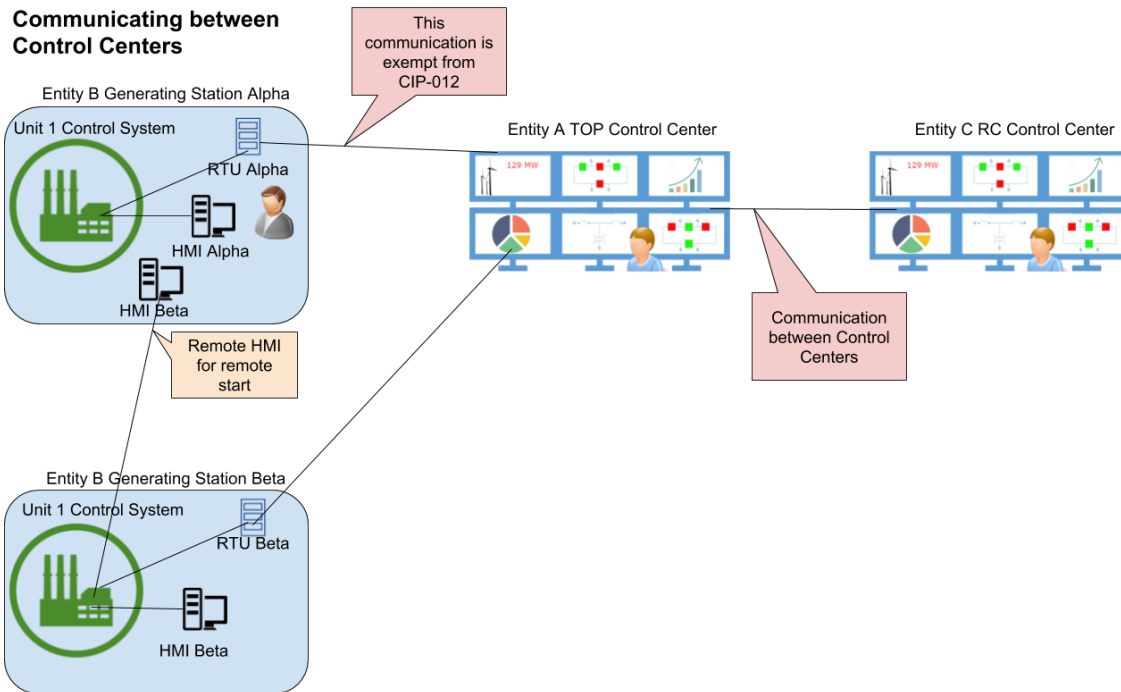


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), ~~makes-would make~~ the communication noted in Figure 3 between Station Alpha and Entity A's TOP Control Center subject to CIP-012 ~~without the exemption~~. Two HMIs have been moved into the same room and a new NERC CIP ~~s~~Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that "operating personnel" within the substation could use to impact an adjacent substation. It is also clear that in the criteria for TO's and GOP's, the "two or more locations" is not a precise enough filter for defining what a Control Center truly is. The SDT's attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT's SAR to address ~~at this time~~. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

~~A Control Center that transmits to another Control Center the transmitting Control Center.~~

The intent of this exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset's status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the standard for protecting communications between Control Centers and this type of equipment communications can may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to that its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

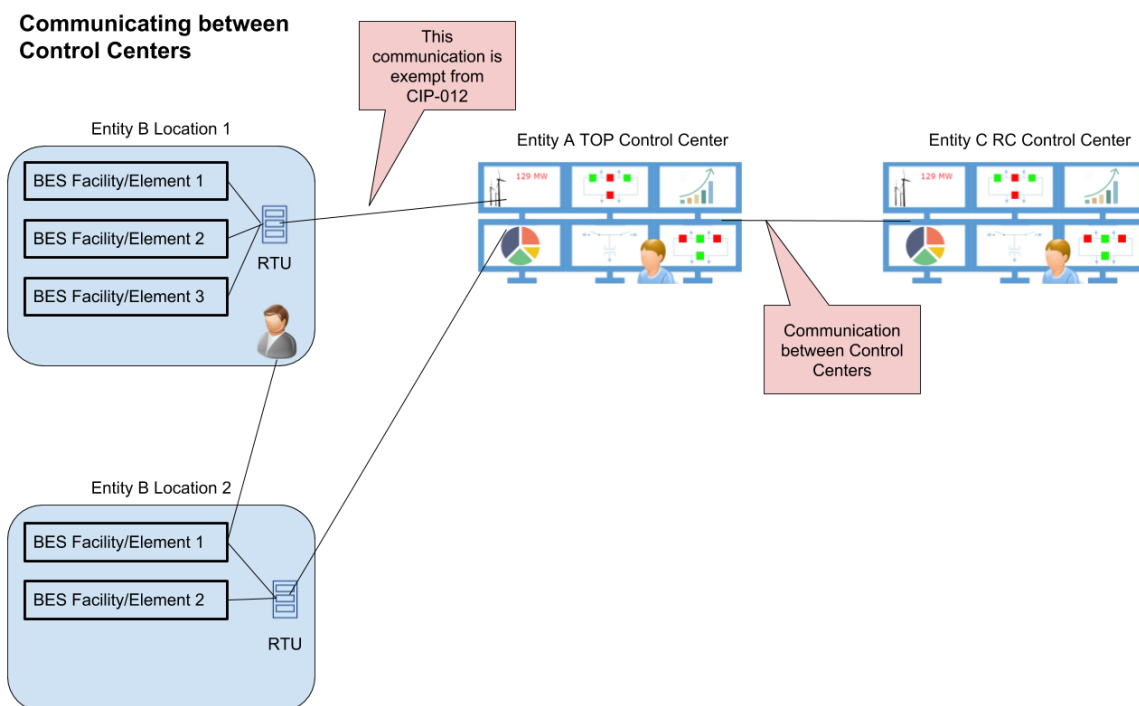


Figure 4

In Figure 4, each location only communicates its own the Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time Monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1, and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** *The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure~~and~~, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1** *Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure~~and~~, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers;*
- 1.2** *Identification of ~~where the Responsible Entity applied security protection methods to be used for the recovery of communication links used to transmit~~ Real-time Assessment and Real-time monitoring data between Control Centers;~~and~~*
- 1.3** *Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1; and*
- 1.3.1.4** *If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security ~~protection~~and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.*

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the ~~three~~ requirement parts to convey any sequence or significance.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security and availability protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers.

Part 1.2 addresses the need to identify measures to recover communications links. An important element of data communications is the availability of the communication links themselves. Communications links are the medium by which the data is transmitted between Control Centers (e.g. fiber, copper lines, satellite, etc). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.3 requires the identification of where protections are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan.

Part 1.4 addresses requirements for each side of the data transfer when they are owned or managed by different Responsible Entities. Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, ~~and~~ Integrity and Availability

The SDT drafted CIP-012-~~1~~ to address the confidentiality, ~~and~~ integrity and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), ~~and~~ unauthorized modification (integrity) transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, ~~and~~ integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴
- Availability is defined as, “Ensuring timely and reliable access to and use of information”⁵

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT ~~asserts~~ acknowledges that the availability of ~~this Real-time Assessment and Real-time monitoring~~ data is ~~already~~ required by the performance obligation of the Operating and Planning Reliability Standards. The SDT drafted CIP-012-~~1~~ to address the data while being transmitted in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems, and ~~while at rest~~ is explicitly protected ~~by CIP-003-6 through other CIP Standards, and CIP-011-2.~~

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59 under “Availability” from 44 U.S.C., Sec. 3542 \(b\)\(1\)\(C\)](#)

Identification of where ~~Security Protection~~Protections is-are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data~~-~~. The SDT did not specify the location where CIP-012 security and availability protections must be applied~~-~~. This allows latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of ~~security~~ measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 ~~security~~ protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS)~~-~~. The identification of the Cyber Asset ~~as-at~~ the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards ~~CIP-002 through CIP-011~~.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should ~~not be held accountable for identifying~~coordinate with a neighboring entity where-in instances where thea neighboring entity has applied ~~security~~ protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place.

~~A~~-A Responsible Entity; ~~however~~, may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying ~~security~~ protections on both ends of the communication link, the Responsible Entity should identify where it applied ~~security~~ protections at both ends of the link. The SDT intends for there to be alignment between the identification of where ~~security~~ protections is-are applied in CIP-012 Requirement R1, Part 1.~~32~~ and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.~~43~~.

Control Center Ownership

The CIP-012 sStandard Rrequirements address protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. They also cover the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider to be in-scope. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

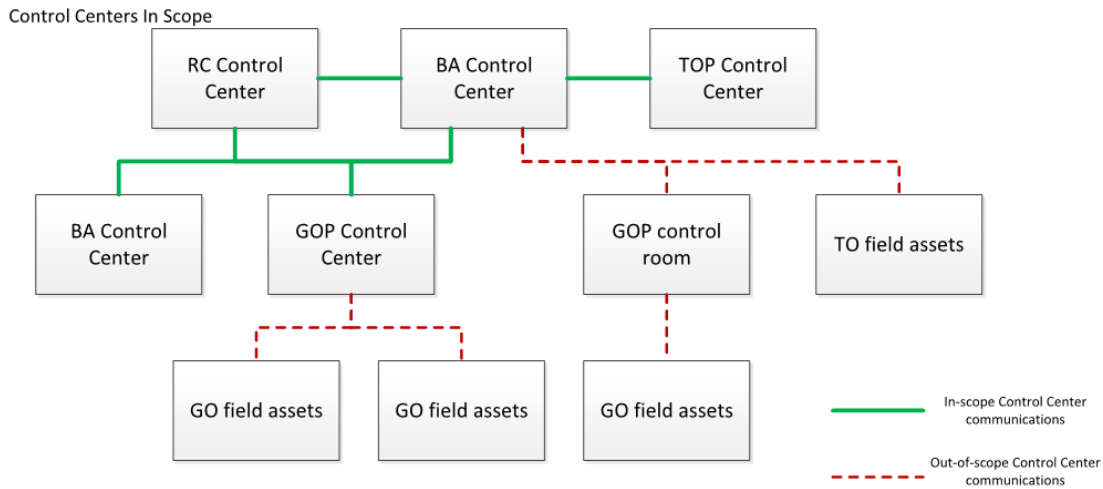


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.43 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.34 provides a mechanism to specify which entity is responsible for the application of security and availability security controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying security controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections-gap. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Security controls applied by the entity to achieve compliance with Parts 1.1, 1.2 and 1.32 of the plan should correlate to the documented responsibilities in Part 1.43 of the entity's plan.

Requirement R2

Requirement R2

~~R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to provide for the availability of communications links and data used for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*~~

- ~~2.1. Identification of how the Responsible Entity has provided for the availability of communications links and data used for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.~~
- ~~2.2. Identification of how the Responsible Entity has addressed communications and data flow restoration to maintain continuity of operations in the Responsible Entity's plan.~~
- ~~2.3. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for providing availability of communications links and data used for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.~~

General Considerations for Requirement R2

~~Requirement R2 focuses on implementing a documented plan to provide for the availability of communications links and data communicated that a critical is critical to the Real-time operations of the Bulk Electric System. This requirement focuses on data is that which is in transit while in transit between applicable Control Centers. While an important element of data communications, communication links themselves are not the only factor in ensuring availability of data. The SDT does not intend for the listed order of the three requirement parts to convey any sequence or significance.~~

Overview of availability

~~The SDT drafted drafted CIP-012-2 Requirement R2 to address availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by loss of data flow (availability) between applicable control centers. For this Standard, the SDT relied on the definitions of availability as defined by National Institute of Standards and Technology (NIST):~~

- ~~• Availability is defined as “Ensuring timely and reliable access to and use of information”~~

Alignment with IRO and TOP standards

~~While TOP-001-4 R20, R21, R32, and R24, as well as IRO-002-5 R2 and R3, address availability of Real-time monitoring and Real-time assessment data, their applicable data exchange infrastructure resides within the primary Control Center. CIP-012-2 also addresses availability of Real-time monitoring and Real-time Assessment data, but the applicable infrastructure includes communication links and data exchange infrastructure enabling transmission between Control Centers.~~

Identification of How Availability is provided for by the Responsible Entity

The SDT specifies ~~recognizes the need to have a plan to incorporate communication link and data provide availability measures to the previously required methods for to the transporting of Real-time Assessment and Real-time monitoring data. These is availability measures can be provided achieved viaby varied solutions, to include including, but not limited to, primarily redundant communication links and data paths.~~ When identifying the methods used to provide availability, Responsible Entities should implement in a manner best fitting their individual circumstances. ~~The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering to achieve the availability of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the availability objective is met.~~

~~The availability of the communications paths and real-time data flow should be monitored in a way to identify when this communication has become unavailable and the data is no longer updating. Incorporating heartbeat data points, and monitoring if the data stops updating, is one approach to consider. Notification methods should be put into place to ensure adequate response and restoration activities. Restoration methods involving contractual obligation or inter department/utility responsibility should be understood.~~

~~The focus isof Requirement R2 is about on maintaining the flow of Real-time data. At any given time, if a data exchange path becomes unreliable because of the malfunction or failure of an individual component or a combination of components in a particular data exchange path, the remaining available data exchange path(s) would support continued flow of Real-time data. Multiple paths for the communication data being exchanged should be considered, as well as how these paths are routed, to avoid single points of failure that can halt the flow of Real-time data, and how they are utilized.~~

~~The availability of the communications paths and real-time data flow should also be monitored in a way to identify when this communication has become unavailable and the data is no longer updating. Incorporating heartbeat data points, and monitoring if the data stops updating, is one approach to consider. Notification methods should be put into place to ensure adequate response and restoration activities. Methods involved in restoration of the communication paths viaRestoration methods involving contractual obligation or inter department/utility responsibility should be understood. When two or more Responsible Entities are involved, it is recommended that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the availability objective is met.~~

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not substantially change from the previously FERC approved CIP-012-1 Reliability Standard. The severe VSL was modified to reflect the proposed Requirement R1 which now has four subparts.

| VSLs for CIP-012-2, Requirement R1 | | | |
|------------------------------------|---|--|---|
| Lower | Moderate | High | Severe |
| N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R2 | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement <u>three or more</u> any Parts of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirements R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R1.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language.</p> <p>The moderate VSL addresses where the Responsible Entity documented its plan(s) but failed to include one of the applicable parts of the plan as specified in Requirement R1.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s) but failed to include two of the applicable parts of the plan as specified in Requirement R1.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|--|---|
| <p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|--|---|

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

November 2021

RELIABILITY | RESILIENCE | SECURITY



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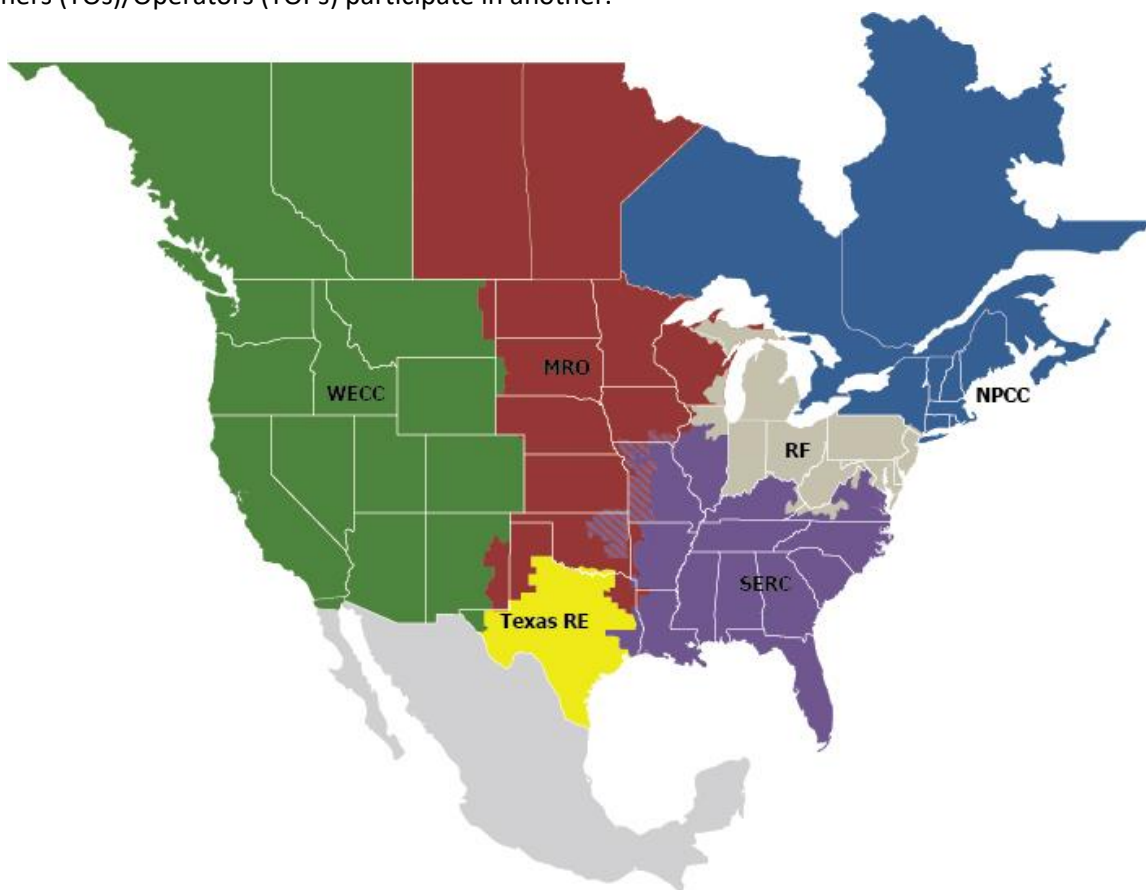
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#)

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of methods to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of where the Responsible Entity applied security and availability protections as required in Part 1.1; and
 - 1.4.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the Bulk Electric System while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between bulk electric system Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit motion.

For CIP-012-2, the SDT relied upon a definition of availability as defined by National Institute of Standards and Technology (NIST):

- Availability is defined as “Ensuring timely and reliable access to and use of information”³

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. A Responsible Entity may also reference other CIP or Operations and Planning (O&P) plans within their CIP-012 plan that include required elements of the CIP-012 plan. For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.2 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1, 1.2, 1.3, and 1.4 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment, and Real-time monitoring data from their RC(s), BA(s) and TOP(s). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

Identification of Security and Availability Protections (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

³ NIST SP 800-59 under Availability from [44 U.S.C., Sec. 3542 \(b\)\(1\)\(C\)](#)

⁴ NERC Order No. 866 at PP 11.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to, but still outside a Control Center, and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration, which applies to the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application

Where the operational obligations of an entire communication link, including both endpoints belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different protocols (e.g., DNP3 and IEC61850) to mitigate against multiple failure scenarios associated with data availability.

As noted previously, availability is generally defined as ensuring timely and reliable access to and use of information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass-through the originator's data to your Control

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple protocols that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Identification of Methods Used for the Recovery of Communication Links (R1.2)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to recover data communication links should they be interrupted. This objective is consistent with the TOP and IRO O&P Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should address within its CIP-012 plan any components of the availability solution that fall outside of the scope of the referenced plan. This may be achieved by inclusion within the other plan or directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.3)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams, or a list, could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.4)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section when communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an ICCP link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

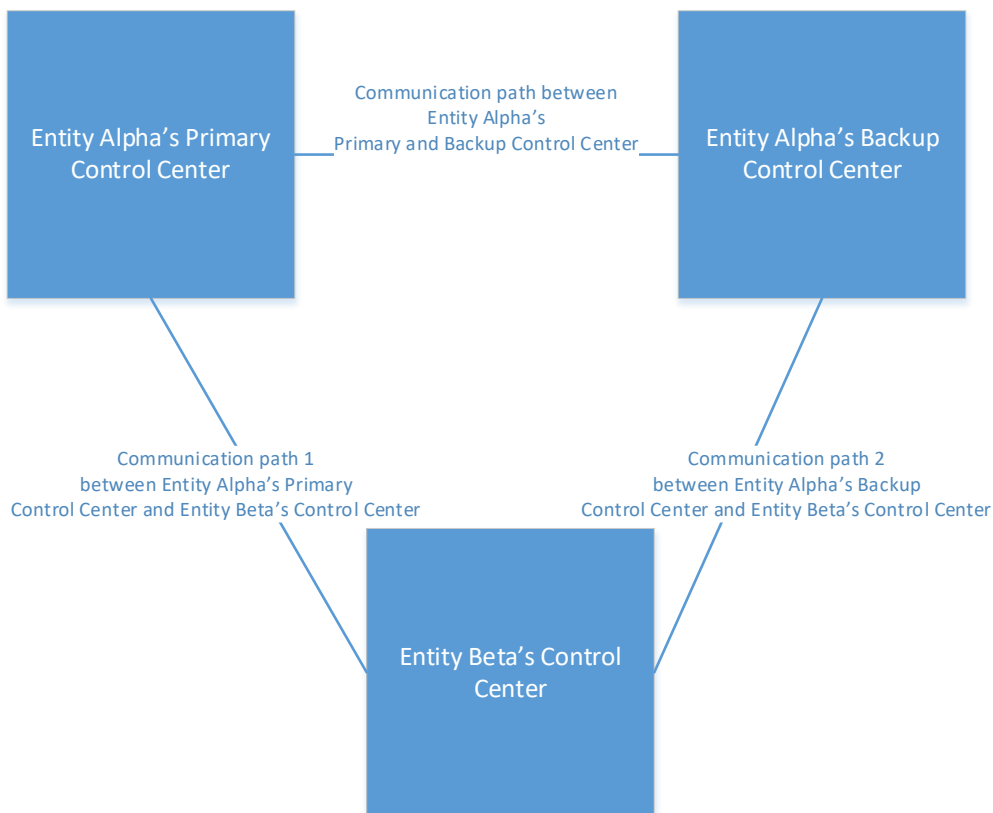


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These O&P Standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across a single communication link. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using the Inter-Control Center Communications Protocol (ICCP).

With an identified scope of communications links the applicable data traverses, Entity Alpha now considers the four required elements of its required communications between Control Centers for its plan.

Identification of Security and Availability Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers. Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. The identification of security protection could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective as long as measures for availability are also addressed. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figures 2 and 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is within a Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1 and 1.2.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using

SSL/TLS or other application layer encryption methods to exchange applicable data. The security objective for availability is achieved via alternate communication link pathing from the backup control center.

Identification of Measures Used for the Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its PSP and continuing for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity but are not part of the plan.
- Figures 2 and 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.
- Availability protection can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.4. Examples include, but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement, or a manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

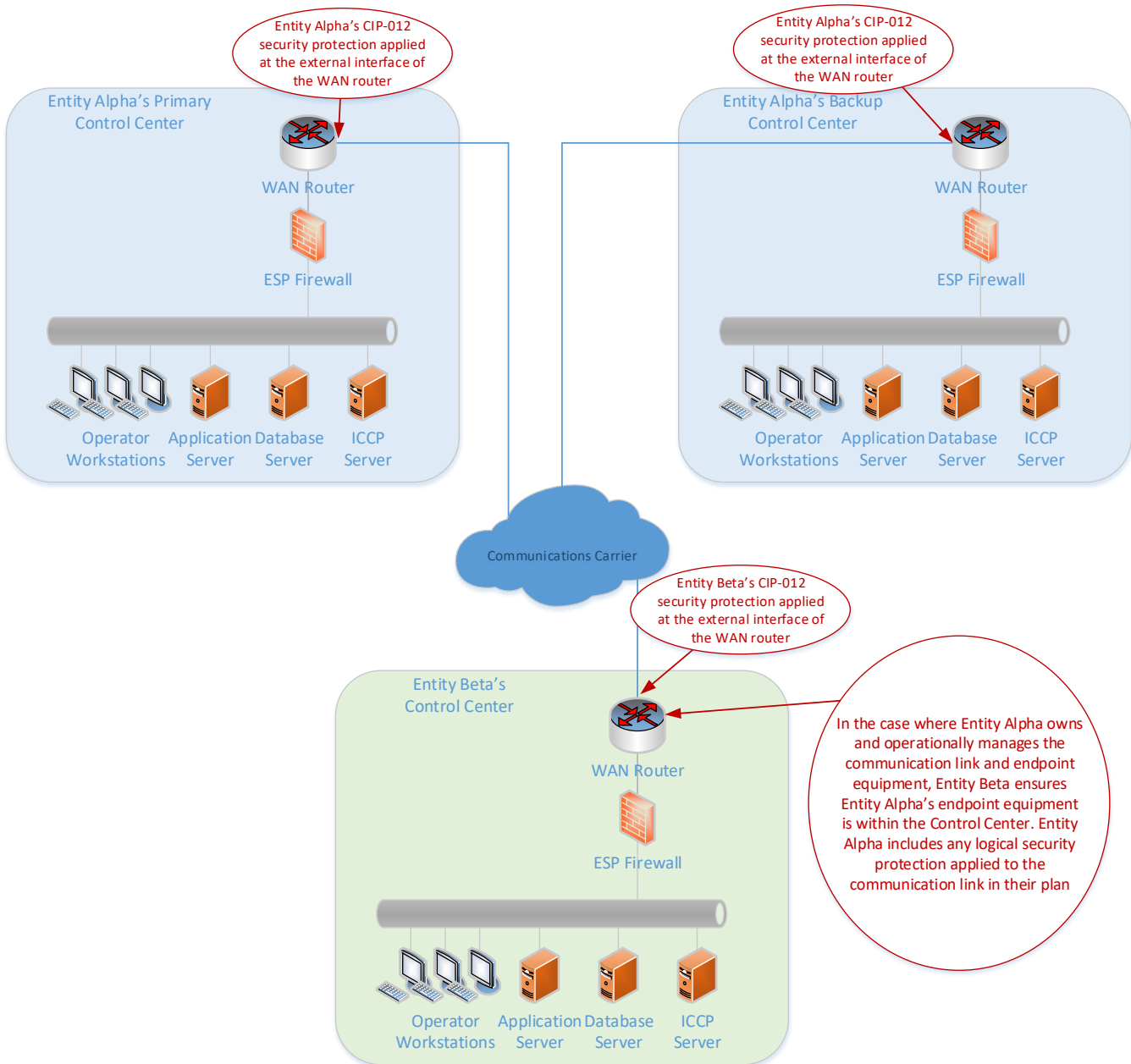


Figure 2: Network diagram and identification of where security protection is applied

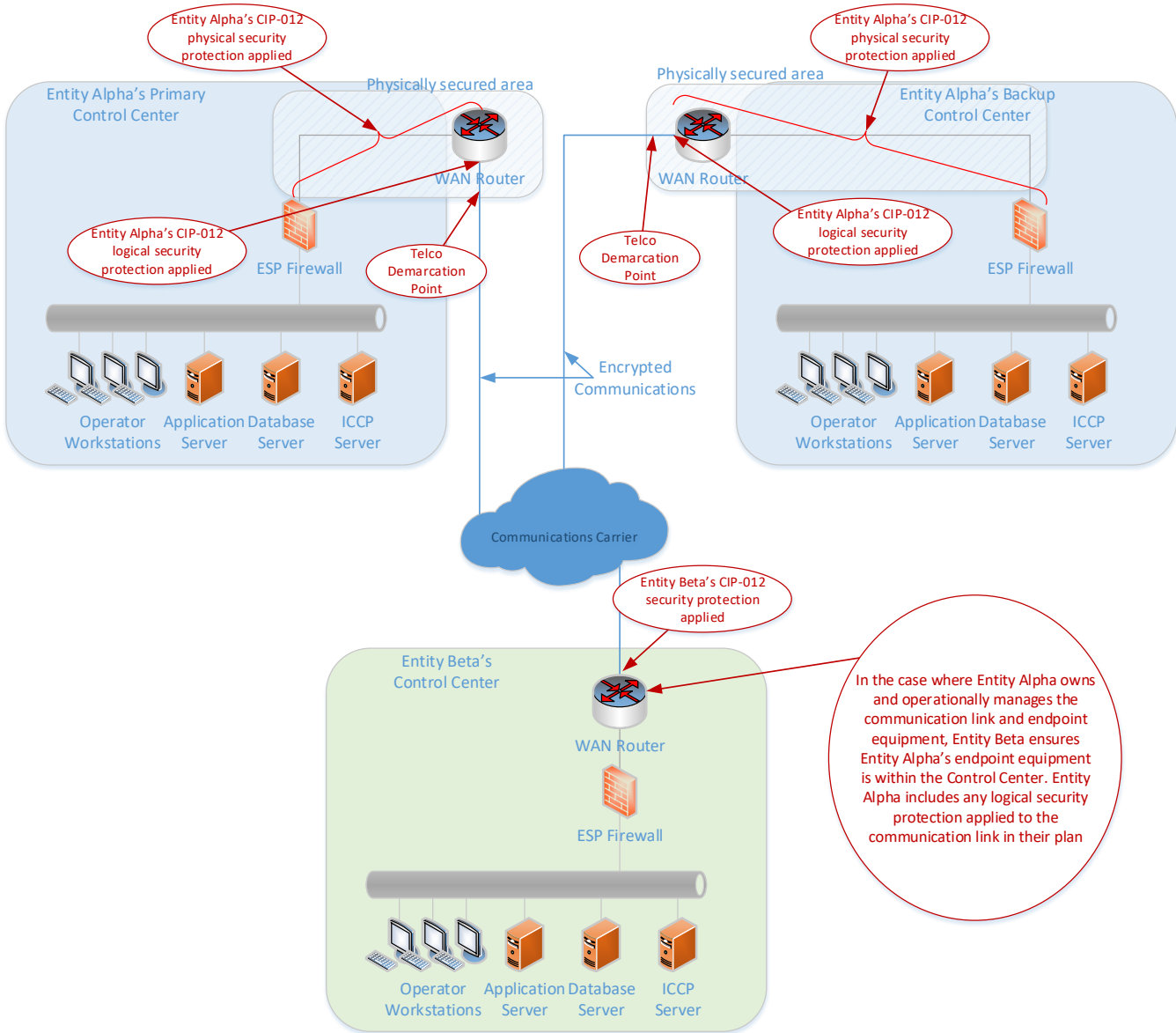


Figure 3: Network diagram using a combination of controls for CIP-012

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Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

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Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

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https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

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DRAFT Implementation Guidance
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Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-21

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Introduction

The Project ~~2016-02~~2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-~~2~~. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-~~2~~ document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 standard drafting team (SDT) developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies

¹ [NERC’s Compliance Guidance Policy](#)

² [See Order No. 866 at PP 35-36.](#)

in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability both to satisfy the security and availability objectives.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the Real-time Assessment and Real-time monitoring data itself, the communication links such data traverses, or a combination of both to satisfy the security objective consistent with the capabilities of the Responsible Entity's operational environment.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure ~~and,~~ unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of security and availability protection(s) used to mitigate the risks posed by unauthorized disclosure ~~and,~~ unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers; ~~and~~
 - 1.2.** Identification of ~~where the Responsible Entity applied security protection methods to be used~~ for transmitting the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers; ~~and~~
 - 1.3.** Identification of where the Responsible Entity applied security and availability protections as required in Part 1.1; and
 - 1.3.1.4.** _____ If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security ~~protection and availability protection(s)~~ to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-~~21~~, the focus of ~~r~~Requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the Bulk Electric System while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between bulk electric system Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit motion.

For CIP-012-2, the SDT relied upon a definition of availability as defined by National Institute of Standards and Technology (NIST):

- Availability is defined as “Ensuring timely and reliable access to and use of information”³

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. A Responsible Entity may also reference other CIP or Operations and Planning (O&P) plans within their CIP-012 plan that include required elements of the CIP-012 plan. For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.2 requirement. For instance, a Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1, 1.2, ~~and 1.3 and 1.43~~ of ~~R~~requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time ~~M~~onitoring ~~D~~ata

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their RC(s), BA(s) and TOP(s). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

Identification of Security and Availability Protections (R1.1)

Entities have latitude to identify and choose which security protections ~~is~~ are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different protocols (e.g., DNP3 and IEC61850) to mitigate against multiple failure scenarios associated with data availability.

As noted previously, availability is generally defined as ensuring timely and reliable access to and use of information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass-through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

⁵ NIST SP 800-160v2, 11

⁶ NIST SP 800-160v2, 11

Another method would be to use multiple protocols that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Identification of Methods Used for the Recovery of Communication Links (R1.2)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to recover data communication links should they be interrupted. This objective is consistent with the TOP and IRO O&P Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should address within its CIP-012 plan any components of the availability solution that fall outside of the scope of the referenced plan. This may be achieved by inclusion within the other plan or directly within the CIP-012 plan.

Identification of Where Security and Availability Protections is-are Applied by the Responsible Entity (R1.32)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement security-the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing either-physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are-is applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are-is applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.43)

The Technical Rationale and Justification for CIP-012-~~4~~ identifies key considerations in the Control Center Ownership section when communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an ICCP link reset.

~~Implementation of responsibilities could also be demonstrated in many ways. Some examples include a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities between the two parties.~~

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A ~~high level~~ high-level block diagram of the basic reference model is shown below in ~~Figure 1~~ Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

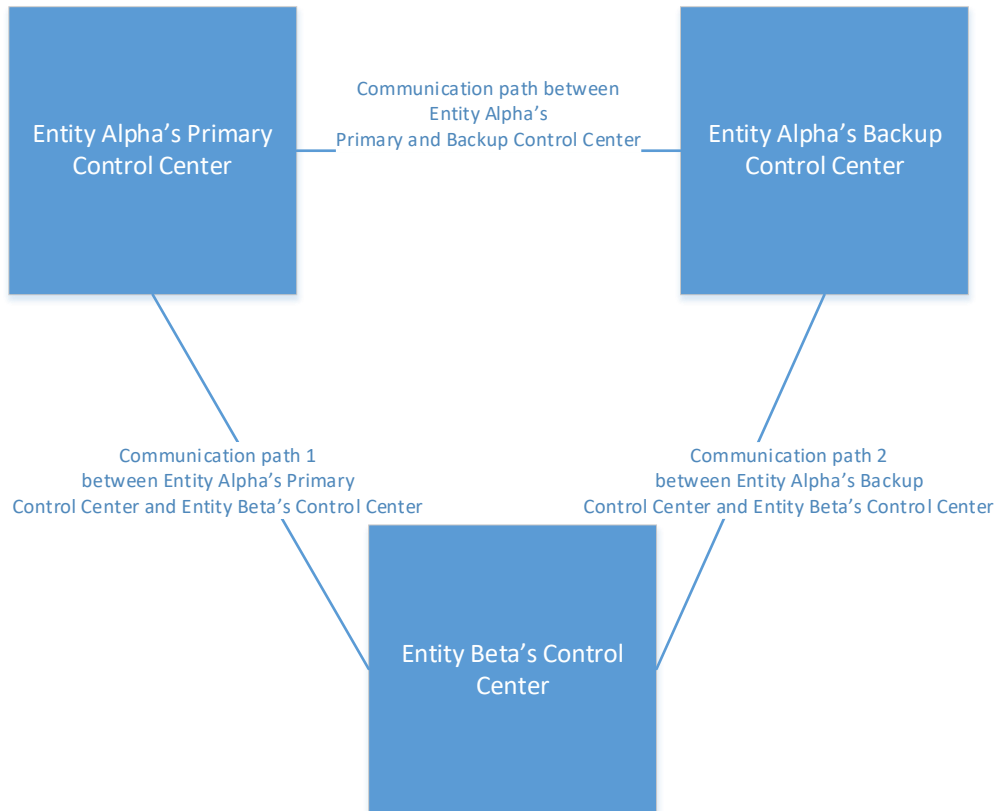


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012-~~1~~. There are multiple ways to identify an entity's scope ~~in~~ in requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012-~~1~~.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could refer to the data specification for Real-time Assessment and Real-time monitoring data identified in

TOP-003-3 and IRO-010. -2These O&P Standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across a single communication link. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using the Inter-Control Center Communications Protocol (ICCP).

With an identified scope of communications links the applicable data traverses, Entity Alpha now considers the ~~four~~ three required elements of its required communications between Control Centers for its plan.

Identification of Security and Availability Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012-4 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers. Entity Alpha must also ensure that this protection accounts for a need to ensure high appropriate availability of the data. The identification of security protection could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the ~~security~~ protections implemented per segment.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective as long as measures for availability are also addressed. For this case, shown in Figure 2 ~~Figure 2~~, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. ~~Therefore~~ Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is within a Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1 and 1.2.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on ~~lower level~~ lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application

layer by using SSL/TLS or other application layer encryption methods to exchange applicable data. The security objective for availability is achieved via alternate communication link pathing from the backup control center.

Identification of Measures Used for the Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2~~Figure 2~~ shows the identification where CIP-012-~~1~~ security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012-~~1~~ security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012-~~1~~. In this scenario, Entity Alpha identifies that it has applied physical security protection for its PSP and continuing for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block₂ for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity, but clarity but are not part of the plan.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.
- Availability protection can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.4. Examples include but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

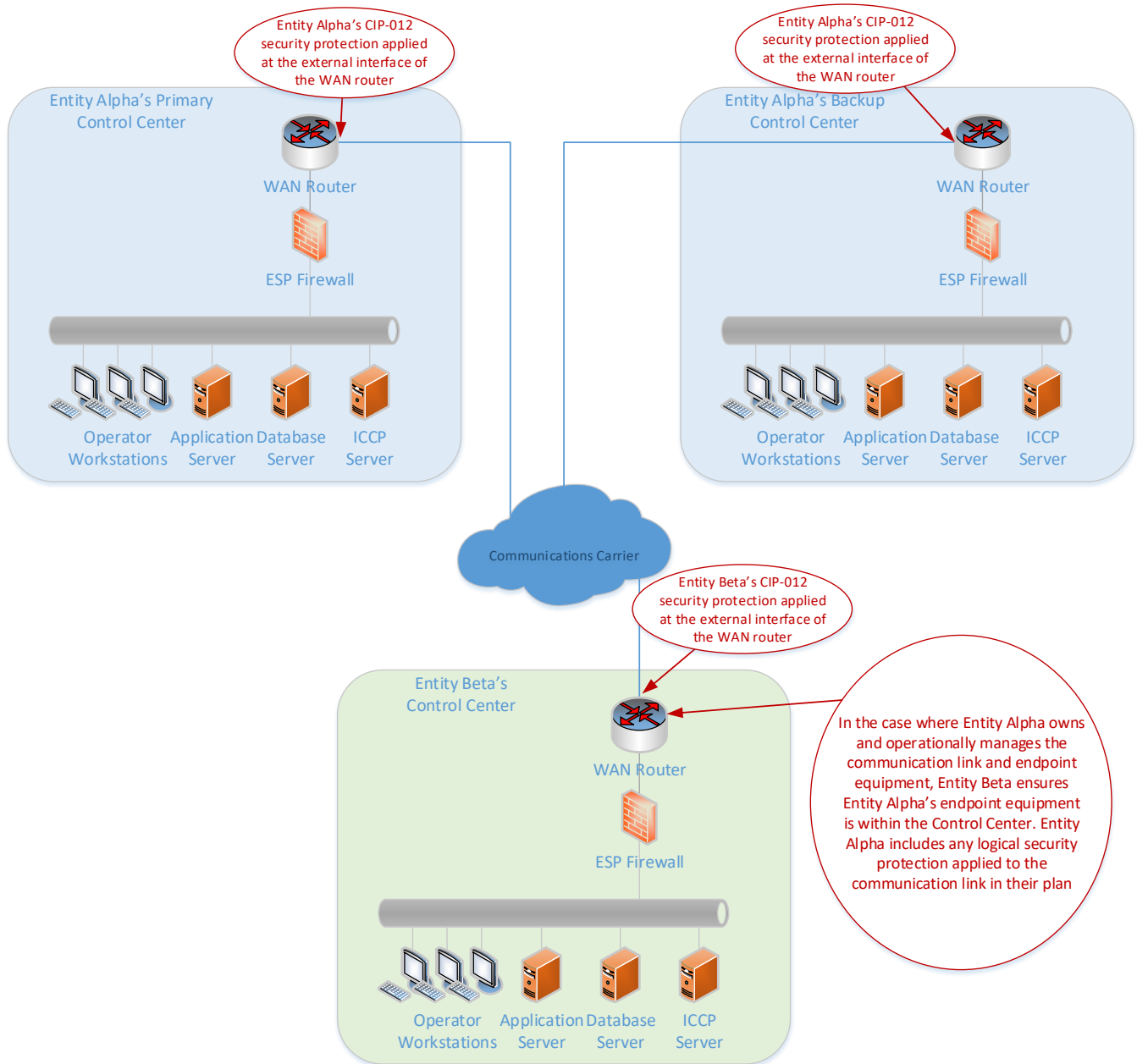


Figure 2: Network diagram and identification of where security protection is applied

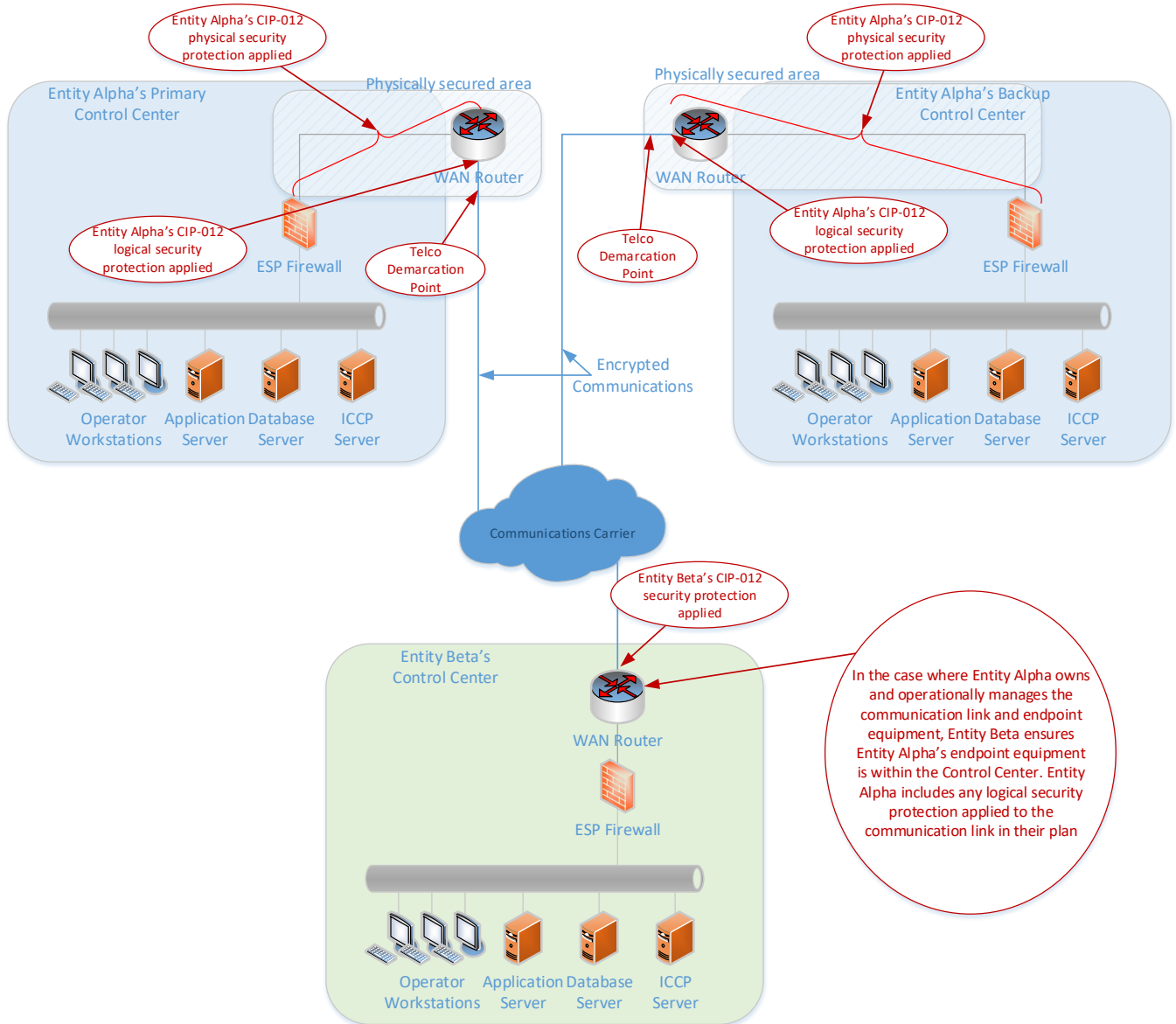


Figure 3: Network diagram using a combination of controls for CIP-012-1

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through January 24, 2022

[Now Available](#)

A 55-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Monday, January 24, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the previous comment period are reflected in this draft of the standard.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Additional ballots for the standard and implementation plan, along with non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **January 14 - 24, 2022**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2020-04 Modifications to CIP-012 | Draft 2
Comment Period Start Date: 11/30/2021
Comment Period End Date: 1/24/2022
Associated Ballots: 2020-04 Modifications to CIP-012 CIP-012-2 AB 2 ST
2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 2 NB
2020-04 Modifications to CIP-012 Implementation Plan AB 2 OT

There were 69 sets of responses, including comments from approximately 144 different people from approximately 94 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. The SDT revised CIP-012-1 R1 to address the comments received during initial ballot and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree that the proposed language in R1 addresses security and availability as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.**
- 2. Do you believe that you can demonstrate compliance with R1.3 to identify where your availability protections are applied? If not please provide comments and suggested requirement language.**
- 3. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.**
- 4. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.**
- 5. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|---------------------------------------|--------------------|------------|--------|----------------------------|------------------------|-------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| DTE Energy - Detroit Edison Company | Adrian Raducea | 5 | | DTE Energy - DTE Electric | Karie Barczak | DTE Energy - Detroit Edison Company | 3 | RF |
| | | | | | Adrian Raducea | DTE Energy - Detroit Edison | 5 | RF |
| | | | | | patricia ireland | DTE Energy | 4 | RF |
| Tennessee Valley Authority | Brian Millard | 1,3,5,6 | SERC | Tennessee Valley Authority | Kurtz, Bryan G. | Tennessee Valley Authority | 1 | SERC |
| | | | | | Grant, Ian S. | Tennessee Valley Authority | 3 | SERC |
| | | | | | Thomas, M. Lee | Tennessee Valley Authority | 5 | SERC |
| | | | | | Parsons, Marjorie S. | Tennessee Valley Authority | 6 | SERC |
| Santee Cooper | Chris Wagner | 1 | | Santee Cooper | Jennifer Richards | Santee Cooper | 1,3,5,6 | SERC |
| | | | | | Rene' Free | Santee Cooper | 1,3,5,6 | SERC |
| CMS Energy - Consumers Energy Company | Jeanne Kurzynowski | 3,4,5 | RF | Consumers Energy Company | Jeanne Kurzynowski | Consumers Energy Company | 1,3,4,5 | RF |
| | | | | | Jim Anderson | Consumers Energy Company | 1 | RF |

| | | | | | | | | |
|--|---------------|-----------|---|------------------------------|-------------------|---|-------|----------|
| | | | | | Karl Blaszkowski | Consumers Energy Company | 3 | RF |
| | | | | | Theresa Martinez | Consumers Energy Company | 4 | RF |
| | | | | | David Greyerbiehl | Consumers Energy Company | 5 | RF |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,NA - Not Applicable,RF,SERC,Texas RE,WECC | ACES Standard Collaborations | Bob Solomon | Hoosier Energy Rural Electric Cooperative, Inc. | 1 | SERC |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Scott Brame | North Carolina Electric Membership Corporation | 3,4,5 | SERC |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 5 | Texas RE |
| | | | | | Dominic Birk | Big Rivers Electric Corporation | 1 | SERC |
| | | | | | Kylee Kropp | Sunflower Electric Power Cooperation | 1 | MRO |
| Public Utility District No. 1 of Chelan County | Joyce Gundry | 3 | | CHPD | Meaghan Connell | Public Utility District No. 1 of Chelan County | 5 | WECC |
| | | | | | Glen Pruitt | Public Utility District No. 1 | 6 | WECC |

| | | | | | | | | | |
|--|-----------------|---------|------|-------------------|--|------------------|--|---|------|
| | | | | | | of Chelan County | | | |
| | | | | | | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | | Diane Landry | Public Utility District No. 1 of Chelan County | 1 | WECC |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | | Tricia Bynum | FirstEnergy - FirstEnergy Corporation | 6 | RF |
| | | | | | | Mark Garza | FirstEnergy-FirstEnergy | 4 | RF |
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |
| | | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | | Ron Carlsen | Southern Company - Southern | 6 | SERC |

| | | | | | | | | |
|--------------------------------------|-------------|----------------------|------|--|----------------------|--|----|------|
| | | | | | | Company Generation | | |
| | | | | | Jim Howell | Southern Company - Southern Company Services, Inc. - Gen | 5 | SERC |
| Eversource Energy | Quintin Lee | 1 | | Eversource Group | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Christopher McKinnon | Eversource Energy | 3 | NPCC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC Regional Standards Committee no NGrid | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |
| | | | | | David Burke | Orange & Rockland Utilities | 3 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | David Kiguel | Independent | 7 | NPCC |
| | | | | | Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| | | | | | Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| | | | | | Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| | | | | | Salvatore Spagnolo | New York Power Authority | 1 | NPCC |

| | | | |
|-------------------|--|----|------|
| Shivaz Chopra | New York Power Authority | 5 | NPCC |
| Deidre Altobell | Con Ed - Consolidated Edison | 4 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Cristhian Godoy | Con Ed - Consolidated Edison Co. of New York | 6 | NPCC |
| Nurul Abser | NB Power Corporation | 1 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |
| Michael Ridolfino | Central Hudson Gas and Electric | 1 | NPCC |
| Vijay Puran | NYSPS | 6 | NPCC |
| ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| Sean Cavote | PSEG - Public Service Electric and Gas Co. | 1 | NPCC |
| Brian Robinson | Utility Services | 5 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Jim Grant | NYISO | 2 | NPCC |
| John Pearson | ISONE | 2 | NPCC |
| Nicolas Turcotte | Hydro-Qu?bec TransEnergie | 1 | NPCC |

| | | | | | | | | |
|-------------------------------------|-------------|---|--|----------|-----------------|-------------------------------------|---|---------------------|
| | | | | | Chantal Mazza | Hydro-Quebec | 2 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Dominion - Dominion Resources, Inc. | Sean Bodkin | 6 | | Dominion | Connie Lowe | Dominion - Dominion Resources, Inc. | 3 | NA - Not Applicable |
| | | | | | Lou Oberski | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| | | | | | Larry Nash | Dominion - Dominion Virginia Power | 1 | NA - Not Applicable |
| | | | | | Rachel Snead | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |

1. The SDT revised CIP-012-1 R1 to address the comments received during initial ballot and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree that the proposed language in R1 addresses security and availability as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer No

Document Name

Comment

While the language in R1 may address security and availability, the availability portion of this proposed standard is better suited for IRO-010, TOP-003, TOP-001 or any other applicable standard within the Operations and Planning suite of standards. Ensuring availability of communication links through redundancy and/or diversity is a significant departure in scope from the CIP standards. The CIP standards generally require controls and protections to be applied at the device level. This proposed language involves protections outside of the device and, in this case, the Entity's Electronic Security Perimeter.

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer No

Document Name

Comment

There is currently no definition of "availability". AEPCO agrees with ACES comments of adding a NERC definition for "availability" or adoption a NIST definition.

Likes 0

Dislikes 0

Response

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

Duke Energy does not believe the SDT revised CIP-012-1 in a way that best meets the directives outlined in FERC Order No. 866. The SDT's use of "availability protections" is unclear and would require further definition of this term versus referring to the NIST definition of *availability* defined as "ensuring timely and reliable access to and use of information". Using the language "security and availability protections" leaves us with questions. We prefer the language of FERC Order No. 822 specifically directing NERC to modify the Reliability Standards to require entities to implement controls to protect communication links and data communicated between BES Control Centers. FERC Order No. 866 conveys FERC's assertion that NERC did not address *availability*. We think that *availability* should be addressed using language that references controls to protect availability of communication links and data. Please see Question 5 below and our suggested rewording of sub requirement 1.2.

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer No

Document Name

Comment

While the language in R1 may address security and availability, the availability portion of this proposed standard is better suited for IRO-010, TOP-003, TOP-001 or any other applicable standard within the Operations and Planning suite of standards. Ensuring availability of communication links through redundancy and/or diversity is a significant departure in scope from the CIP standards. The CIP standards generally require controls and protections to be applied at the device level. This proposed language involves protections outside of the device and, in this case, the Entity's Electronic Security Perimeter.

Likes 0

Dislikes 0

Response

Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer No

Document Name

Comment

The proposed language states that entities are to have a plan to mitigate the risks of a loss of availability of data while being transmitted between control centers. As worded, this does not direct entities to implement redundant or highly available communications infrastructure, which we believe is the intent of Order No. 866, but rather it directs entities to have a plan for mitigating the risks of a loss of availability of the data. We would recommend making the availability directive a stand alone requirement.

Likes 3 Black Hills Corporation, 3, Stahl Don; Black Hills Corporation, 5, Silbaugh Derek; PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer No

Document Name

Comment

Eversource supports the comments of EEI.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. This may be creating a conflict with other standards by including availability of data when we feel it is already included in other standards

Likes 0

Dislikes 0

Response

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

Answer No

Document Name

Comment

What exactly are "availability protections"? Can examples be provided?

Likes 0

Dislikes 0

Response

Answer No

Document Name

Comment

The MRO NSRF (“NSRF”) generally agrees revised CIP-012-2 meets the FERC Order 866 directives; however, to be useful the term “availability” must be clarified in the requirements. While the NSRF appreciates the NIST definition of “availability” contained in the proposed Implementation Guidance, it is not certain that the Implementation Guidance will be endorsed by the ERO. Therefore, the NSRF recommends the SDT draft a formal definition of “Availability” for inclusion in the CIP-012-2 Standard, which could be the adoption of the NIST definition, or something similar. The NSRF recognizes the challenges and unintended consequences associated with “availability” being added as a new definition to the NERC Glossary of Terms since “availability” is used in other standards which could be impacted. In light of that, the NSRF suggests a definition be added (and limited in scope) to the CIP-012 standard itself.

Additionally, clarification of “availability” could also be included in the Technical Rationale for CIP-012. The benefits of a definition include formalization within the Standard’s vernacular, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams. The NSRF also believes that the Measure M1 should provide examples of what types of evidence would meet the availability requirement (e.g., an entity executing plans in support of the recovery of compromised communications links and the use of back-up communications capability when primary communications are unavailable). This would provide additional clarity to the industry.

Similarly, while having the concepts of “diversity, redundancy, or a combination of both” in the Implementation Guidance is needed, the NSRF recommends the SDT consider including the concepts in M1 to achieve a clearer measure of what constitutes meeting the requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The NSRF recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The NSRF recommends the SDT clarify within the Implementation Guidance at **Identification of Methods Used for the Recovery of Communication Links (R1.2)** the phrase “This objective is consistent with TOP and IRO O&P Standards” by identifying which standards are are being referenced.

The term “recovery” as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the NSRF recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity’s fault.

Additionally, the task of restoring availability predominantly resides with the telecommunication provider. In the event a communication link goes down, electric reliability entities are reliant on telecommunication provider to restore service. The NSRF requests the SDT add an exemption for links and equipment owned by telecommunication providers.

Likes 1

Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer No

Document Name

Comment

Dominion Energy supports the comments from EEI. In addition, we would like to emphasize particular concern around the term "availability". This should be a defined term to eliminate ambiguity and reduce confusion. The current NIST definition used in the Technical Rational and the Implementation Guidance could be used as a basis for a definition.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Although BPA supports the revisions made in the latest draft, the additional availability requirement is added into the standard with an 'and' statement and not clearly distinguished. Because availability requires significantly different controls than confidentiality or integrity, BPA recommends:

1. R1.1 should be maintained, as it is currently written, limited to confidentiality/integrity.

a) The Drafting Team should insert a new subpart (R1.2) for the availability requirement. This will assist both entities and auditors in a cleaner approach to implementation and assessing compliance.

b) The Drafting Team should insert a new subpart (R1.2) for the availability requirement. This will assist both entities and auditors in a cleaner approach to implementation and assessing compliance.

2. BPA appreciates that the SDT has clarified the definition of the term "availability" in the Technical Rationale and Implementation Guidance. However, the Requirement is confusing, and it is inconsistent with the approach taken for the existing confidentiality/integrity requirement:

a. The terms "confidentiality" and "integrity" are not used in R1.1; rather, they are described as "unauthorized disclosure" and "unauthorized modification", respectively. They are only linked to the cybersecurity terms of Confidentiality and Integrity in the Technical Rationale, for clarity. The Drafting Team should use the same approach for Availability.

b. "Availability" means different things to cybersecurity professionals and communications professionals (who will be interpreting and implementing this Requirement):

i. Availability in cybersecurity circles is 'Ensuring timely and reliable access to and use of information.' BPA agrees that this definition meets the intent of the FERC Order.

ii. Availability in communications circles is a 'Quantitative measurement of the expected desirable performance criteria of a communications link/channel/system.' (i.e., Block Error Rate < 10⁻⁶, < 2 Serverly Error Seconds in 24 hours, 99.9999% uptime in any given year period, etc.) This definition doesn't meet FERC's intentions, but will be the first thing that comes to mind in telecom engineers who read it.

c. Because of this important and potentially confusing difference, BPA recommends that the SDT:

i. Replace "availability" in the new proposed subpart (R1.2, proposed above): "Identification of protection(s) used to ensure timely and reliable access to, and use of, Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers."

ii. The term availability should only appear in the Technical Rationale and Implementation Guidance for additional clarity, as is already done for confidentiality and integrity.

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer

No

Document Name

Comment

While CHPD supports revisions made in the latest draft and appreciates the effort that went into consolidating R2 into R1, CHPD does not believe this revision best meets the directives of FERC Order No. 866. Because availability requires significantly different controls than confidentiality and integrity, CHPD recommends the SDT insert a new subpart (R1.2) for the availability protections requirement. This will assist both entities and auditors in a cleaner approach to implementing and assessing compliance.

CHPD appreciates that the SDT clarified the definition of the term "availability" in the Technical Rationale. However, R1 is confusing with regards to availability and inconsistent with the approach taken for the existing confidentiality/integrity requirement. The current revision remains ambiguous with the term "availability". Availability should be addressed using language that references controls to protect availability of communication links and data. The Technical Rationale is helpful, and including its clear examples (e.g., "redundant communication links and data paths") or adding a requirement table with a measures column with similar evidence examples would minimize inconsistent interpretations among Registered Entities and Regional Entities.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

No

Document Name

Comment

The scope of 'availability' is not clear and should be further clarified in R1 or in the Technical Rationale and/or Implementation Guidance. Noting on page 2 of the TR the SDT does reference TOP-001 and IRO-002 ("diversity, redundancy, or a combination of both"), but it is not clear what scope of availability is also required in R1.

Likes 0

Dislikes 0

Response

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer

No

Document Name

Comment

While the NSRF appreciates the NIST definition of "availability" contained in the proposed Implementation Guidance, the NSRF recommends the SDT draft a formal definition of "availability" for inclusion in the NERC Glossary of Terms, even if it entails adoption of the NIST definition, or something similar. By doing so, the new definition would be formalized within NERC's vernacular and within the Standard, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams.

Similarly, while having the concepts of "diversity, redundancy, or a combination of both" in the Implementation Guidance is needed, the NSRF recommends the SDT consider including the concepts in R1 to achieve a clearer requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The NSRF recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The NSRF recommends the SDT clarify within the Implementation Guidance at Identification of Methods Used for the Recovery of Communication Links (R1.2) the phrase "This objective is consistent with TOP and IRO O&P Standards" by identifying which standards are being referenced.

The term "recovery" as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the NSRF recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity's fault.

Additionally, much availability relies on Telecommunication Providers that in the event they go down, we are reliant on them to bring it back up. In the event a line or their telecommunication equipment goes down, the Registered Entity does have to rely on them to bring it back up. The NSRF requests the SDT to add an exemption for links and equipment used by telecommunication providers.

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer

No

Document Name

Comment

While AEP agrees that R1 addresses both security and availability concerns as identified in FERC Order No. 866, potential scope creep could exist within Requirement R1.1, as it is not explicitly stated that loss of data availability is due to communication link failure. Data loss can occur for a variety of reasons, and as such, AEP recommends that R1.1 specify that data loss is due to communication link unavailability.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

N&ST believes the proposed language in R1 does not fully address FERC Order 866. The Order directs NERC to modify CIP-012 to address availability of communications links and the data they carry while it's in transit. The proposed "combination" requirement to address data confidentiality, integrity, and availability fails to identify communications links between in-scope Control Centers as requiring availability protections. The need to do so is implied in R1.2, but N&ST believes this should be made explicit. In addition, R1's proposed language does not identify any requirement for a Responsible Entity's CIP-012 plan(s) to include provisions for continuity of operations, as directed by the FERC Order.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

| | |
|---|----|
| Document Name | |
| Comment | |
| <p>BC Hydro appreciates the opportunity to comment and provides the following comments.</p> <p>Although the Requirement 2 wording from Draft 2 of CIP-012-2 is removed however it appears that the wording of the Requirement 2 from Draft 1 has only been moved or merged into Requirement 1 of Draft 2. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 appear to still hold valid. The changes in Requirement 1 in Draft 2 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP 002-5.1a. As availability is the purview of operations, it would be better suited to other MRS standards (e.g., IRO-010, TOP-003, TOP-001) or other applicable Standard(s) within the Operations and Planning (O&P) domain..</p> <p>BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.</p> <p>Alternatively BC Hydro suggests providing a clear understanding of the term 'availability' and a clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on 3rd party telecommunication providers and in the event of a line or telecommunication equipment going down, the entity is reliant on the 3rd party telecommunication providers to fix the problems. BC Hydro suggests that SDT include an exemption for the links and equipment used by 3rd party telecommunication providers as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Larry Watt - Lakeland Electric - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Availability should be handled as part of the TOP or EOP series of standards and does not belong in the CIP Standards. In fact, response to unavailability is already built into standards of the TOP/EOP series.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Susan Sosbe - Wabash Valley Power Association - 3 | |
| Answer | No |
| Document Name | |
| Comment | |

While we agree the proposed language in R1 addresses the availability modifications being proposed in this draft to meet FERC Order No. 866, the definition of “availability” is not a NERC defined term. Providing an alternative standard’s term definition does not provide an avenue to meet strict NERC CIP compliance. To aid Entities, a formal definition of “availability” should be adopted to the NERC Glossary. By defining “availability”, it alleviates the potential of differing interpretations of the term.

R1.1.2 is too broad in using the term “recovery”. Entities are more often dependent on telecommunication providers to restore communications when a circuit goes down between Control Centers. This is due to the number of physical mediums and cyber assets data traverses from Control Center to Control Center. There should be an exception in the requirement allowing for restoration issues outside of the control of the entity being required to comply.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Becky Webb - Exelon - 6 | |
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi | |
| Answer | No |
| Document Name | |
| Comment | |
| No: As mentioned by others and NCPA agree that availability is not well defined and can have multi meanings and expectations relating to the standards. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | No |

| | |
|--|----|
| Document Name | |
| Comment | |
| MPC supports comments submitted by the MRO NERC Standards Review Forum. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | No |
| Document Name | |
| Comment | |
| SCPSA believes that the previous version of the CIP-002-2 draft addressed FERC Order No. 866 more effectively. Integrating the security and availability components into a single requirement potentially leads to confusion because the methods of implementation for security and availability protections are different. Furthermore, the term “availability protections” is unclear. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness. Similarly, the NIST definition provided in the Technical Rational which states “Ensuring timely and reliable access to and use of information” is vague and lacks actionable direction. Furthermore, entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness. Similarly, the NIST definition provided in the Technical Rational which states “Ensuring timely and reliable access to and use of information” is vague and lacks actionable direction. Furthermore, entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>While we agree the proposed language in R1 addresses the availability modifications being proposed in this draft to meet FERC Order No. 866, the definition of “availability” is not a NERC defined term. Providing an alternative standard’s term definition does not provide an avenue to meet strict NERC CIP compliance. To aid entities, ACES believes a formal definition of “availability” be adopted to the NERC Glossary. By defning “availability”, it alieves the potential of differing interpretations of the term.</p> <p>Further, ACES believes R1.1.2 is too broad in using the term “recovery”. Entities, are more often dependent on it’s telecommunication providers to restore communications when a circuit goes down between Control Centers. This is due to the number of physical mediums and cyber assets data traverses from Control Center to Control Center. There should be an exception in the requirement allowing for restoration issues outside of the control of the entity being required to comply.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman | |
| Answer | No |
| Document Name | |
| Comment | |

Availability should be handled as part of the TOP or EOP series of standards and does not belong in the CIP Standards. In fact, response to unavailability is already built into standards of the TOP/EOP series.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer

No

Document Name

Comment

The inclusion of “availability” in R1 is not well defined. R1’s availability is subtly but importantly different than the question. The question adds “data while in transit between control centers.” We recommend adding this language to R1.

Per previous feedback, in most cases, communications between Control Centers are handled by a third party. If that third party cannot provide communications, the Service Level Agreement provides compensation but does not guarantee availability. IRO-002 and TOP-001 already have Requirements that mandate diversity and redundancy as they pertain to communications. It is not clear that diversity and redundancy equate to availability. We recommend removing availability from CIP-012 since other Standards cover this topic OR moving availability to other Standard(s)

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

No

Document Name

Comment

PG&E supports the comments provided by the Edison Electric Institute (EEI) related to the undefined term “availability” and the proposed modifications to R1. As EEI indicated in their comments, dividing R1 into two (2) sub-parts and changing “availability protection” with “availability controls, or another term that better aligns with NERC’s results based standards philosophy and does not inappropriately cause confusion with entity internal controls” helps remove the subjectiveness of just “availability protections”. This would allow the entity to indicate the “controls” to meet “availability” which could be measured more easily than “protections”,

Likes 0

Dislikes 0

Response

Greg Davis - Georgia Transmission Corporation - 1

Answer No

Document Name

Comment

GTC finds the term ‘availability protections,’ as used in the proposed language to be lacking in specificity or unsupported by industry standard terminology. For the purposes of clarity, in order to eliminate the need for the inexact term ‘availability protections,’ while still capturing the requirements of Order 866, GTC proposes the following alternate language for Requirement 1.1:

“Identification of protections used to mitigates risks posed by: (1) unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; and (2) loss of availability of Real-time Assessment and Real time monitoring data while being transmitted between Control Centers.”

GTC has identified similar use of the term ‘availabilitiy protections’ in Requirement 1.4, and similarly proposes the following alternate language:

“If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying the protections as required in Part 1.1.”

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirchak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer No

Document Name

Comment

See EEI Comments.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer No

Document Name

Comment

While EEI appreciates the changes made to CIP-012, Requirement R1; additional modifications are still needed to ensure that entities have adequate flexibility to demonstrate that availability is fully addressed and provides responsible entities with results-based requirements that are achievable and clearly defined. For this reason, we suggest that the SDT consider splitting Requirement R1, subpart 1.1 (as indicated below) and substitute “availability protection” with the term “availability controls”. Such a change, in the context of availability, is important because protections for availability are subjective whereas making availability controls is something that is regardless of the approach is achievable and clearly understood.

R1.1 Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

R1.2 (proposed new) Identification of availability controls used to mitigate the risk posed by loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

Additionally, the use of Measures supporting these two requirements provided above would alleviate the regulatory certainty concerns many companies are facing with the proposed language used in the 2nd Draft. As examples of measures that could be developed to support the two requirement above are as follows:

(1.1) Security Protection

- Identification of points where encryption/decryption of the data occurs at either a transport, network, or application layer.
- Physical access restrictions to unencrypted portions of the network

(1.2) Availability Controls

- Network diagrams showing redundancy of paths between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service-level agreements with carriers containing high availability provisions

Likes 0

Dislikes 0

Response

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer No

Document Name

Comment

ERCOT agrees with the IRC SRC comments regarding a common understanding of the use of “availability” within the standard. ERCOT notes, however, that promoting availability consists of actions and measures to provide redundancy and diversity rather than a specific metric.

In Paragraph 16 of Order No. 866, FERC identified a gap concerning the availability of communication links and data communicated between bulk electric system Control Centers. In Paragraph 33, FERC clarifies the intent of its directive to NERC to “address the risks associated with the availability of communication links and data communicated between all bulk electric system Control Centers” As stated in its previous comments, ERCOT believes FERC’s intent of “availability” is to identify a proactive approach to promote the continuity of operations through availability of communication links and, relatedly, the data passing through those links. The technical guidance provides similar insight to understanding “availability” where, on page 2 (pdf page 10), the technical guidance explains availability and states that this standard should mitigate the risk posed by the loss of “data flow.” However, the proposed standard revisions may not achieve that same level of understanding of “availability” within the standard itself, as explained in the IRC SRC comments. Availability is not necessarily an object to be measured, but rather a process illustrated by providing redundancy and diversity to provide for the continuity of operations if the primary communication link is lost or compromised.

ERCOT provides the following language (with explanations in brackets at the end of each paragraph/part), which leaves the security protection of data the same as in the current version of the standard and addresses the concept of promoting availability as well as establishing an identification/recovery process as noted by FERC in Paragraph 35 of Order No. 866.

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: **[same language as provided in Nov 2021 Draft]**

1.1. Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers; **[identical to approved CIP-012-1, Part 1.1]**

1.2. Identification of measures to promote the availability of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers, including use of redundant or backup communication capability between Control Centers in the event of an unavailable or compromised communication link between Control Centers; **[new Part to address availability]**

1.3. Identification of a process to identify and recover unavailable or compromised communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers; **[from Nov 2021 Draft Part 1.2, with some modifications to address recovery as a process]**

1.4. Identification of where the Responsible Entity applied security protection as required in Part 1.1; and **[from Nov 2021 Draft Part 1.2, modified to be consistent with CIP-012-1, Part 1.2]**

1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection as required in Part 1.1, identifying availability measures as required in Part 1.2, and identifying of a process to identify and recover communication links as required in Part 1.3. **[similar to and consistent with CIP-012-1, Part 1.3]**

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3

Answer No

Document Name

Comment

PNMR supports EEI comments and proposed lanuguage for CIP-012-2 R1. If the STD rejects the proposed EEI language, PNMR recommends defining availability and a restoration metric.

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer

No

Document Name

[CIP-012-2 Comment Form \(Final Draft\).docx](#)

Comment

GSOC finds the term 'availability protections,' as used in the proposed language to be lacking in specificity or unsupported by industry standard terminology. For the purposes of clarity and to eliminate the need for the inexact term 'availability protections,' while still capturing the requirements of Order 866, GSOC proposes the following alternate language for Requirement 1.1:

"Identification of protections used to mitigates risks posed by: (1) unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; and (2) loss of availability of Real-time Assessment and Real time monitoring data while being transmitted between Control Centers."

GSOC has identified similar use of the term 'availablity protections' in Requirement 1.4, and, similarly, proposes the following alternate language:

"If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying the protections as required in Part 1.1."

Likes 0

Dislikes 0

Response

Erin Green - Western Area Power Administration - 1,6

Answer

No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer

No

Document Name

Comment

A. We do not agree with the draft language proposed. Once RTA/RTm data has left the physical Control Center or associated data center equipment, an entity relies on intermediary companies such as Telecom carriers to ensure availability of data communication paths for RTA/RTm data between Control Centers. Therefore they have no control over the operation, maintenance or availability of such equipment nor the availability.

Identifying methods used to recover communication links does not at all ensure the availability of those paths – which is the intent of the requirement. Entities already have to comply to TOP-001-5 R20 to R24 to ensure said data exchange protections of RTA/RTm exists. Secondly, entity’s must protect BES Cyber System Information in CIP-011 and CIP-004.

We recommend the SDT remove or revise the term availability, or add a requirement to have “at least 2 or more communications paths between Control Centers.” We also recommend the SDT provide technical guidance related to RTA/RTm being BES Cyber System Information.

B. Without prescribing encryption of RTA/RTm and key management, entities have no control of such RTA/RTm data beyond the last managed and maintained communication equipment interface. Therefore entities will not be able to meet the requirements of confidentiality and integrity as they are giving information to others beyond the entity’s control. This becomes a zero defect situation because an entity will not be able to guarantee that RTA/RTm data was compromised.

We Recommend that the SDT change the language to include the word “potential” confidentiality and integrity. This would allow entities to determine, implement and document a best effort set of security controls and clarify for industry and regulators that encryption and key management is or is not required.

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 1. Evergy would also suggest that the drafting team consider including their final definition of "availability" in the standard itself. Given that Implementation Guidance represents one way to meet compliance, a definition that is fundamental to the interpretation of the standard is not appropriately captured in Implementation Guidance. documents have not been approved by NERC for over a year, including it in the standard itself would provide the clarity that entities will need to implement this change.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer No

Document Name

Comment

Southern Company strongly disagrees with asking for **Availability** to be defined. We are aligned with EEI in most of our comment that follows, but please note some important differences in the proposed language.

We feel additional modifications are needed to ensure that entities have adequate flexibility to demonstrate that availability is fully addressed and provides responsible entities with results-based requirements that are achievable and clearly defined. For this reason, we suggest that the SDT consider splitting Requirement R1, subpart 1.1 (as indicated below) and substitute "*availability protection*" with the term "**availability provisions**". Such a change, in the context of availability, is important because protections for availability are subjective whereas making **availability provisions** is something that, regardless of the approach, is achievable and clearly understood. To address the above concern, we suggest that R1.1 could be split. Note the following suggested Language:

R1.1 Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

R1.2 (new) Identification of availability provisions used to mitigate the risk posed by loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

Additionally, the use the Measures supporting these two Requirements provided above would alleviate the regulatory certainty concerns many companies are facing with the proposed language used in the 2nd Draft. As examples of Measures that could be developed to support the two requirement above are as follows:

M1. Examples of evidence may include, but are not limited to:

(1.1) Security Protections

- Identification of points where encryption/decryption of the data occurs at either a transport, network, or application layer.

- Physical access restrictions to unencrypted portions of the network

(1.2) Availability Provisions

- Network diagrams showing redundancy of paths between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service-level agreements with carriers containing high availability provisions

(1.3) <and the rest>

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

Likes 0

Dislikes 0

Response

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

We believe it is unclear what controls are required to protect the availability associated with communication of real-time assessment and real-time monitoring data, as this is not a defined term in the NERC CIP glossary of terms. In addition, examples of protections are not provided in the revision of this standard. Is the expectation of the SDT that there be redundant paths of communication between control centers, as well as a plan for failure or loss of both of those communication paths?

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO**Answer** Yes**Document Name****Comment**

Manitoba Hydro agrees with the language in R1. The language could be simplified by eliminating sub-requirement R1.3 and combining with R1.1 directly. Current language: R1.3 "Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1" . Proposed modification to R.1.1: Identification of security and availability protection(s), including where protections are applied, used to mitigate the risks posed by unauthorized disclosure and, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers

Likes 0

Dislikes 0

Response**Richard Jackson - U.S. Bureau of Reclamation - 1****Answer** Yes**Document Name****Comment**

Reclamation recommends that communications paths between Control Centers be on physically separated, redundant communications paths where feasible. Reclamation also recommends third-party vendors be included to ensure all parties are covered.

Likes 0

Dislikes 0

Response**Leonard Kula - Independent Electricity System Operator - 2****Answer** Yes**Document Name****Comment**

While IESO supports the comments submitted by the ISO/RTO Council SRC and NPCC, we further amend those comments by suggesting that "availability" be considered "as defined by the Responsible Entity" within the proposed standard. This is already implied in the proposed wording, thus IESO supports the proposed standard, however an explicit statement would further clarify this

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF recommends that the SDT either define availability or integrate language into the Standard that addresses how availability is to be accomplished.

Likes 0

Dislikes 0

Response

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Likes 0

Dislikes 0

Response

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bender - Nebraska Public Power District - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Gail Golden - Entergy - Entergy Services, Inc. - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4 | |
| Answer | |
| Document Name | |
| Comment | |
| MGE does not support the defining of the word "availability", as the NIST definition is sufficient. | |

| | | |
|---|---|--|
| Likes | 0 | |
| Dislikes | 0 | |
| Response | | |
| | | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | | |
| Answer | | |
| Document Name | | |
| Comment | | |
| <p>Texas RE appreciates the Standard Drafting Team’s (SDT) modifications to proposed CIP-012-2, R 1.1 to better address the identification of security and availability protections to mitigate the risks posed by, among other things, the loss of availability of data used for Real-time Assessments and Real-time monitoring. Texas RE further appreciates the proposed changes to CIP-012-2, R 1.2 requiring “[i]dentification of methods to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers.” Texas RE notes, however, that CIP-012-2, R1.2’s focus on “recovery” may not encompass the full range of proactive scenarios to ensure communications link availability. For instance, entities may need to consider eliminating single points of failure in their communication links to ensure “communication link availability” rather than simply focusing on recovery from a link outage. Texas RE recommends the SDT consider adopting explicit language requiring strategies to implement communication link availability in CIP-012-2, R 1.2 similar to that proposed by FERC in Order No. 866, paragraph 3.</p> | | |
| Likes | 1 | PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy |
| Dislikes | 0 | |
| Response | | |
| | | |

2. Do you believe that you can demonstrate compliance with R1.3 to identify where your availability protections are applied? If not please provide comments and suggested requirement language.

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

For us this would be dependent on the SDT response to our commnets in Question 1.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer No

Document Name

Comment

Southern Company is concerned that Requirement R1.3 as currently proposed would create compliance problems, however, replacing the term availability protections with availability provisions would resolve this concern. (See our response to Question 1.)

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 2.

Likes 0

Dislikes 0

Response

Erin Green - Western Area Power Administration - 1,6

Answer No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3

Answer No

Document Name

Comment

PNMR supports EEI comments. Protections should be replaced with controls. Or "Identify methods to address the risk of loss of RTA and RTm data between contorls centers.

Likes 0

Dislikes 0

Response

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer No

Document Name

Comment

As stated in comments to question 1, availability is not an object to be measured, but rather a process illustrated by providing redundancy and diversity to provide for the continuity of operations if the primary communication link is lost or compromised.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer No

Document Name

Comment

EEl is concerned that Requirement R1.3 as currently proposed would create compliance problems, however, replacing the term availability protections with availability controls would resolve this concern. (See our response to Question 1.)

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirchak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer No

Document Name

Comment

See EEl Comments.

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer No

Document Name

Comment

PG&E supports the comments submitted by the Edison Electric Institute (EEI) comments that indicated the term “availability” is subjective in the context in which it is used and may create confusion for registered entities leading to inconsistent compliance enforcement actions. Refer to our response to Q1 for more details.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer No

Document Name

Comment

“Availability” is not well defined. Availability of data? Availability of the application? See feedback to question 1

The double jeopardy question with IRO and TOP Standards needs addressing. The SDT’s December 8, 2021 webinar raised this question.

We recommend removing availability from CIP-012 since other Standards cover this topic OR moving availability to other Standard(s)

How does CIP-012 distinctly cover any gaps that are not covered in other Standards?

Likes 0

Dislikes 0

Response

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer No

Document Name

Comment

Available protections seem to boil down to 'redundant and divergently routed' connectivity. As it is common to use the limited number of commercial paths between Control Centers and a customer cannot be 100% sure of the current path it will be difficult to prove compliance.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

No

Document Name

Comment

Again, most often entities depend on external communication providers for availability of data between Control Centers. This further supports the need for an exemption when communication provider's links fail. A Registered Entity has no control over how or when a communication path will be restored in this case and therefore strict compliance is difficult or impossible to achieve.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

No

Document Name

Comment

LCRA has similar concerns to what was raised in response to Question 1.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer

No

Document Name

Comment

LCRA has similar concerns to what was raised in response to Question 1.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

No

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

No

Document Name

Comment

Without further clarity on the definition of "availability", organizations will have issues with consistently scoping the controls to be applied and the documentation to demonstrate compliance.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

No

Document Name

Comment

The term "availability" is subjective in the context in which it is used and may create confusion for registered entities leading to inconsistent compliance enforcement. ITC recommends a definition for the term "availability" be developed within the Reliability Standard itself.

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

No

Document Name

Comment

When a third party is providing the availability protections, the specific components/details may be unknown and the monitoring / troubleshooting /resolution of availability issues would be outside of the registered entity's purview.

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer

No

Document Name

Comment

No: As mentioned above NCPA does not believe this can be answers until availability has been better defined.

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Susan Sosbe - Wabash Valley Power Association - 3

Answer

No

Document Name

Comment

Again, most often Entities depend on external communication providers for availability of data between Control Centers. This further supports the need for an exception when communication provider's links fail. A Registered Entity has no control over how or when a communication path will be restored in this case and therefore strict compliance is difficult or impossible to achieve.

Likes 0

Dislikes 0

Response

Larry Watt - Lakeland Electric - 1

Answer

No

Document Name

Comment

Available protections seem to boil down to 'redundant and divergently routed' connectivity. As it is common to use the limited number of commercial paths between Control Centers and a customer cannot be 100% sure of the current path it will be difficult to prove compliance.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

CIP-012-1 is not yet in effect in British Columbia and BC Hydro has not implemented a solution to comply with CIP-012-1 yet. This question on compliance will be difficult to address at this stage and will be best answered once CIP-012-1 has been designed and implemented. As identified in response to Question # 1, BC Hydro suggests that SDT add an exemption for the links and equipment used by 3rd party telecommunication providers.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

N&ST believes this could be a difficult question to answer for some Responsible Entities, depending on their approach(s) to addressing availability protection. If the mainstay of an Entity's CIP-012 availability protection plan is a service level agreement with a wide-area communications carrier (an option the FERC Order suggests but appears to have been ignored by the SDT), the "where" of that Entity's protections would be in its contractual document. Similarly, the "where" might be within an Entity's disaster recovery procedures defined for its communications and networking infrastructure. N&ST believes it is neither practical nor necessary to compel Responsible Entities to identify the "where" of its availability protections, and we therefore recommend that it be removed from R1.3. We believe R1.1's requirement to identify and describe availability protections is sufficient.

Likes 0

Dislikes 0

Response

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer

No

Document Name

Comment

Demonstrating compliance will be difficult to prove if the communication link is provided by a third party.

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer

No

| | |
|---|----|
| Document Name | |
| Comment | |
| <p>AEP believes it could demonstrate compliance with Requirement R1.3 if the language from the Technical Rationale document on page 9 under General Considerations for Requirement R1 is added to the the R1 measurement language.</p> <p>AEP recommends M1 read as follows:</p> <p>Evidence may include, but is not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). <i>Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1. can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan.</i></p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>In many instances, availability relies on telecommunication providers; and in the event service is interrupted, Registered Entities are solely reliant on the telecom providers to bring service back up. Similarly, in the event a line or telecommunication equipment goes down, the Registered Entity is again reliant on the telecommunication providers to fix the issues. NSRF requests the SDT add an exemption for the links and equipment used by telecommunication providers.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The scope identification of availability protections is not clear for entities using 3rd party telecommuncion networks. This should be further clarified in R1 or the Technical Rationale and/or Implmentation Guidance.</p> | |
| Likes 0 | |

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer No

Document Name

Comment

CHPD has concerns demonstrating compliance for “security protections” in the common scenario where the Reliability Coordinator contracts with a telecommunications company for communication links between Control Centers operated by different Registered Entities. These Registered Entities depend on the telecommunication company to implement the security protections and do not have direct access to evidence that it is in place and functioning.

With more descriptive “availability protections” requirement language, CHPD could more confidently demonstrate “availability protections” compliance. Possible ways of clarifying include using alternate wording from the Technical Rationale (e.g., “redundant communication links and data paths”) or adding a requirements table with a measures column with evidence examples to minimize inconsistent interpretations among Registered Entities and Regional Entities.

Likes 0

Dislikes 0

Response

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1

Answer No

Document Name

Comment

Demonstrating compliance will be difficult to prove if the communication link is provided by a third party.

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO

Answer No

Document Name

Comment

The NSRF requests the SDT add an exemption for the links and equipment owned by telecommunication providers. In many instances, availability resides with telecommunication providers; and in the event service is interrupted, Registered Entities are reliant on the telecommunication provider(s) to restore service. Similarly, in the event a telecommunication line or other piece of telecommunication equipment goes down, the Registered Entity is again reliant on the Telecommunication Provider(s) to address the issue(s).

The term “availability” is subjective and should be clearly defined prior to approving CIP-012-2.

| | |
|---------|--|
| Likes 1 | Lincoln Electric System, 1, Johnson Josh |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

What exactly are “availability protections”? Can examples be provided?

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. Concept of availability between control centers would need to be clarified.

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer No

Document Name

Comment

Eversource supports the comments of EEI.

Likes 0

Dislikes 0

Response

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer No

Document Name

Comment

Without access to the equipment CE doesn't own, CE cannot definitively demonstrate that the compliance has been achieved.

Likes 1 Platte River Power Authority, 5, Archie Tyson

Dislikes 0

Response

Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer No

Document Name

Comment

Black Hills Corporation has concerns with R1.1 with regards to the scenario where vendors like CAISO and SPP are providing the communications infrastructure. Entities would be relying on the vendors to implement the security (and availability) protections and the entity will not have direct access to evidence that it is in place and functional.

Likes 1 Platte River Power Authority, 5, Archie Tyson

Dislikes 0

Response

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

| | |
|---|--|
| Answer | No |
| Document Name | |
| Comment | |
| Duke Energy takes issue with the term “availability protections” and not with the concept of availability. We prefer addressing the “where” in our rewording of sub requirement 1.4 as provided in Question 5 below. | |
| Likes 1 | PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy |
| Dislikes 0 | |
| Response | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| Entities are dependent on telecommunicatino carriers to maintain availability which makes R1.3 almost impossible to meet compliance with. Providing entities with an exception in this scenario should be considered. | |
| Likes 1 | Platte River Power Authority, 5, Archie Tyson |
| Dislikes 0 | |
| Response | |
| sean erickson - Western Area Power Administration - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Requirement 1.3 is is redundant to requirement 1.1 and not needed. Producing evidence to show overall compliance of requirement 1 more specifically requirement 1.1 will always lead to the identifications of where the responsible entity applied the appropriate controls. | |
| In addition, the language is requiring an entity to ensure availability beyond the Control Center. An entity will not be able to demonstrate compliance to availability beyond an entities physical equipment and contract language with carriers. Most entities communication links are managed by Telecom carrier companies. Entities have no control over the availability of the paths. It is recommended that the SDT remove the language. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

While IESO supports the comments submitted by the ISO/RTO Council SRC and NPCC, we further amend those comments as follows: If the “availability” be considered “as defined by the Responsible Entity” within the proposed standard, then this gives IESO the flexibility in the application of availability protections. This is already implied in the proposed wording, thus IESO supports the proposed standard, however an explicit statement would further clarify this.

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Greg Davis - Georgia Transmission Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ronald Bender - Nebraska Public Power District - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE believes registered entities should be able to demonstrate compliance with the Requirement Part 1.3.

Likes 0

Dislikes 0

Response

3. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer No

Document Name

Comment

NRG does not believe that these modifications meet the FERC directives in a cost effective manner. A more cost effective solution would be to include such modifications in IRO-010, TOP-003, TOP-001, or other applicable Operations and Planning standards. Including this verbiage in the CIP standards means the same or similar compliance activities have to be documented for multiple standards and represented in more audits (i.e. 693 and 706 standards).

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer No

Document Name

Comment

NRG does not believe that these modifications meet the FERC directives in a cost effective manner. A more cost effective solution would be to include such modifications in IRO-010, TOP-003, TOP-001, or other applicable Operations and Planning standards. Including this verbiage in the CIP standards means the same or similar compliance activities have to be documented for multiple standards and represented in more audits (i.e. 693 and 706 standards).

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer No

Document Name

Comment

Reclamation observes there is an environment of constant churn with reliability standards. This results in ineffective use of resources associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that allows entities to fully implement technical compliance with current standards before moving to subsequent versions.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. Protection of availability implies physical actions to protect the communications between control centers. This is impractical given the distance between control centers.

Likes 0

Dislikes 0

Response

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

Answer

No

Document Name

Comment

Without having a more thorough understanding as to what "availability protections" are, it is indeterminate as to the impact of what costs would be.

Likes 0

Dislikes 0

Response

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

Answer

No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer

No

Document Name

Comment

SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R1 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for a Registered Entity to design a solution that meets security goals and is cost effective.

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer

No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

N&ST believes that as written, the draft Implementation Guidance document strongly implies that Responsible Entities should employ redundant communication links between Control Centers to address availability, even while noting FERC's acknowledgement that in some suburban and rural areas, this could be prohibitively expensive, of only marginal incremental benefit to availability (no options for path diversity), or both. While we agree that redundant links should be considered, we recommend the document be revised to acknowledge this may not be a viable approach to mitigating availability risks in all cases. The SDT might also consider adding some examples of emergency back-up communications links an Entity might be able to utilize if its primary communications link is down or otherwise unavailable.

N&ST notes, further, that while FERC Order 866 suggests it might be possible for a Responsible Entity to establish availability-related service level agreements with one or more network service providers, the Implementation Guidance document makes no mention of this option.

Finally, N&ST believes the scope of CIP-012's proposed availability requirements is unclear and open to interpretation, which has the potential to have significant cost implications for some entities, especially those without fully redundant Control Center network and computing infrastructures.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

Please refer to BC Hydro's comments on Question #2.

CIP-012-1 is not yet in effect in British Columbia and BC Hydro has not implemented a solution to comply with CIP-012-1 yet; therefore, it is not yet feasible to identify the additional costs related to the Project 2020-04 CIP-012-2 changes.

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer

No

Document Name

Comment

No: NCPA does not agree the proposed language is considered cost effective until there is expectation of what availability would be defined as with regards to the standard.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

Document Name

Comment

GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

LCRA is unclear exactly what these modifications will entail and is unsure what will constitute as sufficient availability.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA is unclear exactly what these modifications will entail and is unsure what will constitute as sufficient availability.

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer No

Document Name

Comment

At this time PG&E cannot determine if the proposed modifications are cost-effective in meeting the FERC directive.

Likes 0

Dislikes 0

Response

Erin Green - Western Area Power Administration - 1,6

Answer No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

| | |
|--|-----|
| Answer | No |
| Document Name | |
| Comment | |
| Implementation will increase costs for Responsible Entities. The changes will have unforeseen consequences. For responsible entities these consequences will be incurred in terms of additional equipment,software licensing, contract modifications and man hours involved in planning, implementation,processes, maintenance and monitoring. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Daniel Gacek - Exelon - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Cynthia Lee - Exelon - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |

Black Hills Corporation does not anticipate a significant expense to achieve compliance.

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO

Answer

Yes

Document Name

Comment

The NSRF suggests the SDT identify which TOP and IRO O&P Standards are referenced in the Implementation plan at **Identification of Methods Used for the Recovery of Communication Links (R1.2)**. If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards.

Likes 1

Lincoln Electric System, 1, Johnson Josh

Dislikes 0

Response

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer

Yes

Document Name

Comment

The NSRF suggests the SDT identify which TOP and IRO O&P Standards that are referenced in the Implementation plan at **Identification of Methods Used for the Recovery of Communication Links (R1.2)**. If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Yes

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3

Answer

Yes

Document Name

Comment

It depends on the final version of this standard. PNMR is concerned that this feels like an all or nothing requirement. What are the restoration requirements? What if we lose connection and ability to transmit RTA and RTm data for 10 seconds, 30 seconds, 30 minutes? Do we have a potential non compliance? There should be some timedriven measure. Availability, like confidentiality and integrity, is a risk and methods to address the risk should be implemented.

Likes 0

Dislikes 0

Response

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bender - Nebraska Public Power District - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Watt - Lakeland Electric - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Susan Sosbe - Wabash Valley Power Association - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Greg Davis - Georgia Transmission Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirchak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer

Document Name

Comment

No Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer

Document Name

Comment

Dominion Energy does not have enough information to make a determination.

Likes 0

Dislikes 0

Response

4. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer No

Document Name

Comment

We do not believe the implementation time frame is adequate because it is unclear whether encryption is or is not required, nor can we predict the length of time to it will take to plan necessary changes, implementation of the changes, management and development of processes and procedures.

Likes 0

Dislikes 0

Response

Erin Green - Western Area Power Administration - 1,6

Answer No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3

Answer No

Document Name

Comment

PNMR recommends 36 month implementation guidance due to supply chain challenges

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer No

Document Name

Comment

We cannot answer until we understand what “availability” means and the availability’s scope. Scope refers to how deeply an entity must depend on other companies. We request clarification on 1) what availability means and 2) what is availability’s scope.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

This standard involves technology and protocol changes. More time is warranted to effectively implement these changes.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

This standard involves technology and protocol changes. More time is warranted to effectively implement these changes.

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer No

Document Name

Comment

No: NCPA does not agree that 24 months is long enough to implement other solutions. Many of these implementations require 3rd party ISPs to install circuits. In many cases it can take 6 months or more to get a circuit installed when it is available, however depending on location it can be years before circuitry is locally available.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

As identified in answers to Questions above, at this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer No

Document Name

Comment

WECC proposes the SDT consider changing to a 12 or 18-month Implementation Plan.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards, specifically the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Likes 0

Dislikes 0

Response

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer No

Document Name

Comment

Compliance with the availability requirement may involve the installation of back-up communications. We are current experiencing delays in obtaining equipment necessary to install a dedicated line (six months from time of order). This type of delivery challenge may necessitate an extension in the enforcement date for CIP-012-2.

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer Yes

Document Name

Comment

PG&E supports the 24-month implementation plan.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

Consider current supply chain landscape impacts to procuring technology to support this implementation.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| <i>The NAFG supports the proposed implementation plan timeframe. GO/GOPs needing to procure equipment to demonstrate compliance must navigate both organizational system development life cycle processes and national supply chain constraints.</i> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Consider current supply chain landscape impacts to procuring technology to support this implementation | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>The need for a 24 month implementation plan is paramount to reliably and securely implement this standard. If the standard is implemented as written, 24 months will be needed to apply the recovery procedures as outlined. Registered Entities will need to work with their neighbors on the development of recovery plans; for example, an RTO/ISO will need to ensure recovery plans are in place for the availability of communications links with each of its members. Also, this standard involves more than just developing a recovery plan. Since these assets are not owned by Functional Entities subject to CIP-002, the utilization of CIP-008 and CIP-009 plans may not be relevant, and entities will have to develop their own recovery plans from scratch. Entities will have to work with telecommunication providers to set up new links and test them for recovery if they have not already done so. Finally, if supply chain issues cause delays in obtaining the required components needed for industry to fully implement V1 of this standard, then extra time will be needed for implementation until the supply chain issues are mitigated and resources are available.</p> | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Quintin Lee - Eversource Energy - 1, Group Name Eversource Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports the comments of EEI. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Black Hills Corporation agrees that a 24 month implementation time is reasonable, however where vendors are involved that timeframe could become challenging. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Greg Davis - Georgia Transmission Corporation - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

Kinte Whitehead - Exelon - 3

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

Daniel Gacek - Exelon - 1

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

Susan Sosbe - Wabash Valley Power Association - 3

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

Likes 0

Dislikes 0

Response

Larry Watt - Lakeland Electric - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC**Answer** Yes**Document Name****Comment**

Likes 0

Dislikes 0

Response**Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1****Answer** Yes**Document Name****Comment**

Likes 0

Dislikes 0

Response**Marcus Bortman - APS - Arizona Public Service Co. - 6****Answer** Yes**Document Name****Comment**

Likes 0

Dislikes 0

Response**Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1****Answer** Yes**Document Name****Comment**

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bender - Nebraska Public Power District - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

Likes 0

Dislikes 0

Response

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

5. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Document Name

Comment

Please see comments provided above

Likes 0

Dislikes 0

Response

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

Answer

Document Name

Comment

Following is Duke Energy's suggested rewording of the SDT's proposed draft sub requirements for R1. We appreciate the effort that went into consolidating R2 into R1 and the opportunity to provide feedback.

1.1 Identification of security protection(s), the Responsible Entity applied to mitigate the risks posed by unauthorized disclosure or unauthorized modification of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

1.2 Identification of controls, the Responsible Entity implemented to protect the availability of communication links used to transmit data between Control Centers for Real-time Assessment and Real-time monitoring as to ensure timely and accurate data communication.

1.3 Identification of methods by the Responsible Entity, to be used for the recovery of communication links to transmit Real-time Assessment and Real-time monitoring data between Control Centers.

1.4 Identification of where the Responsible Entity has applied the protections and controls identified in Parts 1.1 and 1.2; and

1.5 If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying protections and controls to data being transmitted between Control Centers as required in Parts 1.1 and 1.2.

FERC Order No. 866 spoke directly to recovery. Recovery in the standard aligns with this; however, restoration and recovery are both used in the Implementation Guidance. We are requesting clarification if "recovery and restoration" are meant to be interchangeable. We recommend that the Implementation Guidance solely reference the term recovery, since recovery and restoration have different technical implications

Likes 1

PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

| | |
|--|---|
| Response | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| Thank you for the opportunity to comment. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>ATC supports the SDT's approach to permit each Registered Entity to define availability within a CIP-012 plan, as opposed to having this term defined in the glossary of terms. Defining "availability" in the glossary of terms would be too prescriptive an approach especially considering the prevalent use of this word is in other Reliability Standards, and the broad ranging impacts and unintended consequences that a definition could have on other mandatory regulations outside the scope of this SDT's SAR. ATC appreciates the flexibility this draft provides entities and supports objective-based requirements that steer away from one-size-fits-all definitions.</p> | |
| Likes 3 | Nebraska Public Power District, 1, Cawley Jamison; Nebraska Public Power District, 3, Eddleman Tony; Nebraska Public Power District, 5, Bender Ronald |
| Dislikes 0 | |
| Response | |
| Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4 | |
| Answer | |
| Document Name | |
| Comment | |
| NONE | |
| Likes 0 | |

Dislikes 0

Response

Ronald Bender - Nebraska Public Power District - 5

Answer

Document Name

Comment

NPPD supports the SDT’s approach to permit each Registered Entity to define availability within a CIP-012 plan, as opposed to having this term defined in the glossary of terms. Defining “availability” in the glossary of terms would be too prescriptive an approach. NPPD appreciates the flexibility this draft provides entities and supports objective-based requirements that steer away from one-size-fits-all definitions.

Likes 2

Nebraska Public Power District, 3, Eddleman Tony; Nebraska Public Power District, 1, Cawley Jamison

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

Document Name

Comment

The terminology continues to be confusing, especially for those unfamiliar with the underlying FERC Order. The concepts could be explained in R1 using simple, plain language.

The changes proposed are a significant increase in the scope of the standard, which will have a substantial impact on affected entities and should not be taken without appropriate consideration. Some communications paths are already covered under other NERC standards.

Proposed R1.2 recovery plans should be included under CIP-009 instead of CIP-012-2.

To minimize churn among standard versions, Reclamation recommends the SDT fully scope each project before developing proposed modifications to ensure all of FERC’s desired requirements are included, thereby precluding the need for FERC to order approval with additional modifications. For CIP-012, Reclamation recommends the SDT coordinate changes with Projects 2016-02 and Project 2019-03. This will reduce the chance that standards conflict with one another and will better align related standards.

Likes 0

Dislikes 0

Response

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| Eversource supports the comments of EEI. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE noticed a potential reliability gap between proposed CIP-012-2 and CIP-008-6. CIP-008-6 seeks to “mitigate the risk to the reliable operation of the BES as a result of a Cyber Security Incident by specifying incident response requirements” (CIP-008-6 Purpose Statement). The definitions of Cyber Security Incident and Reportable Cyber Security Incident may not cover cyberattacks targeted toward disrupting the confidentiality, integrity, or availability of Control Center communications. Texas RE recommends the definitions of Cyber Security Incident, Reportable Cyber Security Incident, and the applicable systems column of CIP-008-6 be modified to explicitly include situations where the confidentiality, integrity, or availability of Control Center communications is targeted. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | |
| Document Name | |
| Comment | |
| There is nothing in Guidance Document that provides information on protections for availability of data. The guidance deals with confidentiality and integrity of data. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer

Document Name

Comment

As mentioned above, Dominion Energy supports EEs comments. In addition, Dominion Energy has the following suggestion for language in R1.2 that would allow this requirement to be actionable by industry:

Identification of methods to be used for the recovery of communication **link components controlled by each Responsible Entity and response plans used for the recovery of communication links not controlled by the Responsible Entity** used to transmit Real-Time Assessment and Real-time monitoring data between Control Centers.

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer

Document Name

Comment

With the content of the previous R1.2 moved to R1.3, the updated R1.2 deals with recovery methods that appear to go beyond the FERC Order No. 866 directive and aren't applicable to many Registered Entities. Communications links between Control Centers operated by different Registered Entities are dependent on telecommunication companies. For many Registered Entities, the method to recover a link is a support call to their region's contracted telecommunication provider.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Document Name

Comment

The Implmentation Guidance and Technical Rationale appear to infer encryption is the only method to meet the security objectives to mitigate the risks posed by unauthorized disclosure, unauthorized modification of applicable data. Consider providing examples an entity could altnatively consider to also meet the security objectives.

For example:

1. An entity owned, operated and managed communication link.
2. Monitoring, detecting, alerting and response to any possible unauthorized disclosure or unauthorized modification of applicable data transmitted on a ---communication link between Control Centers.

Likes 0

Dislikes 0

Response

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer

Document Name

Comment

None at this time.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Document Name

Comment

The current wording of the proposed standard gives IESO the flexibility to address the availability controls of the data itself in addition to the just the availability controls associated with solely with the communications link.

IESO recommends that that the definition of term "availability" be futher clarified with the addition of the wording "as determined by the Responsible Entity"

Likes 0

Dislikes 0

Response

JT Kuehne - AEP - 6

Answer

Document Name

Comment

AEP appreciates the efforts of the SDT on this project. Please see below for additional comments.

While AEP agrees that creating a plan to account for the security and availability of Real-time Assessment and Real-time monitoring data is crucial as part of FERC Order No. 866, we believe the revisions to CIP-012-2 need to be more prescriptive to capture the expected contents of the plan. For example, page 4 of the Technical Rationale document lays out an expectation and relationship with CIP-008 and CIP-009 plans, "The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 and CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort."

However, the applicable systems for CIP-008 and CIP-009 are different than the devices that would receive protections for CIP-012. With that in mind, AEP suggests that NERC take either of the following action:

- (1) Create the desired components of CIP-008 and CIP-009 as explicit requirements and sub-requirements within CIP-012; or
- (2) Create a new classification for CIP-012 devices (e.g., "associated networking equipment") and determine the specific requirements within the other CIP standards that apply to that classification.

Likes 0

Dislikes 0

Response

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer

Document Name

Comment

No comments.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

N&ST believes that both the proposed availability language of CIP-012 R1 and the accompanying draft Implementation Guidance lack sufficient clarity regarding the scope of a Responsible Entity's CIP-012 availability obligations: Where do they begin and end? The Implementation Guidance document seems to suggest that inter- Control Center communications channels subject to CIP-012 should include literally everything either utilizing or comprising those channels, including the sending and receiving hosts. Evidence supporting this opinion includes the statement, "The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets." Should Entities include ICCP servers, which are almost always identified as BES Cyber Systems and, for High and Medium Impact, located within Electronic Security Perimeters, in their CIP-012 availability plans? If so, will Entities with only single ICCP servers be expected to procure additional ones for redundancy? N&ST is concerned that by discussing endpoint hosts, the SDT may be expanding the scope of CIP-012 beyond FERC's mandate. At the very least, the draft Implementation Guidance raises questions we believe the SDT should answer. If it does not, experience suggests to us that NERC and/or the Regions will.

Additional Guidance document statements and phrases that N&ST believes need clarification include:

"Availability protection can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used."

What kind of systems? Switches? Routers? Endpoint hosts? The SDT should provide examples.

The phrase, "entire communications link" is used several times. The SDT should define what this means, as well as whether or not endpoints are subject to CIP-012.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

Document Name

Comment

BC Hydro suggests adding more clarity to term 'availability' by providing a more detailed definition. Although the SDT has proposed the use of the NIST definition of "Ensuring timely and reliable access to and use of information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at NERC entities, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.

Likes 0

Dislikes 0

Response

Larry Watt - Lakeland Electric - 1

Answer

Document Name

Comment

This 'availability' requirement should be moved to the O&P standards.

Likes 0

Dislikes 0

Response**Susan Sosbe - Wabash Valley Power Association - 3****Answer****Document Name****Comment**

Thank you for your hard work and allowing Entities to provide feedback.

Likes 0

Dislikes 0

Response**Daniel Gacek - Exelon - 1****Answer****Document Name****Comment**

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response**Kinte Whitehead - Exelon - 3****Answer****Document Name****Comment**

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Cynthia Lee - Exelon - 5

Answer

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Becky Webb - Exelon - 6

Answer

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Document Name

Comment

The phrase “and components used to provide availability protections” was added to both the technical rationale document and the implementation guidance for R1.3. As mentioned in our comment to question 2, if we contract with a 3rd party for security and availability (such as CAISO's AT&T DMVPN solution), we may not be privy to the specific component(s) where the availability protection is being applied. Additionally, this seems to be unnecessarily prescriptive. We recommend this phrase be removed from both documents.

Also, the implementation guidance doesn't acknowledge that not all entities involved are Registered Entities (such as a common carrier like AT&T). We recommend adding language to acknowledge those situations may exist, at a minimum.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

Document Name

Comment

None at this time.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Document Name

Comment

The NAGF has no additional comments.

Likes 0

Dislikes 0

Response

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer

Document Name

Comment

Is this not an overlap with TOP-001-5 R20, R23? Or is the gap due to the communication links between control centers / data centers?

TOP-001-5 R20. Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

Same question but in regards to EOP-008-2. Would this not fall under "Loss of Control Center Functionality"? Or is FERC / NERC focused on the dealing with impacts to the specific processes associated with the Real-time Assessment and Real-time Monitoring tasks?

Finally – how far does this extend? Is this limited to the loss of availability of data associated with the security protections applied between control centers/ data centers? Or would it also stretch to wider data losses, such as external measurements sourced via ICCP, substation data sourced via RTU, or system-to-system communications within a control center / data center? The requirement as written, seems overly broad in scope when accounting for all of the data required to perform Real-time monitoring and Real-time Assessments.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer

Document Name

Comment

Throughout the supporting documentation there are references to CIP-008 and CIP-009; however, these standards are not applicable to communication between control centers. By including CIP-008 and CIP-009 in the implementation of CIP-012, there may be unintended scope creep of CIP-008 and CIP-009.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

Throughout the supporting documentation there are references to CIP-008 and CIP-009; however, these standards are not applicable to communication between control centers. By including CIP-008 and CIP-009 in the implementation of CIP-012, there may be unintended scope creep of CIP-008 and CIP-009.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

Document Name

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer

Document Name

Comment

We request that future posting of all CIP Standards include a redline to the last approved. This redline will help SMEs determine the change and thereby complete comment forms faster.

The Implementation Guidance refers to a NIST definition of availability. NIST could change its definition without notifying entities. NIST's definition is generic. We request clarification of CIP-012 availability.

In the fourth paragraph of the introduction in the Technical Rational, the following sentence needs to be corrected as there is no R2 in CIP-012-1. "CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers.". We believe the text should read R1 and R1.2.

Likes 1

PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer

Document Name

Comment

This 'availability' requirement should be moved to the O&P standards.

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

Document Name

Comment

PG&E agrees with the Edison Electric Institute (EEI) comments related to the Introduction section having a reference to R2 that was removed in the most recent draft – the sections should be updated with the removal of R2.

Likes 0

Dislikes 0

Response

Greg Davis - Georgia Transmission Corporation - 1

Answer

Document Name

Comment

GTC is concerned that the revisions to the technical rationale significantly alter the potential flexibility intended to be offered in requirements such as requirement 1.3. In addition, the inclusion of infeasible alternatives to availability such as backing up ICCP data with DNP3 is problematic, and GTC recommends that the SDT review the proposed revisions to the technical rationale and implement revisions to retain the original flexibility of implementation and to better ensure that suggested methods for compliance are actionable.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Document Name

Comment

The Introduction section has a reference to R2 that should be removed now that R2 has been deleted by the SDT (see below):

“Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 **and R2** protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

Document Name

Comment

See EEI Comments.

Likes 0

Dislikes 0

Response

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

The VSL table appears incomplete. ERCOT would encourage the drafting team to ensure there is consistency among standards with plans that are documented versus implemented, perhaps by identifying documentation versus implementation separately within the VSL matrix. Further, the VSLs refer to Requirement R2, which was removed in the Nov 2021 Draft.

Likes 0

Dislikes 0

Response

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer

Document Name

Comment

GSOC is concerned that the revisions to the Technical Rationale significantly alter the potential flexibility intended to be offered in requirements such as Requirement 1.3. In addition, the inclusion of infeasible alternatives to availability such as backing up ICCP data with DNP3 is problematic, and GSOC recommends that the SDT review the proposed revisions to the Technical Rationale and implement additional revisions to retain the original flexibility of implementation and to better ensure that suggested methods for compliance are actionable.

Likes 0

Dislikes 0

Response

sean erickson - Western Area Power Administration - 1

Answer

Document Name

Comment

We do not agree with the draft language proposed. The standard purpose and requirements are to protect the confidentiality, availability and integrity (CIA) of Real-time Assessment and Real-time monitoring data transmitted between Control Centers. While this language maps to the standard tenets of information assurance controls, the requirements and mitigation of risk cannot be achieved unless an entity uses encryption and manages the encryption keys.

Once data packets carrying RTA/RTM data have egressed the physical Control Center or associated data center equipment/technology, an entity is relying on non-entity controlled or maintained communication paths such as telecom carriers to transmit and route RTA/RTM data between Control Centers.

How is an entity able to “mitigate risks” of unauthorized disclosure and/or modification when RTA/RTM data is no longer in possession or control of the systems which transmit and carry such data?

Secondly, the phrase “while it is being transmitted” in context with availability requires an entity to only address entity owned and maintained equipment. This is because an entity cannot ensure the availability of RTA/RTM data beyond its possession. This phrase adds no value to the protection of data.

Because of this, industry and regulators alike will not be able to establish a clear understanding of what meets or what does not meet compliance, it may lead to additional administrative overhead, potential findings or self-reports or others issues. This position was also validated in the recent 12/8 Industry Webinar whereas the SDT’s Lead related that an entity is not required to implement encryption, but an auditor would ask for it.

We ask the SDT to:

- a. Remove or change the confidentiality and integrity language, and revise R1 to add the phrases “potential disclosure, potential modification and availability.”
- b. Remove the phrase “while being transmitted”.
- c. Remove the term “links.” There is no such term and this may apply to many different things.
- d. Clarify if RTA/RTM data is BES Cyber System Information.
- e. Instead of relying on a one size fits all definition for the CIA triad the SDT would be better suited in defining a list of controls that responsibilities can implement and if used in concert with each other mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time Monitoring Data.

Likes 0

Dislikes 0

Response

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute's (EEI) response to Question 5.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Document Name

Comment

If the SDT's intent was to point to Operations standards (TOP/IRO) to explain the "Availability timeframes" or server redundancy or site redundancy then our suggestion is that they spell that out or point to other standards.

Likes 0

Dislikes 0

Response

“Comments received from Jamie Monette – Minnesota Power, Inc.”

Question 1

MP Draft Response: Minnesota Power opts to answer “No”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments. In addition, MP would like to see a definition for real time monitoring incorporated in the NERC Glossary of Terms for clarity.

Question 2

MP Draft Comments: Minnesota Power opts to answer “No”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments.

Question 3

MP Draft Comments: Minnesota Power opts to answer “No”. Until the scope of the standard is more clearly defined it is difficult to determine cost effectiveness of implementation.

Question 4

MP Draft Comments: Minnesota Power opts to answer “Yes”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments.

Question 5

MP Draft Comments: Minnesota Power has no additional comment.

“Comments received from Darcy O’Connell – California ISO”

Question 1

Yes

No

Comments:

The definition of availability needs to be clarified.

The SRC generally agrees revised CIP-012-2 meets the FERC Order 866 directives; however, to be useful the term “availability” must be clarified in the requirements. While the SRC appreciates the NIST definition of “availability” contained in the proposed Implementation Guidance, it is not certain that the Implementation Guidance will be endorsed by the ERO. Therefore, the SRC recommends the SDT draft a formal definition of “Availability” for inclusion in the CIP-012-2 Standard, which could be the adoption of the NIST definition, or something similar. The SRC recognizes the challenges and unintended consequences associated with “availability” being added as a new definition to the NERC Glossary of Terms since “availability is used in other standards which could be impacted. In light of that, the SRC suggests a definition be added (and limited in scope) to the CIP-012 standard itself.

Additionally, clarification of “availability” could also be included in the Technical Rationale for CIP-012. The benefits of a definition include formalization within the Standard’s vernacular, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams. The SRC also believes that the Measure M1 should provide examples of what types of evidence would meet the availability requirement (e.g., an entity executing plans in support of the recovery of compromised communications links and the use of back-up communications capability when primary communications are unavailable). This would provide additional clarity to the industry.

In addition, the SRC seeks clarification from the SDT whether availability only refers to the data links used for the transmittal of data, or if availability also refers to the data being provided by external systems flowing through the data links under CIP-012. The wording in the current revision makes the intended scope of what availability is ambiguous. There is concern that unintended interpretation of the standard could reach to include the external systems

providing data through the data links; e.g. ICCP servers, in addition to the links themselves. Leaving this up to each entity to define for themselves can be problematic as the application of this standard relies on consistent interpretation across Registered Entities owning or operating Control Centers. Therefore, SRC requests the scope be clarified.

Similarly, while having the concepts of “diversity, redundancy, or a combination of both” in the Implementation Guidance is needed, the SRC recommends the SDT consider including the concepts in M1 to achieve a clearer measure of what constitutes meeting the requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The SRC recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The SRC recommends the SDT clarify within the Implementation Guidance at Identification of Methods Used for the Recovery of Communication Links (R1.2) the phrase “This objective is consistent with TOP and IRO O&P Standards” by identifying which standards are being referenced.

The term “recovery” as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the SRC recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity’s fault.

Additionally, the task of restoring availability predominantly resides with the telecommunication provider. In the event a communication link goes down, electric reliability entities are reliant on telecommunication provider to restore service. The SRC requests the SDT add an exemption for links and equipment owned by telecommunication providers.

Question 2

Yes

No

Comments:

The SRC requests the SDT add an exemption for the links and equipment owned by telecommunication providers. In many instances, availability resides with telecommunication providers; and in the event service is interrupted, Registered Entities are reliant on the telecommunication provider(s) to restore service. Similarly, in the event a telecommunication line or other piece of telecommunication equipment goes down, the Registered Entity is again reliant on the Telecommunication Provider(s) to address the issue(s).

The term “availability” is subjective and should be clearly defined prior to approving CIP-012-2.

Question 3

Yes

No

Comments:

The SRC suggests the SDT identify which TOP and IRO O&P Standards are referenced in the Implementation plan at **Identification of Methods Used for the Recovery of Communication Links (R1.2)**. If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards.

Question 4 **Yes** **No**

Comments:

The need for a 24-month implementation plan is paramount for reliably and securely implementing this standard. If the standard is implemented as written, 24 months will be needed to apply the recovery procedures as outlined. Registered Entities will need to work with their neighbors on the development of recovery plans; for example, an RTO/ISO will need to ensure recovery plans are in place for the availability of communications links with each of its members. Also, this standard involves more than just developing a recovery plan. Since these assets are not owned by Functional Entities subject to CIP-002, the utilization of CIP-008 and CIP-009 plans may not be relevant, and entities will have to develop their own recovery plans from scratch. Entities will have to work with telecommunication providers to set up new links and test them for recovery if they have not already done so. Finally, if supply chain issues cause delays in obtaining the required components needed for industry to fully implement V1 of this standard, then extra time will be needed for implementation until the supply chain issues are mitigated and resources are available.

Question 5

Comments:

The SRC would prefer to have availability addressed as a separate requirement, e.g. R2, under CIP-012 and not as part of requirement R1 as encryption and availability are two separate functions. Inserting availability in with encryption merely serves to muddy the intent of R1.

Consideration of Comments

| | |
|----------------------------|--|
| Project Name: | 2020-04 Modifications to CIP-012 Draft 2 |
| Comment Period Start Date: | 11/30/2021 |
| Comment Period End Date: | 1/24/2022 |
| Associated Ballots: | 2020-04 Modifications to CIP-012 CIP-012-2 AB 2 ST |

There were 69 sets of responses, including comments from approximately 144 different people from approximately 94 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Vice President of Engineering and Standards, [Howard Gugel](#) (via email) or at (404) 446-9693.

Questions

1. The SDT revised CIP-012-1 R1 to address the comments received during initial ballot and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree that the proposed language in R1 addresses security and availability as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.
2. Do you believe that you can demonstrate compliance with R1.3 to identify where your availability protections are applied? If not please provide comments and suggested requirement language.
3. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.
4. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.
5. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|-------------------------------------|-----------------|------------|--------|----------------------------|------------------------|-------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| DTE Energy - Detroit Edison Company | Adrian Raducea | 5 | | DTE Energy - DTE Electric | Karie Barczak | DTE Energy - Detroit Edison Company | 3 | RF |
| | | | | | Adrian Raducea | DTE Energy - Detroit Edison | 5 | RF |
| | | | | | patricia ireland | DTE Energy | 4 | RF |
| Tennessee Valley Authority | Brian Millard | 1,3,5,6 | SERC | Tennessee Valley Authority | Kurtz, Bryan G. | Tennessee Valley Authority | 1 | SERC |
| | | | | | Grant, Ian S. | Tennessee Valley Authority | 3 | SERC |

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|---------------------------------------|--------------------|-----------|----|--------------------------|----------------------|----------------------------|---------|------|
| | | | | | Thomas, M. Lee | Tennessee Valley Authority | 5 | SERC |
| | | | | | Parsons, Marjorie S. | Tennessee Valley Authority | 6 | SERC |
| Santee Cooper | Chris Wagner | 1 | | Santee Cooper | Jennifer Richards | Santee Cooper | 1,3,5,6 | SERC |
| | | | | | Rene' Free | Santee Cooper | 1,3,5,6 | SERC |
| CMS Energy - Consumers Energy Company | Jeanne Kurzynowski | 3,4,5 | RF | Consumers Energy Company | Jeanne Kurzynowski | Consumers Energy Company | 1,3,4,5 | RF |
| | | | | | Jim Anderson | Consumers Energy Company | 1 | RF |
| | | | | | Karl Blaszkowski | Consumers Energy Company | 3 | RF |
| | | | | | Theresa Martinez | Consumers Energy Company | 4 | RF |
| | | | | | David Greyerbiehl | Consumers Energy Company | 5 | RF |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | | | Bob Solomon | Hoosier Energy Rural | 1 | SERC |

| | | | | | | | | |
|--|--|--|---|------------------------------------|----------------------------------|--|-------|----------|
| | | | MRO,NA - Not Applicable,RF,SERC,Texas RE,WECC | ACES Standard Collaborations | Electric Cooperative, Inc. | | | |
| | | | | | Kevin Lyons | Central Iowa Power Cooperative | 1 | MRO |
| | | | | | Bill Hutchison | Southern Illinois Power Cooperative | 1 | SERC |
| | | | | | Scott Brame | North Carolina Electric Membership Corporation | 3,4,5 | SERC |
| | | | | | Susan Sosbe | Wabash Valley Power Association | 3 | RF |
| | | | | | Shari Heino | Brazos Electric Power Cooperative, Inc. | 5 | Texas RE |
| | | | | | Dominic Birk | Big Rivers Electric Corporation | 1 | SERC |
| | | | | | Kylee Kropp | Sunflower Electric | 1 | MRO |

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|---|-----------------|---|--|----------|---------------------|---|---|------|
| | | | | | | Power Cooperation | | |
| Public Utility District No. 1 of Chelan County | Joyce Gundry | 3 | | CHPD | Meaghan Connell | Public Utility District No. 1 of Chelan County | 5 | WECC |
| | | | | | Glen Pruitt | Public Utility District No. 1 of Chelan County | 6 | WECC |
| | | | | | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | Diane Landry | Public Utility District No. 1 of Chelan County | 1 | WECC |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |

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|--|-----------------|---------|------|-------------------|----------------|--|---|------|
| | | | | | Tricia Bynum | FirstEnergy - FirstEnergy Corporation | 6 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 4 | RF |
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |
| | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | Ron Carlsen | Southern Company - Southern | 6 | SERC |

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| | | | | | | Company Generation | | |
| | | | | | Jim Howell | Southern Company - Southern Company Services, Inc. - Gen | 5 | SERC |
| Eversource Energy | Quintin Lee | 1 | | Eversource Group | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Christopher McKinnon | Eversource Energy | 3 | NPCC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC Regional Standards Committee no NGrid | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power | 2 | NPCC |
| | | | | | Glen Smith | Entergy Services | 4 | NPCC |
| | | | | | Alan Adamson | New York State Reliability Council | 7 | NPCC |

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|--------------------|---|---|------|
| David Burke | Orange & Rockland Utilities | 3 | NPCC |
| Helen Lainis | IESO | 2 | NPCC |
| David Kiguel | Independent | 7 | NPCC |
| Nick Kowalczyk | Orange and Rockland | 1 | NPCC |
| Joel Charlebois | AESI - Acumen Engineered Solutions International Inc. | 5 | NPCC |
| Mike Cooke | Ontario Power Generation, Inc. | 4 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Shivaz Chopra | New York Power Authority | 5 | NPCC |
| Deidre Altobell | Con Ed - Consolidated Edison | 4 | NPCC |

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|-------------------|--|----|------|
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Cristhian Godoy | Con Ed - Consolidated Edison Co. of New York | 6 | NPCC |
| Nurul Abser | NB Power Corporation | 1 | NPCC |
| Randy MacDonald | NB Power Corporation | 2 | NPCC |
| Michael Ridolfino | Central Hudson Gas and Electric | 1 | NPCC |
| Vijay Puran | NYSPS | 6 | NPCC |
| ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| Sean Cavote | PSEG - Public Service | 1 | NPCC |

| | | | | | | | | |
|---------------------|-------------|---|--|----------|------------------|-------------------------------------|---|---------------------|
| | | | | | | Electric and Gas Co. | | |
| | | | | | Brian Robinson | Utility Services | 5 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |
| | | | | | Jim Grant | NYISO | 2 | NPCC |
| | | | | | John Pearson | ISONE | 2 | NPCC |
| | | | | | Nicolas Turcotte | Hydro-Quebec TransEnergie | 1 | NPCC |
| | | | | | Chantal Mazza | Hydro-Quebec | 2 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Paul Malozewski | Hydro One Networks, Inc. | 3 | NPCC |
| | | | | | Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| Dominion - Dominion | Sean Bodkin | 6 | | Dominion | Connie Lowe | Dominion - Dominion | 3 | NA - Not Applicable |

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| Resources, Inc. | | | | | | Resources, Inc. | | | |
| | | | | | | Lou Oberski | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |
| | | | | | | Larry Nash | Dominion - Dominion Virginia Power | 1 | NA - Not Applicable |
| | | | | | | Rachel Snead | Dominion - Dominion Resources, Inc. | 5 | NA - Not Applicable |

1. The SDT revised CIP-012-1 R1 to address the comments received during initial ballot and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of real-time assessment and real-time monitoring data while in transit between control centers. Do you agree that the proposed language in R1 addresses security and availability as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

While the language in R1 may address security and availability, the availability portion of this proposed standard is better suited for IRO-010, TOP-003, TOP-001 or any other applicable standard within the Operations and Planning suite of standards. Ensuring availability of communication links through redundancy and/or diversity is a significant departure in scope from the CIP standards. The CIP standards generally require controls and protections to be applied at the device level. This proposed language involves protections outside of the device and, in this case, the Entity's Electronic Security Perimeter.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. TOP and IRO do address availability but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 "develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers." The SDT has developed language to help clarify that controls and protections are the focus of the requirement as it pertains to *availability*. The focus of CIP-012 is Control Center to Control Center communication and this communication may or may not take place outside of the ESP. Regardless of where the Control Center to Control Center communications occur, the communications must be protected.

| | |
|---|----|
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| There is currently no definition of "availability". AEPCO agrees with ACES comments of adding a NERC definition for "availability" or adoption a NIST definition. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. There is currently a NIST based definition of <i>availability</i> within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. | |
| Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF | |
| Answer | No |
| Document Name | |
| Comment | |
| Duke Energy does not believe the SDT revised CIP-012-1 in a way that best meets the directives outlined in FERC Order No. 866. The SDT's use of "availability protections" is unclear and would require further definition of this term versus referring to the NIST definition of <i>availability</i> defined as "ensuring timely and reliable access to and use of information". Using the language "security and availability protections" leaves us with questions. We prefer the language of FERC Order No. 822 specifically directing NERC to modify the Reliability Standards to require entities to implement controls to protect communication links and data communicated between BES Control Centers. FERC Order No. 866 conveys FERC's assertion that NERC did not address <i>availability</i> . We think that <i>availability</i> should be addressed using language that references | |

controls to protect availability of communication links and data. Please see Question 5 below and our suggested rewording of sub requirement 1.2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has revised the R1 subpart language to focus upon “Identification of method(s) used to mitigate the risk” to better reflect the requirement for availability controls based on industry feedback. The SDT appreciates the inclusion of suggested language below in question 5.

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer No

Document Name

Comment

While the language in R1 may address security and availability, the availability portion of this proposed standard is better suited for IRO-010, TOP-003, TOP-001 or any other applicable standard within the Operations and Planning suite of standards. Ensuring availability of communication links through redundancy and/or diversity is a significant departure in scope from the CIP standards. The CIP standards generally require controls and protections to be applied at the device level. This proposed language involves protections outside of the device and, in this case, the Entity’s Electronic Security Perimeter.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric

system Control Centers.” The SDT has developed language to help clarify that controls and protections are the focus of the requirement as it pertains to *availability*. The focus of CIP-012 is Control Center to Control Center communication and this communication may or may not take place outside of the ESP. Regardless of where the Control Center to Control Center communications occur, the communications must be protected.

Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer No

Document Name

Comment

The proposed language states that entities are to have a plan to mitigate the risks of a loss of availability of data while being transmitted between control centers. As worded, this does not direct entities to implement redundant or highly available communications infrastructure, which we believe is the intent of Order No. 866, but rather it directs entities to have a plan for mitigating the risks of a loss of availability of the data. We would recommend making the availability directive a stand alone requirement.

Likes 3 Black Hills Corporation, 3, Stahl Don; Black Hills Corporation, 5, Silbaugh Derek; PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

Thank you for your comment. The SDT has revised the draft language based on feedback.

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer No

Document Name

Comment

Eversource supports the comments of EEI.

Likes 0

| | |
|---|----|
| Dislikes | 0 |
| Response | |
| Please see response to EEI. | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | No |
| Document Name | |
| Comment | |
| We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. This may be creating a conflict with other standards by including availability of data when we feel it is already included in other standards | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. While the TOP and IRO O&P Standards do address <i>availability</i> to an extent, they are scoped to data exchange infrastructure within the primary Control Center and do not address data in motion between other Control Centers. The revisions to CIP-012 address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.” The SDT has developed language to help clarify that “methods used to mitigate the risk” of loss is the focus of the requirement as they pertain to <i>availability</i> . | |
| Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |

What exactly are “availability protections”? Can examples be provided?

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry comments, the “availability protections” language has been revised to reflect a requirement for “Identification of method(s) used to mitigate the risk” associated with loss of communication links. This change should better allow entities the flexibility they need to meet the compliance and security objectives of the Standard. Please see the revised Implementation Guidance for examples.

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO

Answer No

Document Name

Comment

The MRO NSRF (“NSRF”) generally agrees revised CIP-012-2 meets the FERC Order 866 directives; however, to be useful the term “availability” must be clarified in the requirements. While the NSRF appreciates the NIST definition of “availability” contained in the proposed Implementation Guidance, it is not certain that the Implementation Guidance will be endorsed by the ERO. Therefore, the NSRF recommends the SDT draft a formal definition of “Availability” for inclusion in the CIP-012-2 Standard, which could be the adoption of the NIST definition, or something similar. The NSRF recognizes the challenges and unintended consequences associated with “availability” being added as a new definition to the NERC Glossary of Terms since “availability” is used in other standards which could be impacted. In light of that, the NSRF suggests a definition be added (and limited in scope) to the CIP-012 standard itself.

Additionally, clarification of “availability” could also be included in the Technical Rationale for CIP-012. The benefits of a definition include formalization within the Standard’s vernacular, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams. The NSRF also believes that the Measure M1 should provide examples of what types of evidence would meet the

availability requirement (e.g., an entity executing plans in support of the recovery of compromised communications links and the use of back-up communications capability when primary communications are unavailable). This would provide additional clarity to the industry.

Similarly, while having the concepts of “diversity, redundancy, or a combination of both” in the Implementation Guidance is needed, the NSRF recommends the SDT consider including the concepts in M1 to achieve a clearer measure of what constitutes meeting the requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The NSRF recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The NSRF recommends the SDT clarify within the Implementation Guidance at **Identification of Methods Used for the Recovery of Communication Links (R1.2)** the phrase “This objective is consistent with TOP and IRO O&P Standards” by identifying which standards are being referenced.

The term “recovery” as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the NSRF recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity’s fault.

Additionally, the task of restoring availability predominantly resides with the telecommunication provider. In the event a communication link goes down, electric reliability entities are reliant on telecommunication provider to restore service. The NSRF requests the SDT add an exemption for links and equipment owned by telecommunication providers.

| | |
|--|--|
| Likes 1 | Lincoln Electric System, 1, Johnson Josh |
| Dislikes 0 | |
| Response | |
| <p>Thank you for your comments. The SDT appreciates the feedback. There is currently a NIST based definition of <i>availability</i> within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. The SDT asserts that because the term is being used within the context of a Cyber-Standard it should lend itself toward a cyber understanding of the term. The team has revised the measures in the latest CIP-012 draft to include more examples in order to provide additional clarity regarding availability and example controls around it. Please see the revised Implementation Guidance regarding carriers, diversity, recovery of links and other topics. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.</p> | |
| Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Dominion Energy supports the comments from EEI. In addition, we would like to emphasize particular concern around the term "availability". This should be a defined term to eliminate ambiguity and reduce confusion. The current NIST definition used in the Technical Rational and the Implementation Guidance could be used as a basis for a definition.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Thank you for your comments. There is currently a NIST based definition of <i>availability</i> within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. The SDT asserts that because the term is being used within the context of a cyber-standard it should lend itself toward a cyber understanding of the term. In addition, the term "availability" has been removed from the Standard. The Requirements are now focused upon "identification of methods used to mitigate the risk posed by loss" and "Identification of</p> | |

methods to be used for recovery”. This should better reflect the focus upon a results-based approach to maintaining Confidentiality, Integrity, and Availability.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Although BPA supports the revisions made in the latest draft, the additional availability requirement is added into the standard with an ‘and’ statement and not clearly distinguished. Because availability requires significantly different controls than confidentiality or integrity, BPA recommends:

1. R1.1 should be maintained, as it is currently written, limited to confidentiality/integrity.

a) The Drafting Team should insert a new subpart (R1.2) for the availability requirement. This will assist both entities and auditors in a cleaner approach to implementation and assessing compliance.

b) The Drafting Team should insert a new subpart (R1.2) for the availability requirement. This will assist both entities and auditors in a cleaner approach to implementation and assessing compliance.

2. BPA appreciates that the SDT has clarified the definition of the term “availability” in the Technical Rationale and Implementation Guidance. However, the Requirement is confusing, and it is inconsistent with the approach taken for the existing confidentiality/integrity requirement:

a. The terms “confidentiality” and “integrity” are not used in R1.1; rather, they are described as “unauthorized disclosure” and “unauthorized modification”, respectively. They are only linked to the cybersecurity terms of Confidentiality and Integrity in the Technical Rationale, for clarity. The Drafting Team should use the same approach for Availability.

- b. “Availability” means different things to cybersecurity professionals and communications professionals (who will be interpreting and implementing this Requirement):
- i. Availability in cybersecurity circles is ‘Ensuring timely and reliable access to and use of information.’ BPA agrees that this definition meets the intent of the FERC Order.
 - ii. Availability in communications circles is a ‘Quantitative measurement of the expected desirable performance criteria of a communications link/channel/system.’ (i.e., Block Error Rate 10^{-6}, <math>< 2</math> Serverly Error Seconds in 24 hours, 99.9999% uptime in any given year period, etc.) This definition doesn’t meet FERC’s intentions, but will be the first thing that comes to mind in telecom engineers who read it.
- c. Because of this important and potentially confusing difference, BPA recommends that the SDT:
- i. Replace “availability” in the new proposed subpart (R1.2, proposed above): “Identification of protection(s) used to ensure timely and reliable access to, and use of, Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers.”
 - ii. The term availability should only appear in the Technical Rationale and Implementation Guidance for additional clarity, as is already done for confidentiality and integrity.

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see the responses below:

1. The SDT has revised the standard language as suggested.
2.
 - a. The SDT has removed the term “Availability” from the requirement language as suggested and Implementation Guidance will reflect the availability concept within the context of subpart 1.2.
 - b. The SDT has removed the term “Availability” from the requirement language. Please see IG and TR for an updated definition. Ensuring timely and reliable information. The “use of” phrase in the definition is more of an O&P component and will be removed from the revised definition.
 - c. The SDT revised the language of subpart 1.2 to remove the word availability. Please see the updated IG and TR

Based on industry feedback, the STD has further modified the draft requirement subparts to include the availability component in its own subpart. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement for availability. The SDT appreciates the inclusion of alternate language for R1.2.

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer No

Document Name

Comment

While CHPD supports revisions made in the latest draft and appreciates the effort that went into consolidating R2 into R1, CHPD does not believe this revision best meets the directives of FERC Order No. 866. Because availability requires significantly different controls than confidentiality and integrity, CHPD recommends the SDT insert a new subpart (R1.2) for the availability protections requirement. This will assist both entities and auditors in a cleaner approach to implementing and assessing compliance.

CHPD appreciates that the SDT clarified the definition of the term “availability” in the Technical Rationale. However, R1 is confusing with regards to availability and inconsistent with the approach taken for the existing confidentiality/integrity requirement. The current revision remains ambiguous with the term “availability”. Availability should be addressed using language that references controls to protect availability of communication links and data. The Technical Rationale is helpful, and including its clear examples (e.g., “redundant communication links and data paths”) or adding a requirement table with a measures column with similar evidence examples would minimize inconsistent interpretations among Registered Entities and Regional Entities.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the STD has further modified the draft requirement subparts to include the availability component within its own subpart. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Please see the

Implementation Guidance and Technical Rationale for the thought that went into defining availability and measures that can demonstrate availability much like CIP-012-1 has definitions for confidentiality and integrity within the IG.

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer No

Document Name

Comment

The scope of 'availability' is not clear and should be further clarified in R1 or in the Technical Rationale and/or Implementation Guidance. Noting on page 2 of the TR the SDT does reference TOP-001 and IRO-002 ("diversity, redundancy, or a combination of both"), but it is not clear what scope of availability is also required in R1.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on "identification of methods to mitigate the risk of loss" of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement for availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the IG. Please see the updated Technical Rationale and Implementation Guidance.

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer No

Document Name

Comment

While the NSRF appreciates the NIST definition of “availability” contained in the proposed Implementation Guidance, the NSRF recommends the SDT draft a formal definition of “availability” for inclusion in the NERC Glossary of Terms, even if it entails adoption of the NIST definition, or something similar. By doing so, the new definition would be formalized within NERC’s vernacular and within the Standard, thereby reducing potential ambiguity and likelihood of different interpretations by registered entities and audit teams.

Similarly, while having the concepts of “diversity, redundancy, or a combination of both” in the Implementation Guidance is needed, the NSRF recommends the SDT consider including the concepts in R1 to achieve a clearer requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The NSRF recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The NSRF recommends the SDT clarify within the Implementation Guidance at Identification of Methods Used for the Recovery of Communication Links (R1.2) the phrase “This objective is consistent with TOP and IRO O&P Standards” by identifying which standards are being referenced.

The term “recovery” as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the NSRF recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity’s fault.

Additionally, much availability relies on Telecommunication Providers that in the event they go down, we are reliant on them to bring it back up. In the event a line or their telecommunication equipment goes down, the Registered Entity does have to rely on them to bring it back up. The NSRF requests the SDT to add an exemption for links and equipment used by telecommunication providers.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language removes the word availability from the Standard language and is focused now on “identification of methods to mitigate the risk of loss” of availability. Examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. The SDT asserts that because the term is being used within the context of a cyber-standard it should lend itself toward a cyber understanding of the term. Please see the revised Implementation Guidance and Technical Rationale updated to reflect these and other suggested changes.

JT Kuehne - AEP - 6

Answer

No

Document Name

Comment

While AEP agrees that R1 addresses both security and availability concerns as identified in FERC Order No. 866, potential scope creep could exist within Requirement R1.1, as it is not explicitly stated that loss of data availability is due to communication link failure. Data loss can occur for a variety of reasons, and as such, AEP recommends that R1.1 specify that data loss is due to communication link unavailability.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language removes the word availability from the Standard language and is focused now on “identification of methods to mitigate the risk of loss” of availability.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

N&ST believes the proposed language in R1 does not fully address FERC Order 866. The Order directs NERC to modify CIP-012 to address availability of communications links and the data they carry while it’s in transit. The proposed “combination” requirement to address data confidentiality, integrity, and availability fails to identify communications links between in-scope Control Centers as requiring availability protections. The need to do so is implied in R1.2, but N&ST believes this should be made explicit. In addition, R1’s proposed language does not identify any requirement for a Responsible Entity’s CIP-012 plan(s) to include provisions for continuity of operations, as directed by the FERC Order.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on feedback received in this comment period, the Standard Drafting Team has revised the subparts of Requirement R1 to refine the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language removes the word availability from the Standard language and is focused now on “identification of methods to mitigate the risk of loss” of availability. Continuity of Operations is addressed in implementing “methods to mitigate the risk of loss”. Provided that an entity’s methods preserve or restore the flow of data in a timely manner, continuity of operations is achieved.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

BC Hydro appreciates the opportunity to comment and provides the following comments.

Although the Requirement 2 wording from Draft 2 of CIP-012-2 is removed however it appears that the wording of the Requirement 2 from Draft 1 has only been moved or merged into Requirement 1 of Draft 2. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 appear to still hold valid. The changes in Requirement 1 in Draft 2 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP 002-5.1a. As availability is the purview of operations, it would be better suited to other MRS standards (e.g., IRO-010, TOP-003, TOP-001) or other applicable Standard(s) within the Operations and Planning (O&P) domain..

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively BC Hydro suggests providing a clear understanding of the term 'availability' and a clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on 3rd party telecommunication providers and in the event of a line or telecommunication equipment going down, the entity is reliant on the 3rd party telecommunication providers to fix the problems. BC Hydro suggests that SDT include an exemption for the links and equipment used by 3rd party telecommunication providers as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

| | |
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| Likes | 0 |
|-------|---|

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| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. The SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.” The SDT has modified the Requirement language to help clarify that controls and protections are the focus of the requirement as it pertains to *availability*. The Standard Drafting Team has also revised the subparts of Requirement R1 to refine the context of *availability* to better reflect the cyber security objective of the Requirement. Please see the updated Technical Rationale and Implementation Guidance.

Larry Watt - Lakeland Electric - 1

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---|----|
| Document Name | |
| Comment | |
| Availability should be handled as part of the TOP or EOP series of standards and does not belong in the CIP Standards. In fact, response to unavailability is already built into standards of the TOP/EOP series. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. The SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.” TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 are addressing elements that TOP and IRO do not address. | |
| Susan Sosbe - Wabash Valley Power Association - 3 | |
| Answer | No |
| Document Name | |
| Comment | |
| While we agree the proposed language in R1 addresses the availability modifications being proposed in this draft to meet FERC Order No. 866, the definition of “availability” is not a NERC defined term. Providing an alternative standard’s term definition does not provide an avenue to meet strict NERC CIP compliance. To aid Entities, a formal definition of “availability” should be adopted to the NERC Glossary. By defining “availability”, it alleviates the potential of differing interpretations of the term. | |
| R1.1.2 is too broad in using the term “recovery”. Entities are more often dependent on telecommunication providers to restore communications when a circuit goes down between Control Centers. This is due to the number of physical mediums and cyber assets data | |

traverses from Control Center to Control Center. There should be an exception in the requirement allowing for restoration issues outside of the control of the entity being required to comply.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has worked to refine the NIST definition of availability to better reflect industry feedback and included it in the Implementation Guidance. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability.

Based on feedback received in this comment period, the Standard Drafting Team has also revised the subparts of Requirement R1 to refine the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language removes the word *availability* from the Standard language and is focused now on “identification of methods to mitigate the risk of loss” of availability. These changes combined with the Requirement R1 language to “implement...one or more documented plan(s)”, aligns the focus of the requirements on having a plan to mitigate risks, which is better aligned with a results based approach.

Daniel Gacek - Exelon - 1

Answer

No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the response to EEI.

Kinte Whitehead - Exelon - 3

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see the response to EEI. | |
| Cynthia Lee - Exelon - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see the response to EEI. | |
| Becky Webb - Exelon - 6 | |
| Answer | No |
| Document Name | |
| Comment | |

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the response to EEI.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer No

Document Name

Comment

No: As mentioned by others and NCPA agree that availability is not well defined and can have multi meanings and expectations relating to the standards.

Likes 0

Dislikes 0

Response

Based on feedback received in this comment period, the Standard Drafting Team has revised the subparts of Requirement R1 to refine the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language removes the word *availability* from the Standard language and is focused now on “identification of methods to mitigate the risk of loss” of availability. These changes combined with the Requirement R1 language to “implement...one or more documented plan(s)”, aligns the focus of the requirements on having a plan to mitigate risks, which is better aligned with a results-based approach.

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer No

| | |
|--|----|
| Document Name | |
| Comment | |
| MPC supports comments submitted by the MRO NERC Standards Review Forum. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see the SDT's response to MRO NERC Standards Review Forum. | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | No |
| Document Name | |
| Comment | |
| SCPSA believes that the previous version of the CIP-002-2 draft addressed FERC Order No. 866 more effectively. Integrating the security and availability components into a single requirement potentially leads to confusion because the methods of implementation for security and availability protections are different. Furthermore, the term "availability protections" is unclear. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. The SDT has revised the language of the Requirements to better reflect the feedback received from the industry as a whole. Based on industry comments, the "availability protections" language is being revised to reflect a requirement for "Identification of method(s) used to mitigate the risk" associated with loss of communication links. This change should better allow entities the flexibility they need to meet the compliance and security objectives of the Standard. Please see the revised Implementation Guidance for examples. | |

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness. Similarly, the NIST definition provided in the Technical Rational which states “Ensuring timely and reliable access to and use of information” is vague and lacks actionable direction. Furthermore, entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA believes that the term “Availability” in this context, offers unnecessary opaqueness. Similarly, the NIST definition provided in the Technical Rational which states “Ensuring timely and reliable access to and use of information” is vague and lacks actionable direction.

Furthermore, entities have little to no control over the availability of communication networks. Entities can, however, provide redundancy. The SDT may benefit from using explicit terms that cannot be misinterpreted by the different industry segments.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer No

Document Name

Comment

While we agree the proposed language in R1 addresses the availability modifications being proposed in this draft to meet FERC Order No. 866, the definition of “availability” is not a NERC defined term. Providing an alternative standard’s term definition does not provide an avenue to meet strict NERC CIP compliance. To aid entities, ACES believes a formal definition of “availability” be adopted to the NERC Glossary. By defining “availability”, it alleviates the potential of differing interpretations of the term.

Further, ACES believes R1.1.2 is too broad in using the term “recovery”. Entities, are more often dependent on it’s telecommunication providers to restore communications when a circuit goes down between Control Centers. This is due to the number of physical mediums and cyber assets data traverses from Control Center to Control Center. There should be an exception in the requirement allowing for restoration issues outside of the control of the entity being required to comply.

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. Based on industry feedback, the SDT is refining the context of <i>availability</i> to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement <i>for</i> availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.</p> | |
| LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Availability should be handled as part of the TOP or EOP series of standards and does not belong in the CIP Standards. In fact, response to unavailability is already built into standards of the TOP/EOP series.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. TOP, IRO, and EOP do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”</p> | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid | |
| Answer | No |

| | |
|--|----|
| Document Name | |
| Comment | |
| <p>The inclusion of “availability” in R1 is not well defined. R1’s availability is subtly but importantly different than the question. The question adds “data while in transit between control centers.” We recommend adding this language to R1.</p> <p>Per previous feedback, in most cases, communications between Control Centers are handled by a third party. If that third party cannot provide communications, the Service Level Agreement provides compensation but does not guarantee availability. IRO -002 and TOP-001 already have Requirements that mandate diversity and redundancy as they pertain to communications. It is not clear that diversity and redundancy equate to availability. We recommend removing availability from CIP -012 since other Standards cover this topic OR moving availability to other Standard(s)</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. Based on industry feedback, the SDT has refined the context of <i>availability</i> to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement <i>for</i> availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.</p> | |
| <p>Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments</p> | |
| Answer | No |
| Document Name | |
| Comment | |

PG&E supports the comments provided by the Edison Electric Institute (EEI) related to the undefined term “availability” and the proposed modifications to R1. As EEI indicated in their comments, dividing R1 into two (2) sub-parts and changing “availability protection” with “availability controls, or another term that better aligns with NERC’s results based standards philosophy and does not inappropriately cause confusion with entity internal controls” helps remove the subjectiveness of just “availability protections”. This would allow the entity to indicate the “controls” to meet “availability” which could be measured more easily than “protections”,

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI.

Greg Davis - Georgia Transmission Corporation - 1

Answer

No

Document Name

Comment

GTC finds the term ‘availability protections,’ as used in the proposed language to be lacking in specificity or unsupported by industry standard terminology. For the purposes of clarity, in order to eliminate the need for the inexact term ‘availability protections,’ while still capturing the requirements of Order 866, GTC proposes the following alternate language for Requirement 1.1:

“Identification of protections used to mitigate risks posed by: (1) unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; and (2) loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.”

GTC has identified similar use of the term ‘availabilty protections’ in Requirement 1.4, and similarly proposes th e following alternate language:

“If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying the protections as required in Part 1.1.”

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics. Based on feedback the SDT has modified the subparts to include the availability component within its own subpart.

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

No

Document Name

Comment

See EEI Comments.

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment, please see response to EEI. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>While EEI appreciates the changes made to CIP-012, Requirement R1; additional modifications are still needed to ensure that entities have adequate flexibility to demonstrate that availability is fully addressed and provides responsible entities with results-based requirements that are achievable and clearly defined. For this reason, we suggest that the SDT consider splitting Requirement R1, subpart 1.1 (as indicated below) and substitute “availability protection” with the term “availability controls”. Such a change, in the context of availability, is important because protections for availability are subjective whereas making availability controls is something that is regardless of the approach is achievable and clearly understood.</p> <p>R1.1 Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;</p> <p>R1.2 (proposed new) Identification of availability controls used to mitigate the risk posed by loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;</p> <p>Additionally, the use of Measures supporting these two requirements provided above would alleviate the regulatory certainty concerns many companies are facing with the proposed language used in the 2nd Draft. As examples of measures that could be developed to support the two requirements above are as follows:</p> <p>(1.1) Security Protection</p> <ul style="list-style-type: none"> • Identification of points where encryption/decryption of the data occurs at either a transport, network, or application layer. | |

- Physical access restrictions to unencrypted portions of the network

(1.2) Availability Controls

- Network diagrams showing redundancy of paths between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service-level agreements with carriers containing high availability provisions

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the subparts and expanded the measures section to include examples for each subpart as suggested.

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer

No

Document Name

Comment

ERCOT agrees with the IRC SRC comments regarding a common understanding of the use of “availability” within the standard. ERCOT notes, however, that promoting availability consists of actions and measures to provide redundancy and diversity rather than a specific metric.

In Paragraph 16 of Order No. 866, FERC identified a gap concerning the availability of communication links and data communicated between bulk electric system Control Centers. In Paragraph 33, FERC clarifies the intent of its directive to NERC to “address the risks associated with the availability of communication links and data communicated between all bulk electric system Control Centers” As stated in its previous comments, ERCOT believes FERC’s intent of “availability” is to identify a proactive approach to promote the continuity of operations through availability of communication links and, relatedly, the data passing through those links. The technical guidance provides similar insight to understanding “availability” where, on page 2 (pdf page 10), the technical guidance explains availability and states that this standard should mitigate the risk posed by the loss of “data flow.” However, the proposed standard revisions may not achieve that same level of understanding of “availability” within the standard itself, as explained in the IRC SRC comments. Availability is not necessarily an

object to be measured, but rather a process illustrated by providing redundancy and diversity to provide for the continuity of operations if the primary communication link is lost or compromised.

ERCOT provides the following language (with explanations in brackets at the end of each paragraph/part), which leaves the security protection of data the same as in the current version of the standard and addresses the concept of promoting availability as well as establishing an identification/recovery process as noted by FERC in Paragraph 35 of Order No. 866.

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: ***[same language as provided in Nov 2021 Draft]***

1.1. Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers; ***[identical to approved CIP-012-1, Part 1.1]***

1.2. Identification of measures to promote the availability of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers, including use of redundant or backup communication capability between Control Centers in the event of an unavailable or compromised communication link between Control Centers; ***[new Part to address availability]***

1.3. Identification of a process to identify and recover unavailable or compromised communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers; ***[from Nov 2021 Draft Part 1.2, with some modifications to address recovery as a process]***

1.4. Identification of where the Responsible Entity applied security protection as required in Part 1.1; and ***[from Nov 2021 Draft Part 1.2, modified to be consistent with CIP-012-1, Part 1.2]***

1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection as required in Part 1.1, identifying availability measures as required in Part 1.2, and identifying of a process to identify and recover communication links as required in Part 1.3. ***[similar to and consistent with CIP-012-1, Part 1.3]***

Likes 0

| | |
|---|---|
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Based on industry feedback, the SDT has refined the language of R1 and the subparts, as well as provided additional context of <i>availability</i> to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement <i>for</i> availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.</p> | |
| Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>PNMR supports EEI comments and proposed lanuguage for CIP-012-2 R1. If the STD rejects the proposed EEI language, PNMR recommends defining availability and a restoration metric.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment, please see response to EEI.</p> | |
| Benjamin Winslett - Georgia System Operations Corporation - 3,4 | |
| Answer | No |
| Document Name | CIP-012-2 Comment Form (Final Draft).docx |
| Comment | |

GSOC finds the term ‘availability protections,’ as used in the proposed language to be lacking in specificity or unsupported by industry standard terminology. For the purposes of clarity and to eliminate the need for the inexact term ‘availability protections,’ while still capturing the requirements of Order 866, GSOC proposes the following alternate language for Requirement 1.1:

“Identification of protections used to mitigate risks posed by: (1) unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers; and (2) loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.”

GSOC has identified similar use of the term ‘availability protections’ in Requirement 1.4, and, similarly, proposes the following alternate language:

“If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying the protections as required in Part 1.1.”

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for

confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Erin Green - Western Area Power Administration - 1,6

Answer No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to WAPA.

sean erickson - Western Area Power Administration - 1

Answer No

Document Name

Comment

A. We do not agree with the draft language proposed. Once RTA/RTm data has left the physical Control Center or associated data center equipment, an entity relies on intermediary companies such as Telecom carriers to ensure availability of data communication paths for RTA/RTm data between Control Centers. Therefore they have no control over the operation, maintenance or availability of such equipment nor the availability.

Identifying methods used to recover communication links does not at all ensure the availability of those paths – which is the intent of the requirement. Entities already have to comply to TOP-001-5 R20 to R24 to ensure said data exchange protections of RTA/RTm exists. Secondly, entity’s must protect BES Cyber System Information in CIP-011 and CIP-004.

We recommend the SDT remove or revise the term availability, or add a requirement to have “at least 2 or more communications paths between Control Centers.” We also recommend the SDT provide technical guidance related to RTA/RTm being BES Cyber System Information.

B. Without prescribing encryption of RTA/RTm and key management, entities have no control of such RTA/RTm data beyond the last managed and maintained communication equipment interface. Therefore entities will not be able to meet the requirements of confidentiality and integrity as they are giving information to others beyond the entity’s control. This becomes a zero defect situation because an entity will not be able to guarantee that RTA/RTm data was compromised.

We Recommend that the SDT change the language to include the word “potential” confidentiality and integrity. This would allow entities to determine, implement and document a best effort set of security controls and clarify for industry and regulators that encryption and key management is or is not required.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Confidentiality and integrity is already in the approved standard going into effect on July 1, 2022.

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer No

Document Name

Comment

Evergy supports and incorporates by reference Edison Electric Institute’s (EEI) response to Question 1. Evergy would also suggest that the drafting team consider including their final definition of “availability” in the standard itself. Given that Implementation Guidance represents one way to meet compliance, a definition that is fundamental to the interpretation of the standard is not appropriately captured in Implementation Guidance. documents have not been approved by NERC for over a year, including it in the standard itself would provide the clarity that entities will need to implement this change.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer No

Document Name

Comment

Southern Company strongly disagrees with asking for **Availability** to be defined. We are aligned with EEI in most of our comment that follows, but please note some important differences in the proposed language.

We feel additional modifications are needed to ensure that entities have adequate flexibility to demonstrate that availability is fully addressed and provides responsible entities with results-based requirements that are achievable and clearly defined. For this reason, we suggest that the SDT consider splitting Requirement R1, subpart 1.1 (as indicated below) and substitute “*availability protection*” with the term “**availability provisions**”. Such a change, in the context of availability, is important because protections for availability are subjective whereas making **availability provisions** is something that, regardless of the approach, is achievable and clearly understood. To address the above concern, we suggest that R1.1 could be split. Note the following suggested Language:

R1.1 Identification of security protection used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

R1.2 (new) Identification of availability provisions used to mitigate the risk posed by loss of availability of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers;

Additionally, the use the Measures supporting these two Requirements provided above would alleviate the regulatory certainty concerns many companies are facing with the proposed language used in the 2nd Draft. As examples of Measures that could be developed to support the two requirement above are as follows:

M1. Examples of evidence may include, but are not limited to:

(1.1) Security Protections

- Identification of points where encryption/decryption of the data occurs at either a transport, network, or application layer.
- Physical access restrictions to unencrypted portions of the network

(1.2) Availability Provisions

- Network diagrams showing redundancy of paths between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service-level agreements with carriers containing high availability provisions

(1.3) <and the rest>

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI. The SDT considered availability provisions, but ultimately went with “methods used to mitigate the risk” to better align with the language in other standards.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid’s comments.

Likes 0

Dislikes 0

Response

Thank you for your comments, please see response to NPCC Regional Standards Committee.

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

We believe it is unclear what controls are required to protect the availability associated with communication of real-time assessment and real-time monitoring data, as this is not a defined term in the NERC CIP glossary of terms. In addition, examples of protections are not

provided in the revision of this standard. Is the expectation of the SDT that there be redundant paths of communication between control centers, as well as a plan for failure or loss of both of those communication paths?

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Manitoba Hydro agrees with the language in R1. The language could be simplified by eliminating sub-requirement R1.3 and combining with R1.1 directly. Current language: R1.3 "Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1" . Proposed modification to R.1.1: Identification of security and availability protection(s), including where protections are applied, used to mitigate the risks posed by unauthorized disclosure and, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the language based on industry feedback.

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Reclamation recommends that communications paths between Control Centers be on physically separated, redundant communications paths where feasible. Reclamation also recommends third-party vendors be included to ensure all parties are covered.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes that the draft language proposed in this draft allows for this approach. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

While IESO supports the comments submitted by the ISO/RTO Council SRC and NPCC, we further amend those comments by suggesting that “availability” be considered “as defined by the Responsible Entity” within the proposed standard. This is already implied in the proposed wording, thus IESO supports the proposed standard, however an explicit statement would further clarify this

Likes 0

Dislikes 0

Response

Thank you for your comment. The term availability has been removed from the proposed language. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF recommends that the SDT either define availability or integrate language into the Standard that addresses how availability is to be accomplished.

Likes 0

Dislikes 0

Response

Thank you for your comment. The term availability has been removed from the proposed language. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley

| | |
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| Answer | Yes |
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| Document Name | |
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| Comment | |
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| Likes 0 | |
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| Dislikes 0 | |
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| Response | |
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Thank you for your support.

Anthony Jablonski - ReliabilityFirst - 10

| | |
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| Answer | Yes |
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| Document Name | |
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|----------------|--|
| Comment | |
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| Likes 0 | |
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| Dislikes 0 | |
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| Response | |
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Thank you for your support.

LaTroy Brumfield - American Transmission Company, LLC - 1

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

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|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Ronald Bender - Nebraska Public Power District - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Donna Wood - Tri-State G and T Association, Inc. - 1

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer

Document Name

Comment

MGE does not support the defining of the word "availability", as the NIST definition is sufficient.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the updated Implementation Guidance regarding the definition of availability.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE appreciates the Standard Drafting Team’s (SDT) modifications to proposed CIP-012-2, R 1.1 to better address the identification of security and availability protections to mitigate the risks posed by, among other things, the loss of availability of data used for Real-time Assessments and Real-time monitoring. Texas RE further appreciates the proposed changes to CIP-012-2, R 1.2 requiring “[i]dentification of methods to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers.” Texas RE notes, however, that CIP-012-2, R1.2’s focus on “recovery” may not encompass the full range of proactive scenarios to ensure communications link availability. For instance, entities may need to consider eliminating single points of failure in their communication links to ensure “communication link availability” rather than simply focusing on recovery from a link outage. Texas RE recommends the SDT consider adopting explicit language requiring strategies to implement communication link availability in CIP-012-2, R 1.2 similar to that proposed by FERC in Order No. 866, paragraph 3.

| | |
|---------|---|
| Likes 1 | PNM Resources - PublicService Company of New Mexico, 3, Bratkovic Amy |
|---------|---|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to be used for the recovery of communication links” and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

2. Do you believe that you can demonstrate compliance with R1.3 to identify where your availability protections are applied? If not please provide comments and suggested requirement language.

David Jendras - Ameren - Ameren Services - 3

Answer No

Document Name

Comment

For us this would be dependent on the SDT response to our commnets in Question 1.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to question 1.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to NPCC Regional Standards Committee.

| | |
|---|----|
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | No |
| Document Name | |
| Comment | |
| Southern Company is concerned that Requirement R1.3 as currently proposed would create compliance problems, however, replacing the term availability protections with availability provisions would resolve this concern. (See our response to Question 1.) | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to question 1. | |
| Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster | |
| Answer | No |
| Document Name | |
| Comment | |
| Evergy supports and incorporates by reference Edison Electric Institute's (EEl) response to Question 2. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to EEl. | |
| Erin Green - Western Area Power Administration - 1,6 | |

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| I support the comments submitted by Sean Erickson (WAPA). | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to WAPA. | |
| Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | No |
| Document Name | |
| Comment | |
| PNMR supports EEI comments. Protections should be replaced with controls. Or "Identify methods to address the risk of loss of RTA and RTm data between contorls centers. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to EEI. The SDT has revised the draft language based on industry comments. | |
| Dana Showalter - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | No |
| Document Name | |

Comment

As stated in comments to question 1, availability is not an object to be measured, but rather a process illustrated by providing redundancy and diversity to provide for the continuity of operations if the primary communication link is lost or compromised.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes that the draft language proposed in this draft allows for this approach. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

No

Document Name

Comment

EI is concerned that Requirement R1.3 as currently proposed would create compliance problems, however, replacing the term availability protections with availability controls would resolve this concern. (See our response to Question 1.)

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to question 1.

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

No

Document Name

Comment

See EEI Comments.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI.

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

No

Document Name

Comment

PG&E supports the comments submitted by the Edison Electric Institute (EEI) comments that indicated the term “availability” is subjective in the context in which it is used and may create confusion for registered entities leading to inconsistent compliance enforcement actions. Refer to our response to Q1 for more details.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI and response to question 1.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer

No

Document Name

Comment

“Availability” is not well defined. Availability of data? Availability of the application? See feedback to question 1

The double jeopardy question with IRO and TOP Standards needs addressing. The SDT’s December 8, 2021 webinar raised this question.

We recommend removing availability from CIP-012 since other Standards cover this topic OR moving availability to other Standard(s)

How does CIP-012 distinctly cover any gaps that are not covered in other Standards?

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. In revising the context around availability and its focus on a cyber context, the SDT believe that the draft language addresses the issue of double jeopardy. TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers.

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer No

Document Name

Comment

Available protections seem to boil down to 'redundant and divergently routed' connectivity. As it is common to use the limited number of commercial paths between Control Centers and a customer cannot be 100% sure of the current path it will be difficult to prove compliance.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer No

Document Name

Comment

Again, most often entities depend on external communication providers for availability of data between Control Centers. This further supports the need for an exemption when communication provider’s links fail. A Registered Entity has no control over how or when a communication path will be restored in this case and therefore strict compliance is difficult or impossible to achieve.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| LCRA has similar concerns to what was raised in response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to question 1. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| LCRA has similar concerns to what was raised in response to Question 1. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to question 1. | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | No |
| Document Name | |
| Comment | |

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to MRO NSRF.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

No

Document Name

Comment

Without further clarity on the definition of “availability”, organizations will have issues with consistently scoping the controls to be applied and the documentation to demonstrate compliance.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

No

| | |
|--|----|
| Document Name | |
| Comment | |
| The term "availability" is subjective in the context in which it is used and may create confusion for registered entities leading to inconsistent compliance enforcement. ITC recommends a definition for the term "availability" be developed within the Reliability Standard itself. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of <i>availability</i> to better reflect the cyber security objective of the Requirement. The revised language is focused now on "identification of methods to mitigate the risk of loss" of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement <i>for</i> availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| When a third party is providing the availability protections, the specific components/details may be unknown and the monitoring / troubleshooting / resolution of availability issues would be outside of the registered entity's purview. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer No

Document Name

Comment

No: As mentioned above NCPA does not believe this can be answers until availability has been better defined.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Becky Webb - Exelon - 6

Answer No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

| | |
|---|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment, please see response to EEI. | |
| Cynthia Lee - Exelon - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment, please see response to EEI. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | No |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment, please see response to EEI.

Daniel Gacek - Exelon - 1

Answer No

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to EEI.

Susan Sosbe - Wabash Valley Power Association - 3

Answer No

Document Name

Comment

Again, most often Entities depend on external communication providers for availability of data between Control Centers. This further supports the need for an exception when communication provider’s links fail. A Registered Entity has no control over how or when a communication path will be restored in this case and therefore strict compliance is difficult or impossible to achieve.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Larry Watt - Lakeland Electric - 1

Answer No

Document Name

Comment

Availably protections seem to boil down to 'redundant and divergently routed' connectivity. As it is common to use the limited number of commercial paths between Control Centers and a customer cannot be 100% sure of the current path it will be difficult to prove compliance.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

CIP-012-1 is not yet in effect in British Columbia and BC Hydro has not implemented a solution to comply with CIP-012-1 yet. This question on compliance will be difficult to address at this stage and will be best answered once CIP-012-1 has been designed and implemented. As

identified in response to Question # 1, BC Hydro suggests that SDT add an exemption for the links and equipment used by 3rd party telecommunication providers.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

N&ST believes this could be a difficult question to answer for some Responsible Entities, depending on their approach(s) to addressing availability protection. If the mainstay of an Entity’s CIP-012 availability protection plan is a service level agreement with a wide-area communications carrier (an option the FERC Order suggests but appears to have been ignored by the SDT), the “where” of that Entity’s protections would be in its contractual document. Similarly, the “where” might be within an Entity’s disaster recovery procedures defined for its communications and networking infrastructure. N&ST believes it is neither practical nor necessary to compel Responsible Entities to identify the “where” of its availability protections, and we therefore recommend that it be removed from R1.3. We believe R1.1’s requirement to identify and describe availability protections is sufficient.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has revised the draft language to focus upon “methods used to mitigate the risks”. Examples given in the measures section address this concern.

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer No

Document Name

Comment

Demonstrating compliance will be difficult to prove if the communication link is provided by a third party.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has revised the draft language to focus upon “methods used to mitigate the risks”. Examples given in the measures section address this concern.

JT Kuehne - AEP - 6

Answer No

Document Name

Comment

AEP believes it could demonstrate compliance with Requirement R1.3 if the language from the Technical Rationale document on page 9 under General Considerations for Requirement R1 is added to the the R1 measurement language.

AEP recommends M1 read as follows:

Evidence may include, but is not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). *Identification of where the Responsible Entity applied security and availability protection(s) as required in Part 1.1. can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan.*

| | |
|---|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT has revised the draft requirements and measures based on industry feedback. | |
| Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | No |
| Document Name | |
| Comment | |
| In many instances, availability relies on telecommunication providers; and in the event service is interrupted, Registered Entities are solely reliant on the telecom providers to bring service back up. Similarly, in the event a line or telecommunication equipment goes down, the Registered Entity is again reliant on the telecommunication providers to fix the issues. NSRF requests the SDT add an exemption for the links and equipment used by telecommunication providers. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | No |
| Document Name | |
| Comment | |

The scope identification of availability protections is not clear for entities using 3rd party telecommuncion networks. This should be further clarified in R1 or the Technical Rationale and/or Implmentation Guidance.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer No

Document Name

Comment

CHPD has concerns demonstrating compliance for “security protections” in the common scenario where the Reliability Coordinator contracts with a telecommunications company for communication links between Control Centers operated by different Registered Entities. These Registered Entities depend on the telecommunication company to implement the security protections and do not have direct access to evidence that it is in place and functioning.

With more descriptive “availability protections” requirement language, CHPD could more confidently demonstrate “availability protections” compliance. Possible ways of clarifying include using alternate wording from the Technical Rationale (e.g., “redundant communication links and data paths”) or adding a requirements table with a measures column with evidence examples to minimize inconsistent interpretations among Registered Entities and Regional Entities.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1

Answer No

Document Name

Comment

Demonstrating compliance will be difficult to prove if the communication link is provided by a third party.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO

Answer No

Document Name

Comment

The NSRF requests the SDT add an exemption for the links and equipment owned by telecommunication providers. In many instances, availability resides with telecommunication providers; and in the event service is interrupted, Registered Entities are reliant on the telecommunication provider(s) to restore service. Similarly, in the event a telecommunication line or other piece of telecommunication equipment goes down, the Registered Entity is again reliant on the Telecommunication Provider(s) to address the issue(s).

The term “availability” is subjective and should be clearly defined prior to approving CIP-012-2.

| | |
|---------|--|
| Likes 1 | Lincoln Electric System, 1, Johnson Josh |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

What exactly are “availability protections”? Can examples be provided?

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a

measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. Concept of availability between control centers would need to be clarified.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer No

Document Name

Comment

Eversource supports the comments of EEI.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI.

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer No

Document Name

Comment

Without access to the equipment CE doesn't own, CE cannot definitively demonstrate that the compliance has been achieved.

Likes 1 Platte River Power Authority, 5, Archie Tyson

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the "identification of methods used to mitigate the risk" addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC

Answer No

Document Name

Comment

Black Hills Corporation has concerns with R1.1 with regards to the scenario where vendors like CAISO and SPP are providing the communications infrastructure. Entities would be relying on the vendors to implement the security (and availability) protections and the entity will not have direct access to evidence that it is in place and functional.

Likes 1 Platte River Power Authority, 5, Archie Tyson

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

Duke Energy takes issue with the term “availability protections” and not with the concept of availability. We prefer addressing the “where” in our rewording of sub requirement 1.4 as provided in Question 5 below.

Likes 1 PNM Resources - PublicService Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

Thank you for your comment. Please see response to question 5 below.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer No

Document Name

Comment

Entities are dependent on telecommunicatino carriers to maintain availability which makes R1.3 almost impossible to meet compliance with. Providing entities with an exception in this scenario should be considered.

Likes 1 Platte River Power Authority, 5, Archie Tyson

Dislikes 0

Response

Thank you for your comment. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

sean erickson - Western Area Power Administration - 1

Answer Yes

Document Name

Comment

Requirement 1.3 is is redundant to requirement 1.1 and not needed. Producing evidence to show overall compliance of requireme nt 1 more specifically requirement 1.1 will always lead to the identifications of where the responsible entity applied the appropriate controls.

In addition, the language is requiring an entity to ensure availability beyond the Control Center. An entity will not be able to demonstrate compliance to availability beyond an entities physical equipment and contract language with carriers. Most entities communication links are managed by Telecom carrier companies. Entities have no control over the availability of the paths. It is recommended that the SDT remove the language.

Likes 0

Dislikes 0

Response

Thank you for your response. The SDT believes that the issues of Requirement 1.3 being redundant to Requirement 1.1 was addressed in CIP-012-1 that is going into effect July 1, 2022. The revised draft language and its focus on the “identification of methods used to mitigate the risk” addresses this concern. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

While IESO supports the comments submitted by the ISO/RTO Council SRC and NPCC, we further amend those comments as follows: If the “availability” be considered “as defined by the Responsible Entity” within the proposed standard, then this gives IESO the flexibility in the application of availability protections. This is already implied in the proposed wording, thus IESO supports the proposed standard, however an explicit statement would further clarify this.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to ISO/RTO Council. The term availability has been removed from the proposed language. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Greg Davis - Georgia Transmission Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your support.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Ronald Bender - Nebraska Public Power District - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Martin Sidor - NRG - NRG Energy, Inc. - 6

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|---|-----|
| Thank you for your support. | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |

Texas RE believes registered entities should be able to demonstrate compliance with the Requirement Part 1.3.

Likes 0

Dislikes 0

Response

Thank you for your comment.

3. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer No

Document Name

Comment

NRG does not believe that these modifications meet the FERC directives in a cost effective manner. A more cost effective solution would be to include such modifications in IRO-010, TOP-003, TOP-001, or other applicable Operations and Planning standards. Including this verbiage in the CIP standards means the same or similar compliance activities have to be documented for multiple standards and represented in more audits (i.e. 693 and 706 standards).

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer No

Document Name

Comment

NRG does not believe that these modifications meet the FERC directives in a cost effective manner. A more cost effective solution would be to include such modifications in IRO-010, TOP-003, TOP-001, or other applicable Operations and Planning standards. Including this verbiage in the CIP standards means the same or similar compliance activities have to be documented for multiple standards and represented in more audits (i.e. 693 and 706 standards).

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer

No

Document Name

Comment

Reclamation observes there is an environment of constant churn with reliability standards. This results in ineffective use of resources associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that allows entities to fully implement technical compliance with current standards before moving to subsequent versions.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT will pass this comment on to NERC staff.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards. Protection of availability implies physical actions to protect the communications between control centers. This is impractical given the distance between control centers.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP and IRO do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.” Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

Answer No

Document Name

Comment

Without having a more thorough understanding as to what “availability protections” are, it is indeterminate as to the impact of what costs would be.

Likes 0

Dislikes 0

Response

Thank you for your comment. There is currently a NIST based definition of *availability* within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

Answer

No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

Thank you for your comment. There is currently a NIST based definition of *availability* within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is

focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer No

Document Name

Comment

SIGE does not agree that the modification meets FERC directives in a cost effective manner. The proposed language for CIP-012, Requirement R1 does not provide guidance on what are acceptable measures for a Registered Entity to take to meet the requirement. There are not sufficient measures, guidelines, or technical rationale documented in the draft for a Registered Entity to design a solution that meets security goals and is cost effective.

Likes 0

Dislikes 0

Response

Thank you for your comment. The team has revised the measures in the latest CIP-012 draft to include more examples in order to provide additional clarity regarding availability and example controls around it. Please see the revised Implementation Guidance regarding carriers, diversity, recovery of links, and other topics. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

| | |
|---|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| While the standard does not impose a requirement for new technology to meet its objectives, some entities may choose to use new technology to meet the requirements. The standard drafting team recommends entities consider the cost of any new equipment to be balanced against the cost of the risk of loss of availability. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>N&ST believes that as written, the draft Implementation Guidance document strongly implies that Responsible Entities should employ redundant communication links between Control Centers to address availability, even while noting FERC’s acknowledgement that in some suburban and rural areas, this could be prohibitively expensive, of only marginal incremental benefit to availability (no options for path diversity), or both. While we agree that redundant links should be considered, we recommend the document be revised to acknowledge this may not be a viable approach to mitigating availability risks in all cases. The SDT might also consider adding some examples of emergency back-up communications links an Entity might be able to utilize if its primary communications link is down or otherwise unavailable.</p> <p>N&ST notes, further, that while FERC Order 866 suggests it might be possible for a Responsible Entity to establish availability-related service level agreements with one or more network service providers, the Implementation Guidance document makes no mention of this option.</p> <p>Finally, N&ST believes the scope of CIP-012’s proposed availability requirements is unclear and open to interpretation, which has the potential to have significant cost implications for some entities, especially those without fully redundant Control Center network and computing infrastructures.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

While the standard does not impose a requirement for redundancy to meet its objectives, some entities may choose to use redundancy to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability. The revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard. The SDT notes that Implementation Guidance is not all inclusive and is only one way in which to comply, not the only way.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Please refer to BC Hydro's comments on Question #2.

CIP-012-1 is not yet in effect in British Columbia and BC Hydro has not implemented a solution to comply with CIP-012-1 yet; therefore, it is not yet feasible to identify the additional costs related to the Project 2020-04 CIP-012-2 changes.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

No: NCPA does not agree the proposed language is considered cost effective until there is expectation of what availability would be defined as with regards to the standard.

Likes 0

Dislikes 0

Response

Thank you for your comment. There is currently a NIST based definition of *availability* within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

Document Name

Comment

GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer No

Document Name

Comment

Where new technology will be required to support availability, we have no basis to determine the cost effectiveness of implementing this standard.

Likes 0

Dislikes 0

Response

While the standard does not impose a requirement for new technology to meet its objectives, some entities may choose to use new technology to meet the requirements. The standard drafting team recommends entities consider the cost of any new equipment to be balanced against the cost of the risk of loss of availability.

James Baldwin - Lower Colorado River Authority - 1

Answer

No

Document Name

Comment

LCRA is unclear exactly what these modifications will entail and is unsure what will constitute as sufficient availability.

Likes 0

Dislikes 0

Response

Thank you for your comment. There is currently a NIST based definition of *availability* within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Teresa Krabe - Lower Colorado River Authority - 1,5

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| LCRA is unclear exactly what these modifications will entail and is unsure what will constitute as sufficient availability. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. There is currently a NIST based definition of <i>availability</i> within the included Implementation Guidance. The SDT has refined this definition to better reflect industry feedback. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard. | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | No |
| Document Name | |
| Comment | |
| At this time PG&E cannot determine if the proposed modifications are cost-effective in meeting the FERC directive. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |

Erin Green - Western Area Power Administration - 1,6

Answer No

Document Name

Comment

I support the comments submitted by Sean Erickson (WAPA).

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to WAPA.

sean erickson - Western Area Power Administration - 1

Answer No

Document Name

Comment

Implementation will increase costs for Responsible Entities. The changes will have unforeseen consequences. For responsible entities these consequences will be incurred in terms of additional equipment, software licensing, contract modifications and man hours involved in planning, implementation, processes, maintenance and monitoring.

Likes 0

Dislikes 0

Response

While the standard does not impose a requirement for new technology to meet its objectives, some entities may choose to use new technology to meet the requirements. The standard drafting team recommends entities consider the cost of any new equipment to be balanced against the cost of the risk of loss of availability.

| | |
|--|-----|
| Daniel Gacek - Exelon - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Cynthia Lee - Exelon - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

| | |
|--|---|
| Black Hills Corporation does not anticipate a significant expense to achieve compliance. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The NSRF suggests the SDT identify which TOP and IRO O&P Standards are referenced in the Implementation plan at Identification of Methods Used for the Recovery of Communication Links (R1.2) . If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards. | |
| Likes | 1 Lincoln Electric System, 1, Johnson Josh |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see the updated Technical Rationale and Implementation Guidance. | |
| Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |

The NSRF suggests the SDT identify which TOP and IRO O&P Standards that are referenced in the Implementation plan at **Identification of Methods Used for the Recovery of Communication Links (R1.2)**. If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards.

Likes 0

Dislikes 0

Response

Thank you for your support. Please see the updated Technical Rationale and Implementation Guidance.

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Thank you for your support. Please see responses to comments submitted by the MRO Standards Review Forum.

Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3

Answer Yes

Document Name

Comment

It depends on the final version of this standard. PNMR is concerned that this feels like an all or nothing requirement. What are the restoration requirements? What if we lose connection and ability to transmit RTA and RTm data for 10 seconds, 30 seconds, 30 minutes? Do we have a potential non compliance? There should be some timedriven measure. Availability, like confidentiality and integrity, is a risk and methods to address the risk should be implemented.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the revised draft language which states “Identification of method(s) used to mitigate the risks”. Please see the revised measure regarding time driven measures. Additionally, the word availability has been removed from the Standard language which now reflects the concept of availability rather than a direct reference to availability. Additionally, the revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Anthony Jablonski - ReliabilityFirst - 10

Answer Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ronald Bender - Nebraska Public Power District - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Thank you for your support. | |
| Leonard Kula - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| JT Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Larry Watt - Lakeland Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Susan Sosbe - Wabash Valley Power Association - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Golden - Entergy - Entergy Services, Inc. - 1,5 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Thank you for your support. | |
| Greg Davis - Georgia Transmission Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Benjamin Winslett - Georgia System Operations Corporation - 3,4 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you for your support.

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer

Document Name

Comment

No Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

Thank you for your response.

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| Dominion Energy does not have enough information to make a determination. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. | |

4. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Constantin Chitescu - Ontario Power Generation Inc. - 5

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

OPG supports the NPCC Regional Standards Committee no NGrid's comments.

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

| |
|-----------------|
| Response |
|-----------------|

Thank you for your comment. Please see response to NGrid's comments.

sean erickson - Western Area Power Administration - 1

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

We do not believe the implementation time frame is adequate because it is unclear whether encryption is or is not required, nor can we predict the length of time to it will take to plan necessary changes, implementation of the changes, management and development of processes and procedures.

| | |
|---------|--|
| Likes 0 | |
|---------|--|

| | |
|--|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The revised draft language is focused upon the availability component of CIP-012. Confidentiality and integrity of the data are already covered in the approved CIP-012-1. The SDT does not endorse a specific technology. | |
| Erin Green - Western Area Power Administration - 1,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| I support the comments submitted by Sean Erickson (WAPA). | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see response to WAPA's comments. | |
| Amy Bratkovic - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | No |
| Document Name | |
| Comment | |
| PNMR recommends 36 month implementation guidance due to supply chain challenges | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer No

Document Name

Comment

We cannot answer until we understand what “availability” means and the availability’s scope. Scope refers to how deeply an entity must depend on other companies. We request clarification on 1) what availability means and 2) what is availability’s scope.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of availability to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing this has allowed the SDT emphasize a focus on controls and measures to achieve availability rather than a measurement for availability.

Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

This standard involves technology and protocol changes. More time is warranted to effectively implement these changes.

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| This standard involves technology and protocol changes. More time is warranted to effectively implement these changes. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot. | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi | |
| Answer | No |
| Document Name | |
| Comment | |
| No: NCPA does not agree that 24 months is long enough to implement other solutions. Many of these implementations require 3rd party ISPs to install circuits. In many cases it can take 6 months or more to get a circuit installed when it is available, however depending on location it can be years before circuitry is locally available. | |
| Likes | 0 |

| | |
|---|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot. | |
| Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro | |
| Answer | No |
| Document Name | |
| Comment | |
| As identified in answers to Questions above, at this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | No |
| Document Name | |
| Comment | |
| WECC proposes the SDT consider changing to a 12 or 18-month Implementation Plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

We do not recommend adding availability to the scope of CIP-012, since availability of operational data is already addressed in other NERC Reliability Standards, specifically the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP, IRO, and EOP do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Adrian Raducea - DTE Energy - Detroit Edison Company - 5, Group Name DTE Energy - DTE Electric

Answer No

Document Name

Comment

Compliance with the availability requirement may involve the installation of back-up communications. We are current experiencing delays in obtaining equipment necessary to install a dedicated line (six months from time of order). This type of delivery challenge may necessitate an extension in the enforcement date for CIP-012-2.

Likes 0

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot. | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E supports the 24-month implementation plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| MPC supports comments submitted by the MRO NERC Standards Review Forum. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment, please see response to MRO NSRF.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

Consider current supply chain landscape impacts to procuring technology to support this implementation.

Likes 0

Dislikes 0

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAFG supports the proposed implementation plan timeframe. GO/GOPs needing to procure equipment to demonstrate compliance must navigate both organizational system development life cycle processes and national supply chain constraints.

Likes 0

Dislikes 0

Response

Thank you for your support.

Terry Harbour - Berkshire Hathaway Energy - MidAmerican Energy Co. - 1

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Consider current supply chain landscape impacts to procuring technology to support this implementation | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>The need for a 24 month implementation plan is paramount to reliably and securely implement this standard. If the standard is implemented as written, 24 months will be needed to apply the recovery procedures as outlined. Registered Entities will need to work with their neighbors on the development of recovery plans; for example, an RTO/ISO will need to ensure recovery plans are in place for the availability of communications links with each of its members. Also, this standard involves more than just developing a recovery plan. Since these assets are not owned by Functional Entities subject to CIP-002, the utilization of CIP-008 and CIP-009 plans may not be relevant, and entities will have to develop their own recovery plans from scratch. Entities will have to work with telecommunication providers to set up new links and test them for recovery if they have not already done so. Finally, if supply chain issues cause delays in obtaining the required components needed for industry to fully implement V1 of this standard, then extra time will be needed for implementation until the supply chain issues are mitigated and resources are available.</p> | |
| Likes | 0 |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Quintin Lee - Eversource Energy - 1, Group Name Eversource Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Eversource supports the comments of EEI. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI's comments. | |
| Jennifer Malon - Black Hills Corporation - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Black Hills Corporation agrees that a 24 month implementation time is reasonable, however where vendors are involved that timeframe could become challenging. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your support.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

David Jendras - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Greg Davis - Georgia Transmission Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Golden - Entergy - Entergy Services, Inc. - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Becky Webb - Exelon - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Cynthia Lee - Exelon - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Susan Sosbe - Wabash Valley Power Association - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Larry Watt - Lakeland Electric - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; John Merrell, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Marc Donaldson, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 3, 1, 4, 5, 6; - Jennie Wike

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Bryan Koyle - Southern Indiana Gas and Electric Co. - 6 - RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

JT Kuehne - AEP - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Leonard Kula - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Daniela Hammons - CenterPoint Energy Houston Electric, LLC - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Steve Toosevich - NiSource - Northern Indiana Public Service Co. - 1

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ronald Bender - Nebraska Public Power District - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jeanne Kurzynowski - CMS Energy - Consumers Energy Company - 3,4,5 - RF, Group Name Consumers Energy Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Anthony Jablonski - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Fong Mua, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 5, 6, 4, 1; - Tim Kelley | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Matthew Jaramilla - Salt River Project - NA - Not Applicable - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name Tennessee Valley Authority

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

Thank you for your support.

5. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Document Name

Comment

Please see comments provided above

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to your previous comments.

Katie Connor - Duke Energy - 1,3,5,6 - SERC,RF

Answer

Document Name

Comment

Following is Duke Energy’s suggested rewording of the SDT’s proposed draft sub requirements for R1. We appreciate the effort that went into consolidating R2 into R1 and the opportunity to provide feedback.

1.1 Identification of security protection(s), the Responsible Entity applied to mitigate the risks posed by unauthorized disclosure or unauthorized modification of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

1.2 Identification of controls, the Responsible Entity implemented to protect the availability of communication links used to transmit data between Control Centers for Real-time Assessment and Real-time monitoring as to ensure timely and accurate data communication.

1.3 Identification of methods by the Responsible Entity, to be used for the recovery of communication links to transmit Real-time Assessment and Real-time monitoring data between Control Centers.

1.4 Identification of where the Responsible Entity has applied the protections and controls identified in Parts 1.1 and 1.2; and

1.5 If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying protections and controls to data being transmitted between Control Centers as required in Parts 1.1 and 1.2.

FERC Order No. 866 spoke directly to recovery. Recovery in the standard aligns with this; however, restoration and recovery are both used in the Implementation Guidance. We are requesting clarification if “recovery and restoration” are meant to be interchangeable. We recommend that the Implementation Guidance solely reference the term recovery, since recovery and restoration have different technical implications

Likes 1

PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

Thank you for your comment. The SDT appreciates the inclusion of suggested language above and has revised the R1 subpart language to focus upon “Identification of method(s) used to mitigate the risk” to better reflect the requirement for availability controls based on industry feedback.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

Thank you for the opportunity to comment.

Likes 0

| | |
|--|---|
| Dislikes | 0 |
| Response | |
| Thank you for your response. | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>ATC supports the SDT’s approach to permit each Registered Entity to define availability within a CIP-012 plan, as opposed to having this term defined in the glossary of terms. Defining “availability” in the glossary of terms would be too prescriptive an approach especially considering the prevalent use of this word is in other Reliability Standards, and the broad ranging impacts and unintended consequences that a definition could have on other mandatory regulations outside the scope of this SDT’s SAR. ATC appreciates the flexibility this draft provides entities and supports objective-based requirements that steer away from one-size-fits-all definitions.</p> | |
| Likes | 3 |
| Nebraska Public Power District, 1, Cawley Jamison; Nebraska Public Power District, 3, Eddleman Tony; Nebraska Public Power District, 5, Bender Ronald | |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joseph DePoorter - MGE Energy - Madison Gas and Electric Co. - 4 | |
| Answer | |
| Document Name | |
| Comment | |
| NONE | |

| | | |
|---|---|---|
| Likes | 0 | |
| Dislikes | 0 | |
| Response | | |
| Thank you for your response. | | |
| Ronald Bender - Nebraska Public Power District - 5 | | |
| Answer | | |
| Document Name | | |
| Comment | | |
| <p>NPPD supports the SDT’s approach to permit each Registered Entity to define availability within a CIP-012 plan, as opposed to having this term defined in the glossary of terms. Defining “availability” in the glossary of terms would be too prescriptive an approach . NPPD appreciates the flexibility this draft provides entities and supports objective -based requirements that steer away from one-size-fits-all definitions.</p> | | |
| Likes | 2 | Nebraska Public Power District, 3, Eddleman Tony; Nebraska Public Power District, 1, Cawley Jamison |
| Dislikes | 0 | |
| Response | | |
| Thank you for your support. | | |
| Richard Jackson - U.S. Bureau of Reclamation - 1 | | |
| Answer | | |
| Document Name | | |
| Comment | | |
| <p>The terminology continues to be confusing, especially for those unfamiliar with the underlying FERC Order. The concepts could be explained in R1 using simple, plain language.</p> | | |

The changes proposed are a significant increase in the scope of the standard, which will have a substantial impact on affected entities and should not be taken without appropriate consideration. Some communications paths are already covered under other NERC standards.

Proposed R1.2 recovery plans should be included under CIP-009 instead of CIP-012-2.

To minimize churn among standard versions, Reclamation recommends the SDT fully scope each project before developing proposed modifications to ensure all of FERC’s desired requirements are included, thereby precluding the need for FERC to order approval with additional modifications. For CIP-012, Reclamation recommends the SDT coordinate changes with Projects 2016-02 and Project 2019-03. This will reduce the chance that standards conflict with one another and will better align related standards.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of availability to better reflect the cyber security objective of the Requirement. There may be elements of your CIP-012 components that logically lay outside of the other CIP standards. Entities may use CIP-009 plans in support of meeting the regulatory requirements within CIP-012, but Entities must ensure that all of the appropriate components for CIP-012 are covered in the restoration plans. The SDT continues to collaborate with Projects 2016-02 and 2019-03.

Quintin Lee - Eversource Energy - 1, Group Name Eversource Group

Answer

Document Name

Comment

Eversource supports the comments of EEI.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. Please see response to EEI’s comments.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE noticed a potential reliability gap between proposed CIP-012-2 and CIP-008-6. CIP-008-6 seeks to “mitigate the risk to the reliable operation of the BES as a result of a Cyber Security Incident by specifying incident response requirements” (CIP-008-6 Purpose Statement). The definitions of Cyber Security Incident and Reportable Cyber Security Incident may not cover cyberattacks targeted toward disrupting the confidentiality, integrity, or availability of Control Center communications. Texas RE recommends the definitions of Cyber Security Incident, Reportable Cyber Security Incident, and the applicable systems column of CIP-008-6 be modified to explicitly include situations where the confidentiality, integrity, or availability of Control Center communications is targeted.

Likes 0

Dislikes 0

Response

Thank you for your comment. Modification of these definitions would be outside the scope of the 2020-04 SAR, and team recommends this comment be submitted during any future CIP-008 standards development activity.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

There is nothing in Guidance Document that provides information on protections for availability of data. The guidance deals with confidentiality and integrity of data.

Likes 0

Dislikes 0

Response

Thank you for your comment. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics.

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion

Answer

Document Name

Comment

As mentioned above, Dominion Energy supports EEIs comments. In addition, Dominion Energy has the following suggestion for language in R1.2 that would allow this requirement to be actionable by industry:

Identification of methods to be used for the recovery of communication **link components controlled by each Responsible Entity and response plans used for the recovery of communication links not controlled by the Responsible Entity** used to transmit Real-Time Assessment and Real-time monitoring data between Control Centers.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI's comments. The SDT has modified the Measures to include language suggesting ways in which the Responsible Entity may affect recovery of links.

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer

Document Name

Comment

With the content of the previous R1.2 moved to R1.3, the updated R1.2 deals with recovery methods that appear to go beyond the FERC Order No. 866 directive and aren't applicable to many Registered Entities. Communications links between Control Centers operated by different Registered Entities are dependent on telecommunication companies. For many Registered Entities, the method to recover a link is a support call to their region's contracted telecommunication provider.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI's comments. The SDT has modified the Measures to include language suggesting ways in which the Responsible Entity may affect recovery of links.

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Document Name

Comment

The Implementation Guidance and Technical Rationale appear to infer encryption is the only method to meet the security objectives to mitigate the risks posed by unauthorized disclosure, unauthorized modification of applicable data. Consider providing examples an entity could alternatively consider to also meet the security objectives.

For example:

1. An entity owned, operated and managed communication link.
2. Monitoring, detecting, alerting and response to any possible unauthorized disclosure or unauthorized modification of applicable data transmitted on a ---communication link between Control Centers.

Likes 0

Dislikes 0

Response

Thank you for your comment. The revised draft language is focused upon the availability component of CIP-012. Confidentiality and integrity of the data are already covered in the approved CIP-012-1. The SDT does not endorse a specific technology.

Dwanique Spiller - Dwanique Spiller On Behalf of: Kevin Salsbury, Berkshire Hathaway - NV Energy, 5; - Berkshire Hathaway - NV Energy - 5 - WECC

Answer

Document Name

Comment

None at this time.

Likes 0

Dislikes 0

Response

Thank you for your response.

Leonard Kula - Independent Electricity System Operator - 2

Answer

Document Name

Comment

The current wording of the proposed standard gives IESO the flexibility to address the availability controls of the data itse If in addition to the just the availability controls associated with solely with the communications link.

IESO recommends that that the definition of term “availability” be further clarified with the addition of the wording “as determined by the Responsible Entity”

Likes 0

Dislikes 0

Response

Thank you for your support. Please see the revised Implementation Guidance and Technical Rationale.

JT Kuehne - AEP - 6

Answer

Document Name

Comment

AEP appreciates the efforts of the SDT on this project. Please see below for additional comments.

While AEP agrees that creating a plan to account for the security and availability of Real-time Assessment and Real-time monitoring data is crucial as part of FERC Order No. 866, we believe the revisions to CIP-012-2 need to be more prescriptive to capture the expected contents of the plan. For example, page 4 of the Technical Rationale document lays out an expectation and relationship with CIP-008 and CIP-009 plans, “The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 and CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan to meet the requirement and avoid duplication of effort.”

However, the applicable systems for CIP-008 and CIP-009 are different than the devices that would receive protections for CIP-012. With that in mind, AEP suggests that NERC take either of the following action:

- (1) Create the desired components of CIP-008 and CIP-009 as explicit requirements and sub-requirements within CIP-012; or
- (2) Create a new classification for CIP-012 devices (e.g., “associated networking equipment”) and determine the specific requirements within the other CIP standards that apply to that classification.

Likes 0

| | |
|--|--|
| Dislikes 0 | |
| Response | |
| Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts. Please see the revised Implementation Guidance and Technical Rationale. | |
| Joseph Amato - Joseph Amato On Behalf of: Terry Harbour, Berkshire Hathaway Energy - MidAmerican Energy Co., 1, 3; - Joseph Amato | |
| Answer | |
| Document Name | |
| Comment | |
| No comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | |
| Document Name | |
| Comment | |
| N&ST believes that both the proposed availability language of CIP-012 R1 and the accompanying draft Implementation Guidance lack sufficient clarity regarding the scope of a Responsible Entity's CIP-012 availability obligations: Where do they begin and end? The Implementation Guidance document seems to suggest that inter- Control Center communications channels subject to CIP-012 should include literally everything either utilizing or comprising those channels, including the sending and receiving hosts. Evidence supporting this opinion includes the statement, "The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets." Should Entities include ICCP servers, which are almost always identified as BES Cyber Systems and, for High | |

and Medium Impact, located within Electronic Security Perimeters, in their CIP-012 availability plans? If so, will Entities with only single ICCP servers be expected to procure additional ones for redundancy? N&ST is concerned that by discussing endpoint hosts, the SDT may be expanding the scope of CIP-012 beyond FERC’s mandate. At the very least, the draft Implementation Guidance raises questions we believe the SDT should answer. If it does not, experience suggests to us that NERC and/or the Regions will.

Additional Guidance document statements and phrases that N&ST believes need clarification include:

“Availability protection can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.”

What kind of systems? Switches? Routers? Endpoint hosts? The SDT should provide examples.

The phrase, “entire communications link” is used several times. The SDT should define what this means, as well as whether or not endpoints are subject to CIP-012.

Likes 0

Dislikes 0

Response

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1, the subparts, and the Measures. Please see the revised Implementation Guidance and Technical Rationale. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance regarding carriers, diversity of links, and similar topics. Regarding the phrase “entire communications link”, the SDT has reviewed the language within the context of the complete statement containing these words. This language has been part of the Implementation Guidance since CIP-012-1 as “Where the operational obligations of an entire communication link, including both endpoints...”.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

Document Name

Comment

BC Hydro suggests adding more clarity to term 'availability' by providing a more detailed definition. Although the SDT has proposed the use of the NIST definition of "Ensuring timely and reliable access to and use of information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at NERC entities, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on industry feedback, the SDT has refined the requirement language of R1, the subparts, and Measures, as well as provided additional context of availability to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement for availability.

Larry Watt - Lakeland Electric - 1

Answer

Document Name

Comment

This 'availability' requirement should be moved to the O&P standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. TOP, IRO, and EOP do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. In addition, the SDT has been charged with addressing the

FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Susan Sosbe - Wabash Valley Power Association - 3

Answer

Document Name

Comment

Thank you for your hard work and allowing Entities to provide feedback.

Likes 0

Dislikes 0

Response

Thank you for your support.

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI’s comments.

Kinte Whitehead - Exelon - 3

| | |
|--|--|
| Answer | |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see response to EEI's comments. | |
| Cynthia Lee - Exelon - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| Exelon has chosen to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see response to EEI's comments. | |
| Becky Webb - Exelon - 6 | |
| Answer | |
| Document Name | |
| Comment | |

Exelon has chosen to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to EEI's comments.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi

Answer

Document Name

Comment

N/A

Likes 0

Dislikes 0

Response

Thank you for your response.

Amy Jones - Public Utility District No. 2 of Grant County, Washington - 1,4,5,6

Answer

Document Name

Comment

N/A

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your response. | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>The phrase “and components used to provide availability protections” was added to both the technical rationale document and the implementation guidance for R1.3. As mentioned in our comment to question 2, if we contract with a 3rd party for security and availability (such as CAISO's AT&T DMVPN solution), we may not be privy to the specific component(s) where the availability protection is being applied. Additionally, this seems to be unnecessarily prescriptive. We recommend this phrase be removed from both documents.</p> <p>Also, the implementation guidance doesn't acknowledge that not all entities involved are Registered Entities (such as a common carrier like AT&T). We recommend adding language to acknowledge those situations may exist, at a minimum.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of availability to better reflect the cyber security objective of the Requirement. The former R1.1 has been separated into R1.1 and R1.2 so that availability could be addressed separately. Please see the revised Implementation Guidance and Technical Rationale. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | |

| | |
|---|--|
| Document Name | |
| Comment | |
| None at this time. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | |
| Document Name | |
| Comment | |
| <i>The NAGF has no additional comments.</i> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. | |
| Gail Golden - Entergy - Entergy Services, Inc. - 1,5 | |
| Answer | |
| Document Name | |
| Comment | |

Is this not an overlap with TOP-001-5 R20, R23? Or is the gap due to the communication links between control centers / data centers?

TOP-001-5 R20. Each Transmission Operator shall have data exchange capabilities, with redundant and diversely routed data exchange infrastructure within the Transmission Operator's primary Control Center, for the exchange of Real-time data with its Reliability Coordinator, Balancing Authority, and the entities it has identified it needs data from in order for it to perform its Real-time monitoring and Real-time Assessments.

Same question but in regards to EOP-008-2. Would this not fall under “Loss of Control Center Functionality”? Or is FERC / NERC focused on the dealing with impacts to the specific processes associated with the Real-time Assessment and Real-time Monitoring tasks?

Finally – how far does this extend? Is this limited to the loss of availability of data associated with the security protections applied between control centers/ data centers? Or would it also stretch to wider data losses, such as external measurements sourced via ICCP, substation data sourced via RTU, or system-to-system communications within a control center / data center? The requirement as written, seems overly broad in scope when accounting for all of the data required to perform Real-time monitoring and Real-time Assessments.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. TOP, IRO, and EOP do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. In addition, the SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Regarding your comment about EOP-008-2 and CIP-012; CIP-012 is about the Cyber protections between the control centers and not so much about the use or ability to use that data.

Regarding your last comment, the intended scope of CIP-012-2 is the movement of data between in-scope Control Centers. Data at rest is covered in other CIP standards. The scope of the data covered by CIP-012-2 remains the same as the already approved CIP-012-1.

James Baldwin - Lower Colorado River Authority - 1

Answer

Document Name

Comment

Throughout the supporting documentation there are references to CIP-008 and CIP-009; however, these standards are not applicable to communication between control centers. By including CIP-008 and CIP-009 in the implementation of CIP-012, there may be unintended scope creep of CIP-008 and CIP-009.

Likes 0

Dislikes 0

Response

Thank you for your response. The reference to CIP-008 and CIP-009 within the supporting documentation represents one way in which a responsible entity may address recovery of links. It is not a requirement to do so in this way, but it is suggested so that existing recovery plans may be used to facilitate this restoration. Please see the Technical Rationale and Implementation Guidance regarding the SDTs thought that went into recovery as well as additional examples of ways in which this can be achieved.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

Throughout the supporting documentation there are references to CIP-008 and CIP-009; however, these standards are not applicable to communication between control centers. By including CIP-008 and CIP-009 in the implementation of CIP-012, there may be unintended scope creep of CIP-008 and CIP-009.

Likes 0

Dislikes 0

Response

Thank you for your response. The reference to CIP-008 and CIP-009 within the supporting documentation represents one way in which a responsible entity may address recovery of links. It is not a requirement to do so in this way, but it is suggested so that existing recovery plans may be used to facilitate this restoration. Please see the Technical Rationale and Implementation Guidance regarding the SDTs thought that went into recovery as well as additional examples of ways in which this can be achieved.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Standard Collaborations

Answer

Document Name

Comment

We would like to thank the SDT for all their hard work and allowing us to provide feedback.

Likes 0

Dislikes 0

Response

Thank you for your support.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee no NGrid

Answer

Document Name

Comment

We request that future posting of all CIP Standards include a redline to the last approved. This redline will help SMEs determine the change and thereby complete comment forms faster.

The Implementation Guidance refers to a NIST definition of availability. NIST could change its definition without notifying entities. NIST’s definition is generic. We request clarification of CIP-012 availability.

In the fourth paragraph of the introduction in the Technical Rational, the following sentence needs to be corrected as there is no R2 in CIP-012-1. “CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers.”. We believe the text should read R1 and R1.2.

Likes 1

PNM Resources - Public Service Company of New Mexico, 3, Bratkovic Amy

Dislikes 0

Response

Thank you for your comment. The SDT will draft redline to last approved for the next ballot and comment period if time allows.

Regarding the NIST definition within IG, the previously approved version of CIP-012 used NIST definitions for confidentiality and integrity, but also spelled out those definitions in the IG. In the current draft, the SDT has used the NIST definition as a starting point for defining availability. The SDT has further modified the listed definition within the IG to better reflect the scope and purpose of CIP-012. Regardless of the definition used by NIST, the version provided in the IG by the SDT would still stand should the IG be ERO endorsed.

Please see the updated language within the Technical Rationale with regards to the modified Requirement language from R2 to R1.

LaKenya VanNorman - LaKenya VanNorman On Behalf of: Neville Bowen, Ocala Utility Services, 3; - LaKenya VanNorman

Answer

Document Name

Comment

This 'availability' requirement should be moved to the O&P standards.

Likes 0

| | |
|---|---|
| Dislikes | 0 |
| Response | |
| Thank you for your response. The SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.” | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | |
| Document Name | |
| Comment | |
| PG&E agrees with the Edison Electric Institute (EEI) comments related to the Introduction section having a reference to R2 that was removed in the most recent draft – the sections should be updated with the removal of R2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see the SDTs response to EEI. | |
| Greg Davis - Georgia Transmission Corporation - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| GTC is concerned that the revisions to the technical rationale significantly alter the potential flexibility intended to be offered in requirements such as requirement 1.3. In addition, the inclusion of infeasible alternatives to availability such as backing up ICCP data with DNP3 is | |

problematic, and GTC recommends that the SDT review the proposed revisions to the technical rationale and implement revisions to retain the original flexibility of implementation and to better ensure that suggested methods for compliance are actionable.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see the revised Technical Rationale and Implementation Guidance.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Document Name

Comment

The Introduction section has a reference to R2 that should be removed now that R2 has been deleted by the SDT (see below):

“Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 **and R2** protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the updated language within the Technical Rationale with regards to the modified Requirement language from R2 to R1.

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

Document Name

Comment

See EEI Comments.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see the SDTs response to EEI.

Dana Showalter - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

The VSL table appears incomplete. ERCOT would encourage the drafting team to ensure there is consistency among standards with plans that are documented versus implemented, perhaps by identifying documentation versus implementation separately within the VSL matrix. Further, the VSLs refer to Requirement R2, which was removed in the Nov 2021 Draft.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT asserts that the proposed VSLs do have documentation and implementation separate in the VSL matrix. Any references to Requirement R2 have been removed.

Benjamin Winslett - Georgia System Operations Corporation - 3,4

Answer

Document Name

Comment

GSOC is concerned that the revisions to the Technical Rationale significantly alter the potential flexibility intended to be offered in requirements such as Requirement 1.3. In addition, the inclusion of infeasible alternatives to availability such as backing up ICCP data with DNP3 is problematic, and GSOC recommends that the SDT review the proposed revisions to the Technical Rationale and implement additional revisions to retain the original flexibility of implementation and to better ensure that suggested methods for compliance are actionable.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the revised TR and IG.

sean erickson - Western Area Power Administration - 1

Answer

Document Name

Comment

We do not agree with the draft language proposed. The standard purpose and requirements are to protect the confidentiality, availability and integrity (CIA) of Real-time Assessment and Real-time monitoring data transmitted between Control Centers. While this language maps to the standard tenets of information assurance controls, the requirements and mitigation of risk cannot be achieved unless an entity uses encryption and manages the encryption keys.

Once data packets carrying RTA/RTm data have egressed the physical Control Center or associated data center equipment/technology, an entity is relying on non-entity controlled or maintained communication paths such as telecom carriers to transmit and route RTA/RTm data between Control Centers.

How is an entity able to “mitigate risks” of unauthorized disclosure and/or modification when RTA/RTm data is no longer in possession or control of the systems which transmit and carry such data?

Secondly, the phrase “while it is being transmitted” in context with availability requires an entity to only address entity owned and maintained equipment. This is because an entity cannot ensure the availability of RTA/RTm data beyond its possession. This phrase adds no value to the protection of data.

Because of this, industry and regulators alike will not be able to establish a clear understanding of what meets or what does not meet compliance, it may lead to additional administrative overhead, potential findings or self-reports or others issues. This position was also validated in the recent 12/8 Industry Webinar whereas the SDT’s Lead related that an entity is not required to implement encryption, but an auditor would ask for it.

We ask the SDT to:

- a. Remove or change the confidentiality and integrity language, and revise R1 to add the phrases “potential disclosure, potential modification and availability.”
- b. Remove the phrase “while being transmitted”.
- c. Remove the term “links.” There is no such term and this may apply to many different things.

- d. Clarify if RTA/RTm data is BES Cyber System Information.
- e. Instead of relying on a one size fits all definition for the CIA triad the SDT would be better suited in defining a list of controls that responsibilities can implement and if used in concert with each other mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time Monitoring Data.

Likes 0

Dislikes 0

Response

Thank you for your comments.

- a. This comment is focused on CIP-012-1. That is not within the SAR for this current version of the project.
- b. “While it is being transmitted” helps define the scope of data to be protected by the other requirements of CIP-012.
- c. The term “links” was copied from the FERC directive, which should provide a common understanding.
- d. BCSI represents information that could be used to gain unauthorized access and pose a security threat to the BES. RTA/RTm represents data needed to run the BES. The focus of CIP-012-2 is about the cyber protections associated with the movement of RTA/RTm between control centers.
- e. The SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of availability to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. The expansion of the Measures section also includes measures for confidentiality and integrity.

Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Confidentiality and integrity is already in the approved standard that went into effect on July 1, 2022.

Alan Kloster - Alan Kloster On Behalf of: Allen Klassen, Evergy, 6, 1, 3, 5; Derek Brown, Evergy, 6, 1, 3, 5; Marcus Moor, Evergy, 6, 1, 3, 5; Thomas ROBBEN, Evergy, 6, 1, 3, 5; - Alan Kloster

Answer

Document Name

Comment

Eergy supports and incorporates by reference Edison Electric Institute’s (EEl) response to Question 5.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the SDT’s response to EEl.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG supports the NPCC Regional Standards Committee no NGrid’s comments.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the SDT’s response to the NPCC Regional Standards Committee.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Document Name

Comment

If the SDT’s intent was to point to Operations standards (TOP/IRO) to explain the “Availability timeframes” or server redundancy or site redundancy then our suggestion is that they spell that out or point to other standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the revised Technical Rationale and Implementation Guidance regarding availability timeframes.

“Comments received from Jamie Monette – Minnesota Power, Inc.”

Question 1

MP Comment: Minnesota Power opts to answer “No”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments. In addition, MP would like to see a definition for real time monitoring incorporated in the NERC Glossary of Terms for clarity.

SDT Response:

Thank you for your comment. Please see the SDT’s response to NSRF. Regarding the definition for real time monitoring, creating a definition for this term is outside the scope of the Project 2020-04 SAR. The term is used throughout other standards with a common understanding in industry.

Question 2

MP Comments: Minnesota Power opts to answer “No”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments.

SDT Response: Thank you for your comment. Please see the SDT’s response to NSRF.

Question 3

MP Comments: Minnesota Power opts to answer “No”. Until the scope of the standard is more clearly defined it is difficult to determine cost effectiveness of implementation.

SDT Response:

Question 4

MP Comments: Minnesota Power opts to answer “Yes”. Minnesota Power agrees with MRO’s NERC Standards Review Forum (NSRF) comments.

SDT Response: Thank you for your comment. Please see the SDT’s response to NSRF.

Question 5

MP Comments: Minnesota Power has no additional comment.

“Comments received from Darcy O’Connell – California ISO”

Question 1

Yes

No

Comments:

The definition of availability needs to be clarified.

The SRC generally agrees revised CIP-012-2 meets the FERC Order 866 directives; however, to be useful the term “availability” must be clarified in the requirements. While the SRC appreciates the NIST definition of “availability” contained in the proposed Implementation Guidance, it is not certain that the Implementation Guidance will be endorsed by the ERO. Therefore, the SRC recommends the SDT draft a formal definition of “Availability” for inclusion in the CIP-012-2 Standard, which could be the adoption of the NIST definition, or something similar. The SRC recognizes the challenges and unintended consequences associated with “availability” being added as a new definition to the NERC Glossary of Terms since “availability is used in other standards which could be impacted. In light of that, the SRC suggests a definition be added (and limited in scope) to the CIP-012 standard itself.

Additionally, clarification of “availability” could also be included in the Technical Rationale for CIP-012. The benefits of a definition include formalization within the Standard’s vernacular, thereby reducing potential ambiguity and likelihood of different

interpretations by registered entities and audit teams. The SRC also believes that the Measure M1 should provide examples of what types of evidence would meet the availability requirement (e.g., an entity executing plans in support of the recovery of compromised communications links and the use of back-up communications capability when primary communications are unavailable). This would provide additional clarity to the industry.

In addition, the SRC seeks clarification from the SDT whether availability only refers to the data links used for the transmission of data, or if availability also refers to the data being provided by external systems flowing through the data links under CIP-012. The wording in the current revision makes the intended scope of what availability is ambiguous. There is concern that unintended interpretation of the standard could reach to include the external systems providing data through the data links; e.g. ICCP servers, in addition to the links themselves. Leaving this up to each entity to define for themselves can be problematic as the application of this standard relies on consistent interpretation across Registered Entities owning or operating Control Centers. Therefore, SRC requests the scope be clarified.

Similarly, while having the concepts of “diversity, redundancy, or a combination of both” in the Implementation Guidance is needed, the SRC recommends the SDT consider including the concepts in M1 to achieve a clearer measure of what constitutes meeting the requirement.

Proposed R1.2 requires identification of methods used for recovery, but the SDT fails to provide any examples of methods to recover a loss of a data link. The information currently contained in the Implementation Guidance is very broad and it would be helpful if examples are provided. Also, CIP-009 deals with CIP assets and restoration in the event of a loss but does not contain requirements regarding communications links and, therefore, is not applicable to CIP-012. The SRC recommends clarifying language be added to show the relation between CIP-012 and CIP-009.

The SRC recommends the SDT clarify within the Implementation Guidance at Identification of Methods Used for the Recovery of Communication Links (R1.2) the phrase “This objective is consistent with TOP and IRO O&P Standards” by identifying which standards are being referenced.

The term “recovery” as used in R1.1.2 is very broad, and, as many entities will be dependent on telecommunication companies to restore communications, the SRC recommends the SDT consider including a clause to mitigate compliance issues if a line goes down and it is not the entity’s fault.

Additionally, the task of restoring availability predominantly resides with the telecommunication provider. In the event a communication link goes down, electric reliability entities are reliant on telecommunication provider to restore service. The SRC requests the SDT add an exemption for links and equipment owned by telecommunication providers.

SDT Response:

Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG.

Regarding the scope, the SDT notes that requirement R1 specifies data used for real-time assessment and real-time monitoring while such data is being transmitted between any applicable control centers.

The SDT has expanded the measures section of the draft standard to provide more details on what types of evidence would meet the availability requirement. The SDT has updated the Technical Rationale and Implementation Guidance references to CIP-008 and CIP-009 documentation. The SDT has also clarified in the Implementation Guidance the phrase Identification of Methods Used for the Recovery of Communication Links.

The SDT notes that the draft language is to have a documented plan to mitigate the risks. The draft language of the subparts was modified to include “identification of methods used to mitigate the risks” to provide additional clarity regarding the requirement.

Question 2

Yes

No

Comments:

The SRC requests the SDT add an exemption for the links and equipment owned by telecommunication providers. In many instances, availability resides with telecommunication providers; and in the event service is interrupted, Registered Entities are reliant on the telecommunication provider(s) to restore service. Similarly, in the event a telecommunication line or other piece of telecommunication equipment goes down, the Registered Entity is again reliant on the Telecommunication Provider(s) to address the issue(s).

The term “availability” is subjective and should be clearly defined prior to approving CIP-012-2.

SDT Response:

The SDT notes that the draft language is to have a documented plan to mitigate the risks. The draft language of the subparts was modified to include “identification of methods used to mitigate the risks” to provide additional clarity regarding the requirement. Thank you for your comments. Based on industry feedback, the SDT has refined the requirement language of R1 and the subparts, as well as provided additional context of *availability* to better reflect the cyber security objective of the Requirement. The revised language is focused now on “identification of methods to mitigate the risk of loss” of availability and examples of those methods are now in the Measures section of the draft Standard. Doing so has allowed the SDT to emphasize a focus on controls and measures to achieve availability rather than a measurement *for* availability. Availability has a definition in the Implementation Guidance much like CIP-012-1 has definitions for confidentiality and integrity within the V1 IG. Please see the updated Technical Rationale and Implementation Guidance.

Question 3

Yes

No

Comments:

The SRC suggests the SDT identify which TOP and IRO O&P Standards are referenced in the Implementation plan at **Identification of Methods Used for the Recovery of Communication Links (R1.2)**. If the objectives are consistent, identification may help with cost effectiveness by allowing an entity to leverage current practices of compliance with those standards.

SDT Response:

Thank you for your comment. The SDT has made this reference more specific to TOP-003 and IRO-010.

Question 4

Yes

No

Comments:

The need for a 24-month implementation plan is paramount for reliably and securely implementing this standard. If the standard is implemented as written, 24 months will be needed to apply the recovery procedures as outlined. Registered Entities will need to work with their neighbors on the development of recovery plans; for example, an RTO/ISO will need to ensure recovery plans are in place for the availability of communications links with each of its members. Also, this standard involves more than just developing a recovery plan. Since these assets are not owned by Functional Entities subject to CIP-002, the utilization of CIP-008 and CIP-009 plans may not be relevant, and entities will have to develop their own recovery plans from scratch. Entities will have to work with telecommunication providers to set up new links and test them for recovery if they have not already done so. Finally, if supply chain issues cause delays in obtaining the required components needed for industry to fully implement V1 of this standard, then extra time will be needed for implementation until the supply chain issues are mitigated and resources are available.

SDT Response:

Thank you for your comment.

Question 5

Comments:

The SRC would prefer to have availability addressed as a separate requirement, e.g. R2, under CIP-012 and not as part of requirement R1 as encryption and availability are two separate functions. Inserting availability in with encryption merely serves to muddy the intent of R1.

SDT Response:

The SDT has separated availability into its own subpart to use clearer wording around what the requirement actually is.

REMINDER

Standards Announcement

Project 2020-04 Modifications to CIP-012

Additional Ballots and Non-Binding Poll Open through January 24, 2022

Now Available

The additional ballots and non-binding poll for the associated Violation Risk Factors and Violation Severity Levels are open through **8 p.m. Eastern, Monday, January 24, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

Balloting

Members of the ballot pools associated with this project can log in and submit their votes by accessing the Standards Balloting and Commenting System (SBS) [here](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The ballot results will be announced and posted on the project page. The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through January 24, 2022

[Now Available](#)

A 55-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Monday, January 24, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the previous comment period are reflected in this draft of the standard.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Additional ballots for the standard and implementation plan, along with non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **January 14 - 24, 2022**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012" in the Description Box.

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/236)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 AB 2 ST

Voting Start Date: 1/14/2022 12:01:00 AM

Voting End Date: 1/24/2022 8:00:00 PM

Ballot Type: ST

Ballot Activity: AB

Ballot Series: 2

Total # Votes: 257

Total Ballot Pool: 293

Quorum: 87.71

Quorum Established Date: 1/24/2022 3:55:05 PM

Weighted Segment Value: 34.75

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 82 | 1 | 26 | 0.394 | 40 | 0.606 | 1 | 6 | 9 |
| Segment: 2 | 7 | 0.7 | 1 | 0.1 | 6 | 0.6 | 0 | 0 | 0 |
| Segment: 3 | 69 | 1 | 20 | 0.364 | 35 | 0.636 | 0 | 5 | 9 |
| Segment: 4 | 16 | 1 | 4 | 0.308 | 9 | 0.692 | 0 | 0 | 3 |
| Segment: 5 | 66 | 1 | 21 | 0.382 | 34 | 0.618 | 0 | 2 | 9 |
| Segment: 6 | 45 | 1 | 12 | 0.308 | 27 | 0.692 | 0 | 1 | 5 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 3 | 0.3 | 2 | 0.2 | 0 | 1 | 1 |
| Totals: | 293 | 6.2 | 87 | 2.155 | 153 | 4.045 | 1 | 16 | 36 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|----------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allele - Minnesota Power, Inc. | Jamie Monette | | Negative | Comments Submitted |
| 1 | Ameren - Ameren Services | Tamara Evey | | Negative | Comments Submitted |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Negative | Comments Submitted |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Abstain | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Abstain | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Third-Party Comments |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Third-Party Comments |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Third-Party Comments |
| 1 | Entergy | Brian Lindsey | | None | N/A |
| 1 | Evergy | Allen Klassen | | Negative | Comments Submitted |
| 1 | Eversource Energy | Quintin Lee | | Negative | Comments Submitted |
| 1 | Exelon | Daniel Gacek | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|-------------------|-------------|----------------------|
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Negative | Comments Submitted |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Third-Party Comments |
| 1 | Great River Energy | Gordon Pietsch | | None | N/A |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciuffo | Negative | Third-Party Comments |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Third-Party Comments |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | Imperial Irrigation District | Jesus Sammy Alcaraz | Denise Sanchez | Affirmative | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Negative | Comments Submitted |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Negative | Third-Party Comments |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Third-Party Comments |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Negative | Third-Party Comments |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Negative | Comments Submitted |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Negative | Third-Party Comments |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Negative | No Comment Submitted |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Third-Party Comments |
| 1 | Oncor Electric Delivery | Lee Maurer | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------------|------------------|-------------|----------------------|
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Negative | Comments Submitted |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Comments Submitted |
| 1 | Portland General Electric Co. | Brooke Jockin | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Negative | Third-Party Comments |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Negative | Comments Submitted |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Negative | Comments Submitted |
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Negative | Third-Party Comments |
| 1 | Sho-Me Power Electric Cooperative | Peter Dawson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | None | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | None | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Negative | Comments Submitted |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Doug Whitworth | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Negative | Third-Party Comments |
| 2 | Electric Reliability Council of Texas, Inc. | Dana Showalter | | Negative | Comments Submitted |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Third-Party Comments |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Third-Party Comments |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Third-Party Comments |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|----------------------|
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Negative | Third-Party Comments |
| 3 | AEP | Kent Feliks | | Negative | Comments Submitted |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Negative | Comments Submitted |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Affirmative | N/A |
| 3 | Black Hills Corporation | Don Stahl | | Negative | Third-Party Comments |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Negative | Comments Submitted |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Negative | Third-Party Comments |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Negative | Comments Submitted |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Third-Party Comments |
| 3 | East Kentucky Power Cooperative | Chris Adams | | None | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Negative | Third-Party Comments |
| 3 | Evergy | Marcus Moor | | Negative | Comments Submitted |
| 3 | Eversource Energy | Vicki O'Leary | | None | N/A |
| 3 | Exelon | Kinte Whitehead | | Negative | Comments Submitted |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Negative | Comments Submitted |
| 3 | Great River Energy | Michael Brytowski | | Negative | Third-Party Comments |
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|-------------------|-------------|----------------------|
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Negative | Comments Submitted |
| 3 | Lincoln Electric System | Angelica Valencia | | Affirmative | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Negative | Third-Party Comments |
| 3 | National Grid USA | Brian Shanahan | | Negative | Third-Party Comments |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Negative | Comments Submitted |
| 3 | Northern California Power Agency | Michael Whitney | | None | N/A |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | Negative | Comments Submitted |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Negative | Third-Party Comments |
| 3 | Omaha Public Power District | David Heins | | Negative | Third-Party Comments |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Abstain | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Negative | Comments Submitted |
| 3 | Platte River Power Authority | Richard Kiess | | Abstain | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Negative | Third-Party Comments |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Negative | Third-Party Comments |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Negative | Comments Submitted |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|----------------------|
| 3 | Seattle City Light | Laurie Hammack | | Negative | Third-Party Comments |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Negative | Third-Party Comments |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | None | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Negative | Comments Submitted |
| 3 | Wabash Valley Power Association | Susan Sosbe | | Negative | Comments Submitted |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Negative | Third-Party Comments |
| 3 | Xcel Energy, Inc. | Nicholas Friebe | | Negative | Third-Party Comments |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Negative | Third-Party Comments |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | None | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Negative | Third-Party Comments |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Negative | Comments Submitted |
| 4 | LaGen | Wayne Messina | Clay Walker | Negative | Comments Submitted |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Third-Party Comments |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Third-Party Comments |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | None | N/A |
| 4 | Utility Services, Inc. | Brian Evans-Mongeon | | Negative | Third-Party Comments |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Negative | Third-Party Comments |
| 5 | Acciona Energy North America | George Brown | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 5 | AEP | Thomas Foltz | | Negative | Comments Submitted |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Negative | Comments Submitted |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Affirmative | N/A |
| 5 | Black Hills Corporation | Derek Silbaugh | | Negative | Third-Party Comments |
| 5 | Bonneville Power Administration | Scott Winner | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Negative | Comments Submitted |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Negative | Third-Party Comments |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | None | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Third-Party Comments |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Affirmative | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Third-Party Comments |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Negative | Third-Party Comments |
| 5 | Evergy | Derek Brown | | Negative | Comments Submitted |
| 5 | Exelon | Cynthia Lee | | Negative | Comments Submitted |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Negative | Comments Submitted |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Third-Party Comments |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Lakeland Electric | George Kerst | | Negative | Comments Submitted |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Manitoba Hydro | Kristy-Lee Young | | None | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Elizabeth Spivak | | Negative | Third-Party Comments |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Negative | Comments Submitted |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Third-Party Comments |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Negative | Third-Party Comments |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Third-Party Comments |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Negative | Comments Submitted |
| 5 | Platte River Power Authority | Tyson Archie | | Abstain | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Negative | Third-Party Comments |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Negative | Comments Submitted |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | None | N/A |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Negative | Comments Submitted |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | None | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Negative | Third-Party Comments |
| 6 | AEP | Justin Kuehne | | Negative | Comments Submitted |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Negative | Comments Submitted |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Negative | Comments Submitted |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Negative | Comments Submitted |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | None | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Negative | Comments Submitted |
| 6 | Duke Energy | Greg Cecil | | Negative | Third-Party Comments |
| 6 | Evergy | Thomas ROBBEN | | Negative | Comments Submitted |
| 6 | Exelon | Becky Webb | | Negative | Comments Submitted |
| 6 | FirstEnergy - FirstEnergy Corporation | Tricia Bynum | | Negative | Comments Submitted |
| 6 | Great River Energy | Donna Stephenson | | Negative | Third-Party Comments |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Negative | Comments Submitted |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Manitoba Hydro | Simon Tanapat-Andre | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|----------------------|
| 6 | New York Power Authority | Anirudh Bhimoreddy | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Negative | Comments Submitted |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Negative | Comments Submitted |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | None | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Third-Party Comments |
| 6 | Platte River Power Authority | Sabrina Martz | | Abstain | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Third-Party Comments |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Negative | Third-Party Comments |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Negative | Third-Party Comments |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Negative | Comments Submitted |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Negative | Comments Submitted |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | None | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | Negative | Third-Party Comments |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Negative | Third-Party Comments |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | None | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Negative | Third-Party Comments |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| | | Rachel Coyne | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------|------------------|----------|--------------------|
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Negative | Comments Submitted |

Showing 1 to 293 of 293 entries

Previous Next

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/236)

Ballot Name: 2020-04 Modifications to CIP-012 Implementation Plan AB 2 OT

Voting Start Date: 1/14/2022 12:01:00 AM

Voting End Date: 1/24/2022 8:00:00 PM

Ballot Type: OT

Ballot Activity: AB

Ballot Series: 2

Total # Votes: 253

Total Ballot Pool: 288

Quorum: 87.85

Quorum Established Date: 1/24/2022 3:36:27 PM

Weighted Segment Value: 65.97

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 80 | 1 | 43 | 0.662 | 22 | 0.338 | 1 | 4 | 10 |
| Segment: 2 | 7 | 0.6 | 5 | 0.5 | 1 | 0.1 | 0 | 1 | 0 |
| Segment: 3 | 68 | 1 | 37 | 0.673 | 18 | 0.327 | 0 | 5 | 8 |
| Segment: 4 | 16 | 1 | 6 | 0.5 | 6 | 0.5 | 0 | 1 | 3 |
| Segment: 5 | 65 | 1 | 35 | 0.648 | 19 | 0.352 | 0 | 3 | 8 |
| Segment: 6 | 44 | 1 | 25 | 0.676 | 12 | 0.324 | 0 | 2 | 5 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.4 | 3 | 0.3 | 1 | 0.1 | 0 | 2 | 1 |
| Totals: | 288 | 6 | 154 | 3.958 | 79 | 2.042 | 1 | 19 | 35 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allele - Minnesota Power, Inc. | Hillary Creurer | | None | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | Negative | Comments Submitted |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Negative | Comments Submitted |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Abstain | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Affirmative | N/A |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Third-Party Comments |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Third-Party Comments |
| 1 | Entergy | Brian Lindsey | | None | N/A |
| 1 | Evergy | Allen Klassen | | Affirmative | N/A |
| 1 | Eversource Energy | Quintin Lee | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Negative | Comments Submitted |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|----------------------|
| 1 | Great River Energy | Gordon Pietsch | | None | N/A |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciufu | Negative | Third-Party Comments |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Third-Party Comments |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Affirmative | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Affirmative | N/A |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Negative | Third-Party Comments |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Negative | No Comment Submitted |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Third-Party Comments |
| 1 | Oncor Electric Delivery | Lee Maurer | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Affirmative | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Comments Submitted |
| 1 | Portland General Electric Co. | Brooke Jockin | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Negative | Third-Party Comments |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Negative | Third-Party Comments |
| 1 | Sho-Me Power Electric Cooperative | Peter Dawson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | None | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | None | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Doug Whitworth | | Abstain | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Negative | Third-Party Comments |
| 2 | Electric Reliability Council of Texas, Inc. | Dana Showalter | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | Abstain | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Negative | Third-Party Comments |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Negative | Comments Submitted |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Affirmative | N/A |
| 3 | Black Hills Corporation | Don Stahl | | Negative | Third-Party Comments |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|-------------------|-------------|----------------------|
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Negative | Comments Submitted |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Negative | Third-Party Comments |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Negative | Comments Submitted |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Third-Party Comments |
| 3 | East Kentucky Power Cooperative | Chris Adams | | None | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Negative | Third-Party Comments |
| 3 | Evergy | Marcus Moor | | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | None | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Negative | Comments Submitted |
| 3 | Great River Energy | Michael Brytowski | | Negative | Third-Party Comments |
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Negative | Third-Party Comments |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Affirmative | N/A |
| 3 | Lincoln Electric System | Angelica Valencia | | Affirmative | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | | None | N/A |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|----------------------|
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Abstain | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Affirmative | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Abstain | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Negative | Third-Party Comments |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Affirmative | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Abstain | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Negative | Third-Party Comments |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Affirmative | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Negative | Third-Party Comments |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | None | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Susan Sosbe | | Negative | Comments Submitted |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Nicholas Friebe | | Negative | Third-Party Comments |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | None | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Negative | Third-Party Comments |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Negative | Comments Submitted |
| 4 | LaGen | Wayne Messina | Clay Walker | Negative | Comments Submitted |
| 4 | MGE Energy - Madison Gas and Electric Co. | Joseph DePoorter | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|----------------------|
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Third-Party Comments |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Third-Party Comments |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | None | N/A |
| 4 | Utility Services, Inc. | Brian Evans-Mongeon | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | George Brown | | Affirmative | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Negative | Comments Submitted |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Affirmative | N/A |
| 5 | Black Hills Corporation | Derek Silbaugh | | Negative | Third-Party Comments |
| 5 | Bonneville Power Administration | Scott Winner | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Negative | Comments Submitted |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Negative | Third-Party Comments |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | None | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Affirmative | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Affirmative | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Negative | Third-Party Comments |
| 5 | Evergy | Derek Brown | | Affirmative | N/A |
| 5 | Exelon | Cynthia Lee | | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Negative | Comments Submitted |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Third-Party Comments |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |
| 5 | Lakeland Electric | George Kerst | | Affirmative | N/A |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Negative | Third-Party Comments |
| 5 | National Grid USA | Elizabeth Spivak | | Affirmative | N/A |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Third-Party Comments |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Affirmative | N/A |
| 5 | Platte River Power Authority | Tyson Archie | | Abstain | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|----------------------|
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Abstain | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | None | N/A |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | None | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Negative | Third-Party Comments |
| 6 | AEP | Justin Kuehne | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Negative | Comments Submitted |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirchak | Clay Walker | Negative | Comments Submitted |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | None | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | Greg Cecil | | Negative | Third-Party Comments |
| 6 | Evergy | Thomas ROBBEN | | Affirmative | N/A |
| 6 | Exelon | Becky Webb | | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Tricia Bynum | | Negative | Comments Submitted |
| 6 | Great River Energy | Donna Stephenson | | Negative | Third-Party Comments |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Manitoba Hydro | Simon Tanapat-Andre | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|----------------------|
| 6 | New York Power Authority | Anirudh Bhimoreddy | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | None | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Abstain | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Negative | Third-Party Comments |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | None | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Negative | Third-Party Comments |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | None | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Abstain | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Negative | Comments Submitted |

Showing 1 to 288 of 288 entries

Previous 1 Next

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/236)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 2 NB**Voting Start Date:** 1/14/2022 12:01:00 AM**Voting End Date:** 1/24/2022 8:00:00 PM**Ballot Type:** NB**Ballot Activity:** AB**Ballot Series:** 2**Total # Votes:** 240**Total Ballot Pool:** 280**Quorum:** 85.71**Quorum Established Date:** 1/24/2022 4:23:22 PM**Weighted Segment Value:** 37.7

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 77 | 1 | 21 | 0.389 | 33 | 0.611 | 13 | 10 |
| Segment: 2 | 7 | 0.5 | 1 | 0.1 | 4 | 0.4 | 2 | 0 |
| Segment: 3 | 66 | 1 | 17 | 0.386 | 27 | 0.614 | 12 | 10 |
| Segment: 4 | 15 | 1 | 3 | 0.3 | 7 | 0.7 | 2 | 3 |
| Segment: 5 | 64 | 1 | 18 | 0.4 | 27 | 0.6 | 10 | 9 |
| Segment: 6 | 43 | 1 | 9 | 0.31 | 20 | 0.69 | 7 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.4 | 3 | 0.3 | 1 | 0.1 | 2 | 1 |
| Totals: | 280 | 5.9 | 72 | 2.186 | 119 | 3.714 | 49 | 40 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Abstain | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Austar - Austar Corporation | Mike Magruder | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|--------------------|
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Affirmative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Affirmative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | None | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Negative | Comments Submitted |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Abstain | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Comments Submitted |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Abstain | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Comments Submitted |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Negative | Comments Submitted |
| 1 | Duke Energy | Laura Lee | | Negative | Comments Submitted |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Negative | Comments Submitted |
| 1 | Entergy | Brian Lindsey | | None | N/A |
| 1 | Evergy | Allen Klassen | | Negative | Comments Submitted |
| 1 | Eversource Energy | Quintin Lee | | Abstain | N/A |
| 1 | Exelon | Daniel Gacek | | Negative | Comments Submitted |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Negative | Comments Submitted |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Negative | Comments Submitted |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Comments Submitted |
| 1 | Great River Energy | Gordon Pietsch | | None | N/A |
| 1 | Hydro One Networks, Inc. | Payam Farahbakhsh | Mark Ciufu | Negative | Comments Submitted |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|--------------------|
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Negative | Comments Submitted |
| 1 | Lincoln Electric System | Josh Johnson | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Affirmative | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Negative | Comments Submitted |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Comments Submitted |
| 1 | NB Power Corporation | Nurul Abser | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Comments Submitted |
| 1 | NextEra Energy - Florida Power and Light Co. | Mike O'Neil | | Negative | Comments Submitted |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Negative | Comments Submitted |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | Affirmative | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Negative | Comments Submitted |
| 1 | Ohio Valley Electric Corporation | Scott Cunningham | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Negative | Comments Submitted |
| 1 | Orlando Utilities Commission | Aaron Staley | | Affirmative | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Negative | Comments Submitted |
| 1 | Platte River Power Authority | Marissa Archie | | None | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Comments Submitted |
| 1 | Portland General Electric Co. | Brooke Jockin | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Negative | Comments Submitted |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Chris Hofmann | | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|--------------------|
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Negative | Comments Submitted |
| 1 | Sho-Me Power Electric Cooperative | Peter Dawson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | None | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | None | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Sean Erickson | | Negative | Comments Submitted |
| 1 | Wind Energy Transmission Texas, LLC | Doug Whitworth | | Abstain | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Dana Showalter | | Negative | Comments Submitted |
| 2 | Independent Electricity System Operator | Leonard Kula | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Comments Submitted |
| 2 | New York Independent System Operator | Gregory Campoli | | Abstain | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Negative | Comments Submitted |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Abstain | N/A |
| 3 | AEP | Kent Feliks | | Abstain | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Scott Kinney | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Darnez Gresham | | Affirmative | N/A |
| 3 | Black Hills Corporation | Don Stahl | | Negative | Comments Submitted |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|-------------------|-------------|--------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Negative | Comments Submitted |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Comments Submitted |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Abstain | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Negative | Comments Submitted |
| 3 | East Kentucky Power Cooperative | Chris Adams | | None | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Negative | Comments Submitted |
| 3 | Evergy | Marcus Moor | | Negative | Comments Submitted |
| 3 | Eversource Energy | Vicki O'Leary | | None | N/A |
| 3 | Exelon | Kinte Whitehead | | Negative | Comments Submitted |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Negative | Comments Submitted |
| 3 | Great River Energy | Michael Brytowski | | Negative | Comments Submitted |
| 3 | Hydro One Networks, Inc. | Paul Malozewski | | Negative | Comments Submitted |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Affirmative | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Negative | Comments Submitted |
| 3 | Lincoln Electric System | Angelica Valencia | | Abstain | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Affirmative | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Negative | Comments Submitted |
| 3 | National Grid USA | Brian Shanahan | | Negative | Comments Submitted |
| 3 | Nebraska Public Power District | Tony Eddleman | | Abstain | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Comments Submitted |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Negative | Comments Submitted |
| 3 | Northern California Power Agency | Michael Whitney | | None | N/A |
| 3 | NW Electric Power Cooperative, Inc. | John Stickley | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | Negative | Comments Submitted |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|--------------------|
| 3 | Omaha Public Power District | David Heins | | Negative | Comments Submitted |
| 3 | Orlando Utilities Commission | Ballard Mutters | | Abstain | N/A |
| 3 | Owensboro Municipal Utilities | Thomas Lyons | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Negative | Comments Submitted |
| 3 | Platte River Power Authority | Richard Kiess | | Abstain | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Negative | Comments Submitted |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Affirmative | N/A |
| 3 | Salt River Project | Zack Heim | | Affirmative | N/A |
| 3 | Santee Cooper | James Poston | | Abstain | N/A |
| 3 | Seattle City Light | Laurie Hammack | | Negative | Comments Submitted |
| 3 | Seminole Electric Cooperative, Inc. | Jeremy Lorigan | | Abstain | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bridget Silvia | | Negative | Comments Submitted |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | None | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Susan Sosbe | | Negative | Comments Submitted |
| 3 | WEC Energy Group, Inc. | Thomas Breene | | Negative | Comments Submitted |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Abstain | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | None | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Negative | Comments Submitted |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Negative | Comments Submitted |
| 4 | LaGen | Wayne Messina | Clay Walker | Negative | Comments Submitted |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Negative | Comments Submitted |

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|---------|---|------------------------|------------------|-------------|--------------------|
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Affirmative | N/A |
| 4 | Seattle City Light | Hao Li | | Negative | Comments Submitted |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | None | N/A |
| 4 | Utility Services, Inc. | Brian Evans-Mongeon | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Negative | Comments Submitted |
| 5 | Acciona Energy North America | George Brown | | Abstain | N/A |
| 5 | AEP | Thomas Foltz | | Abstain | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Brad Haralson | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Kevin Salsbury | | Affirmative | N/A |
| 5 | Black Hills Corporation | Derek Silbaugh | | Negative | Comments Submitted |
| 5 | Bonneville Power Administration | Scott Winner | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Negative | Comments Submitted |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Negative | Comments Submitted |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Comments Submitted |
| 5 | Constellation | Alison MacKellar | | None | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Comments Submitted |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Negative | Comments Submitted |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Affirmative | N/A |
| 5 | Duke Energy | Dale Goodwine | | Negative | Comments Submitted |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | None | N/A |

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| 5 | Evergy | Derek Brown | | Negative | Comments Submitted |
| 5 | Exelon | Cynthia Lee | | Negative | Comments Submitted |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Negative | Comments Submitted |
| 5 | Great River Energy | Jacalynn Bentz | | Negative | Comments Submitted |
| 5 | Herb Schrayshuen | Herb Schrayshuen | | Affirmative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Affirmative | N/A |
| 5 | Lakeland Electric | George Kerst | | Negative | Comments Submitted |
| 5 | Lincoln Electric System | Kayleigh Wilkerson | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Negative | Comments Submitted |
| 5 | National Grid USA | Elizabeth Spivak | | Negative | Comments Submitted |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Abstain | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Comments Submitted |
| 5 | NextEra Energy | Allen Schriver | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Negative | Comments Submitted |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Negative | Comments Submitted |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Negative | Comments Submitted |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Negative | Comments Submitted |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Comments Submitted |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Negative | Comments Submitted |
| 5 | Platte River Power Authority | Tyson Archie | | Abstain | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Abstain | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|--------------------|
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Negative | Comments Submitted |
| 5 | Public Utility District No. 1 of Snohomish County | Sam Nietfeld | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Affirmative | N/A |
| 5 | Salt River Project | Kevin Nielsen | | Affirmative | N/A |
| 5 | Santee Cooper | Tommy Curtis | | Abstain | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | None | N/A |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | None | N/A |
| 6 | AEP | Justin Kuehne | | Abstain | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Lisa Martin | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Andrew Meyers | | Negative | Comments Submitted |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Negative | Comments Submitted |
| 6 | Con Ed - Consolidated Edison Co. of New York | Cristhian Godoy | | Negative | Comments Submitted |
| 6 | Constellation | Kimberly Turco | | None | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Negative | Comments Submitted |
| 6 | Duke Energy | Greg Cecil | | Negative | Comments Submitted |
| 6 | Evergy | Thomas ROBBEN | | Negative | Comments Submitted |
| 6 | Exelon | Becky Webb | | Negative | Comments Submitted |
| 6 | FirstEnergy - FirstEnergy Corporation | Tricia Bynum | | Negative | Comments Submitted |
| 6 | Great River Energy | Donna Stephenson | | Negative | Comments Submitted |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Affirmative | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Negative | Comments Submitted |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|--------------------|
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Negative | Comments Submitted |
| 6 | New York Power Authority | Anirudh Bhimoreddy | | Negative | Comments Submitted |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Negative | Comments Submitted |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Negative | Comments Submitted |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | None | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Comments Submitted |
| 6 | Platte River Power Authority | Sabrina Martz | | Abstain | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Comments Submitted |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Negative | Comments Submitted |
| 6 | Public Utility District No. 2 of Grant County, Washington | M LeRoy Patterson | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Affirmative | N/A |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | None | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | None | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Hathaway | | Negative | Comments Submitted |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | None | N/A |
| 10 | New York State Reliability Council | ALAN ADAMSON | | Negative | Comments Submitted |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Anthony Jablonski | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Energy Coordinating Council | Steven Rueckert | | Abstain | N/A |

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Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |
| 55-day formal comment period with ballot | November 2021 |

| Anticipated Actions | Date |
|--|---------------|
| 45-day formal comment period with ballot | October 2022 |
| 10-day final ballot | December 2022 |
| Board adoption | February 2023 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.3.** Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1 and 1.2.
- M1.** Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).

Part 1.1

- identification of points where the encryption/decryption of the data occurs at either a transport, network, or application layer
- physical access restrictions to unencrypted portions of the network

Part 1.2

- network diagram showing redundancy of paths between Control Centers
- procedures explaining the use of alternative systems or methods for providing for the availability of the data
- service level agreements with carriers containing high availability provisions
- availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data

Part 1.3

- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery
- Methods for the recovery of links such as standard operating procedures, CIP-009 recovery plan(s), or similar technical recovery plans
- Documentation of the process to restore assets and systems that provide communications

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Agreements outlining the implemented methods if provided by a third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|--|--|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | |

Standard Development Timeline

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- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1. Identification of ~~security and availability protection method~~(s) used to mitigate the risks posed by unauthorized disclosure, ~~and~~ unauthorized modification, ~~and loss of availability~~ of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2. Identification of ~~methods~~ method(s) used to mitigate the risk(s) posed by loss of data used for the recovery of Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - ~~1.2.1.3.~~ 1.2.1.3. Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - ~~1.3.1.4.~~ 1.3.1.4. Identification of where the Responsible Entity ~~applied security and availability protection~~ implemented method(s) as required in ~~Part~~ Parts 1.1 and 1.2; and
 - ~~1.4.1.5.~~ 1.4.1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for ~~applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers~~ implementing method(s) as required in Parts 1.1 and 1.2.
- M1. ~~Evidence~~ Examples of evidence may include, but ~~is~~ are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).

Part 1.1

- identification of points where the encryption/decryption of the data occurs at either a transport, network, or application layer
- physical access restrictions to unencrypted portions of the network

Part 1.2

- network diagram showing redundancy of paths between Control Centers
- procedures explaining the use of alternative systems or methods for providing for the availability of the data
- service level agreements with carriers containing high availability provisions
- availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data

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The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or

information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|---|---|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document <u>its</u> plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | |

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |
| 55-day formal comment period with ballot | November 2021 |

| Anticipated Actions | Date |
|--|---------------|
| 45-day formal comment period with ballot | October 2022 |
| 10-day final ballot | December 2022 |
| Board adoption | February 2023 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** ~~————~~ Cyber Security – Communications between Control Centers-
2. **Number:** CIP-012-~~42~~
3. **Purpose:** To protect the confidentiality, availability and integrity of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:-**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.-
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator-**
 - 4.1.3. **Generator Owner-**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner-**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-~~42~~:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-~~42~~.

B. Requirements and Measures

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure ~~and~~, unauthorized modification ~~of~~, and loss of availability of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1.** Identification of ~~security protection~~ method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers;
- 1.2.** Identification of ~~where~~ method(s) used to mitigate the ~~Responsible Entity applied security protection~~ risk(s) posed by loss of data used for transmitting Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
- 1.3.** Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
- 1.2.1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
- 1.3.1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers. implementing method(s) as required in Parts 1.1 and 1.2.

Evidence

M1. Examples of evidence may include, but ~~is~~ are not limited to, documented plan(s) that meet the security mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s).-

Part 1.1

- identification of points where the encryption/decryption of the data occurs at either a transport, network, or application layer
- physical access restrictions to unencrypted portions of the network

Part 1.2

- network diagram showing redundancy of paths between Control Centers
- procedures explaining the use of alternative systems or methods for providing for the availability of the data
- service level agreements with carriers containing high availability provisions
- availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data

Part 1.3

- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery
- Methods for the recovery of links such as standard operating procedures, CIP-009 recovery plan(s), or similar technical recovery plans

- Documentation of the process to restore assets and systems that provide communications

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Agreements outlining the implemented methods if provided by a third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

- 1.1. Compliance Enforcement Authority:** “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.
- 1.2. Evidence Retention:** The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.-
 - If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.-
 - The CEA shall keep the last audit records and all requested and submitted subsequent audit records.
- 1.3. Compliance Monitoring and Enforcement Program:** As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or

information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

-Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|---|---|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document <u>its</u> plan(s) for Requirement R1; Or The Responsible Entity failed to implement <u>any Part three or more Parts</u> of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-~~1~~2.
~~Implementation Guidance.~~

Version History-

| Version | Date | Action | Change Tracking |
|----------|-------------------|--|-----------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 1 | February 17, 2020 | Effective Date | 7/1/2022 |
| <u>2</u> | <u>TBD</u> | <u>Adopted by NERC Board of Trustees</u> | |

Implementation Plan

Project 2020-04 Modifications to CIP-012

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communication links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of [communications](#) communication links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

Unofficial Comment Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2020-04 Modifications to CIP-012** by **8 p.m. Eastern, November 16, 2022**.

Additional information is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Alison Oswald](#) (via email), or at 404-446-9668.

Background Information

In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

Questions

1. The SDT revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

- Yes
 No

Comments:

4. The SDT received multiple requests to provide more possible mitigation methods. Do you agree that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit?

- Yes
 No

Comments:

5. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement

to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Yes

No

Comments:

6. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Yes

No

Comments:

7. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Comments:

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

October 2022

RELIABILITY | RESILIENCE | SECURITY



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Suite 600, North Tower
Atlanta, GA 30326
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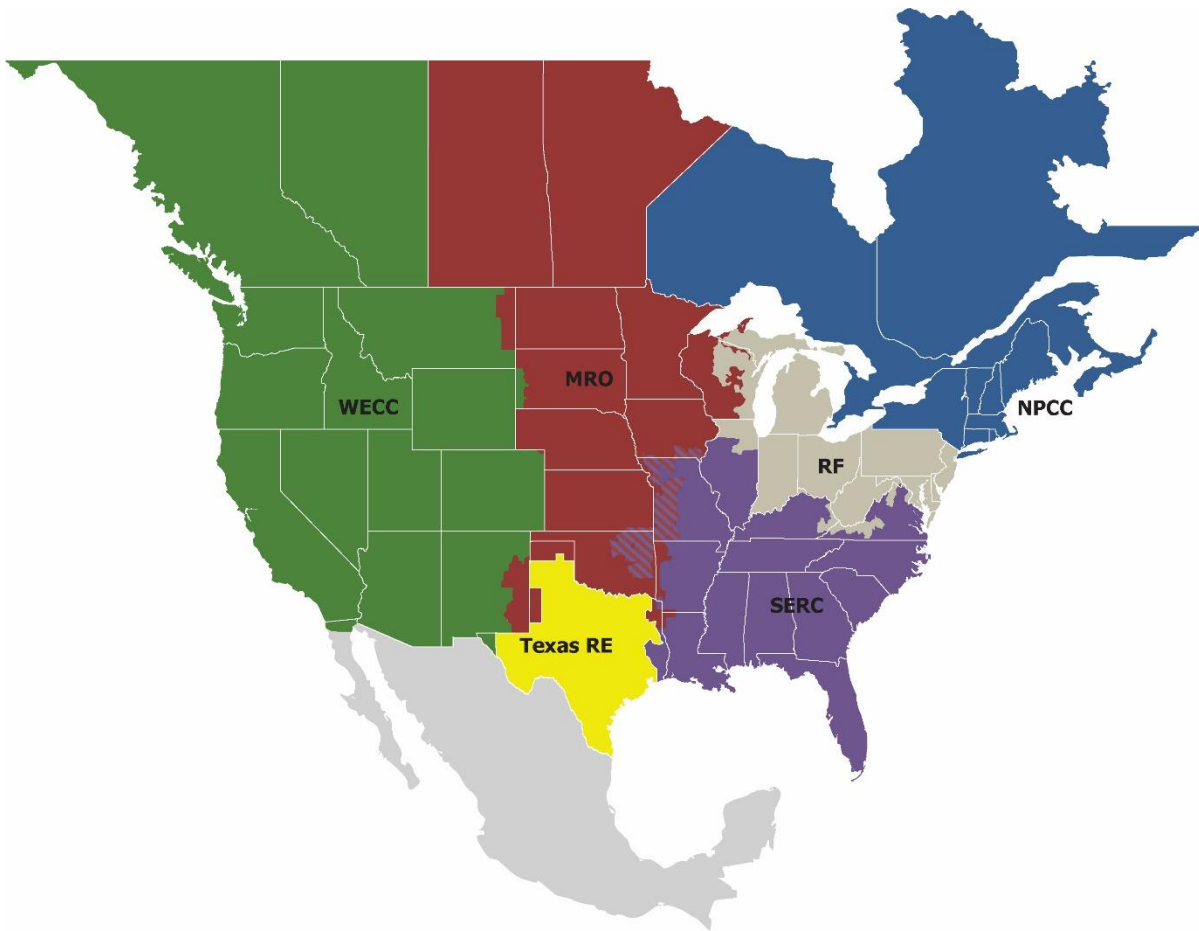
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of NERC and the six Regional Entities, is a highly reliable, resilient, and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the standard drafting team's (SDT's) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive Bulk Electric System (BES) data communicated between BES Control Centers in a manner that is appropriately tailored to address the risks posed to the BES by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive BES data and communication links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the BES Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT refined the subparts of R1, including a Part requiring entities to identify methods used to mitigate the risk of the loss of communication links transmitting Real-time Assessment and Real-time monitoring data.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

their existing recovery and/or incident response plan(s). These may be referenced as part of their CIP-012 plan to meet Requirement R1.3, avoiding duplication of effort.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their BA or TOP Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this particular scenario which is described in further detail below.

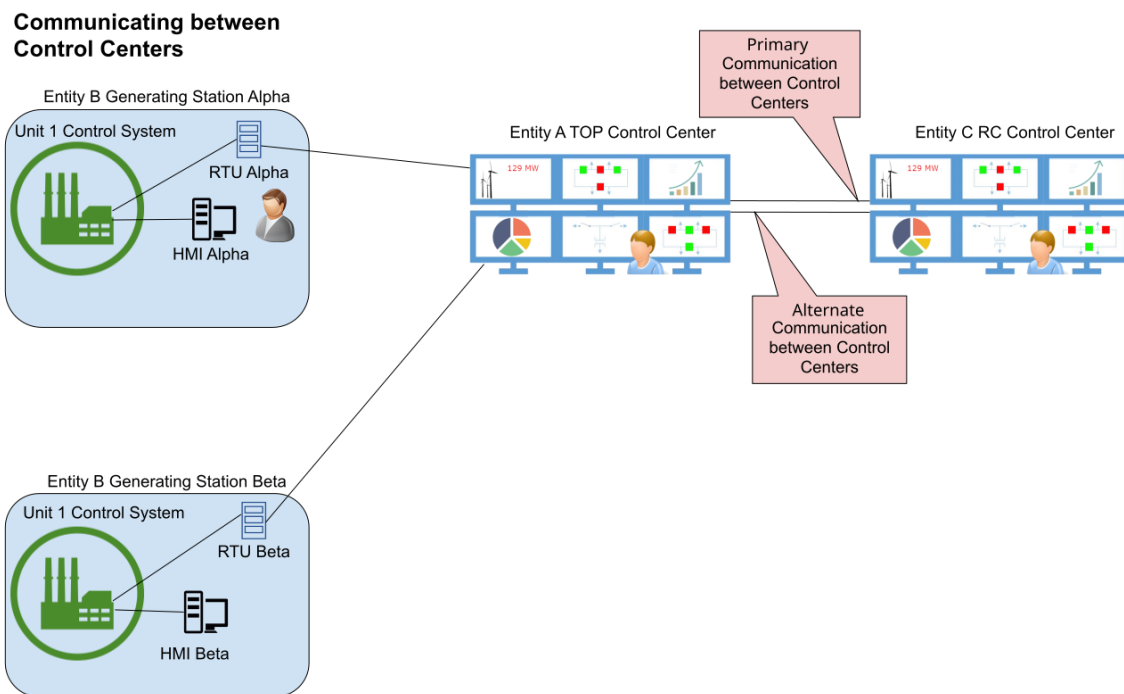


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units. Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

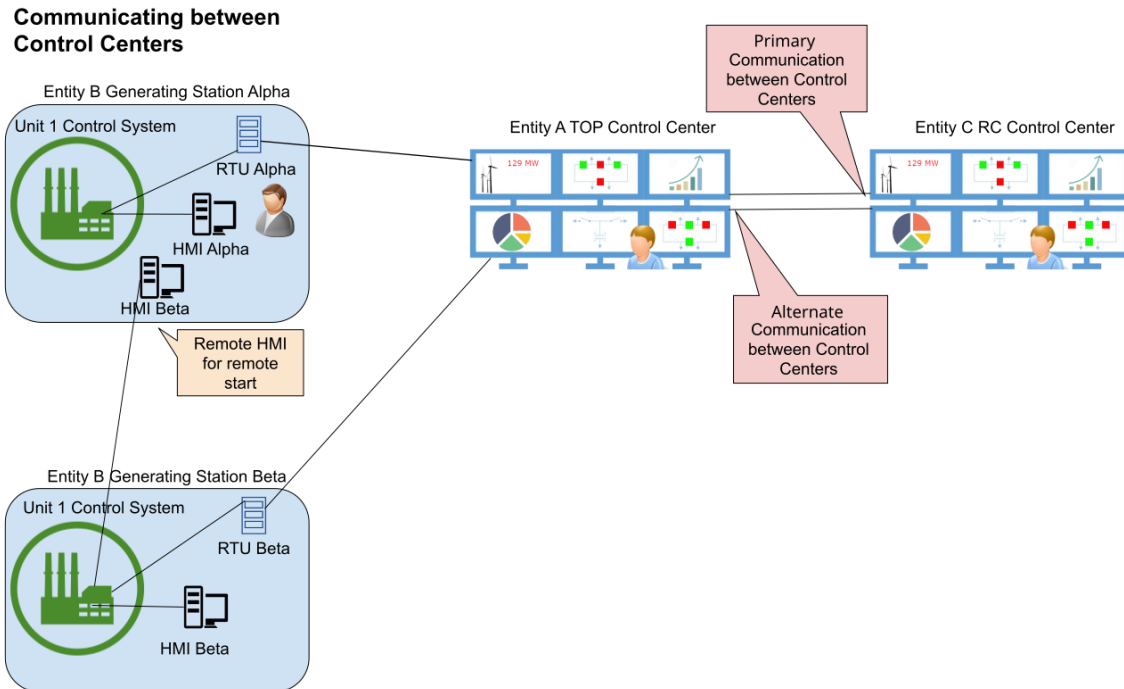


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

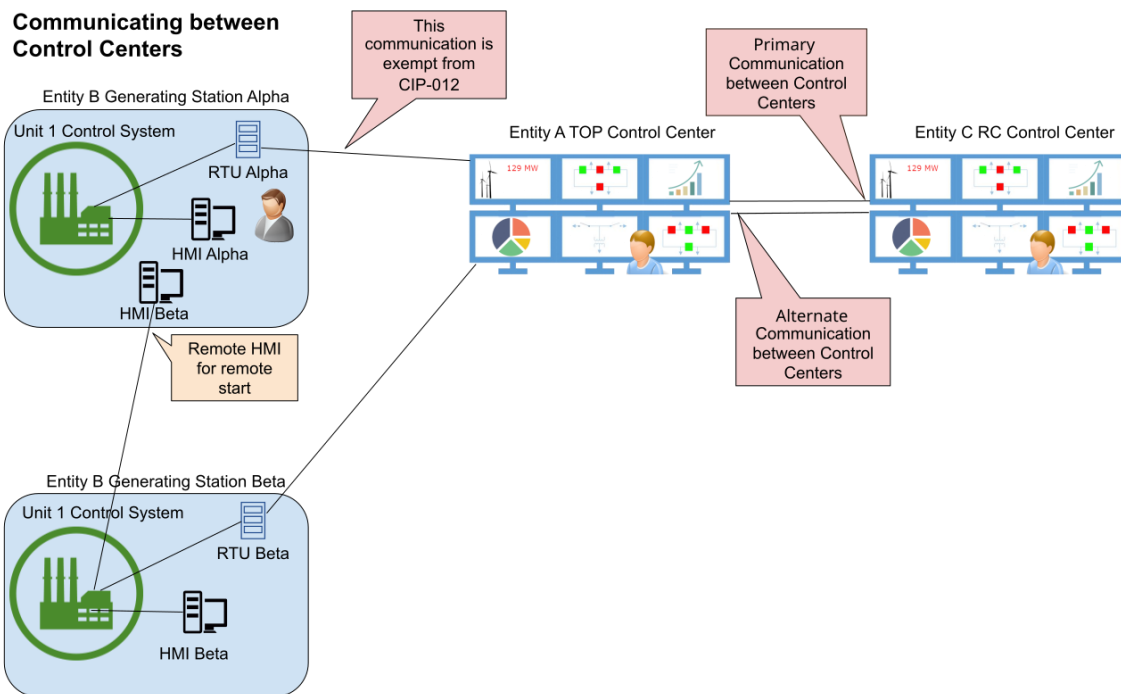


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for TOs and GOPs, the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

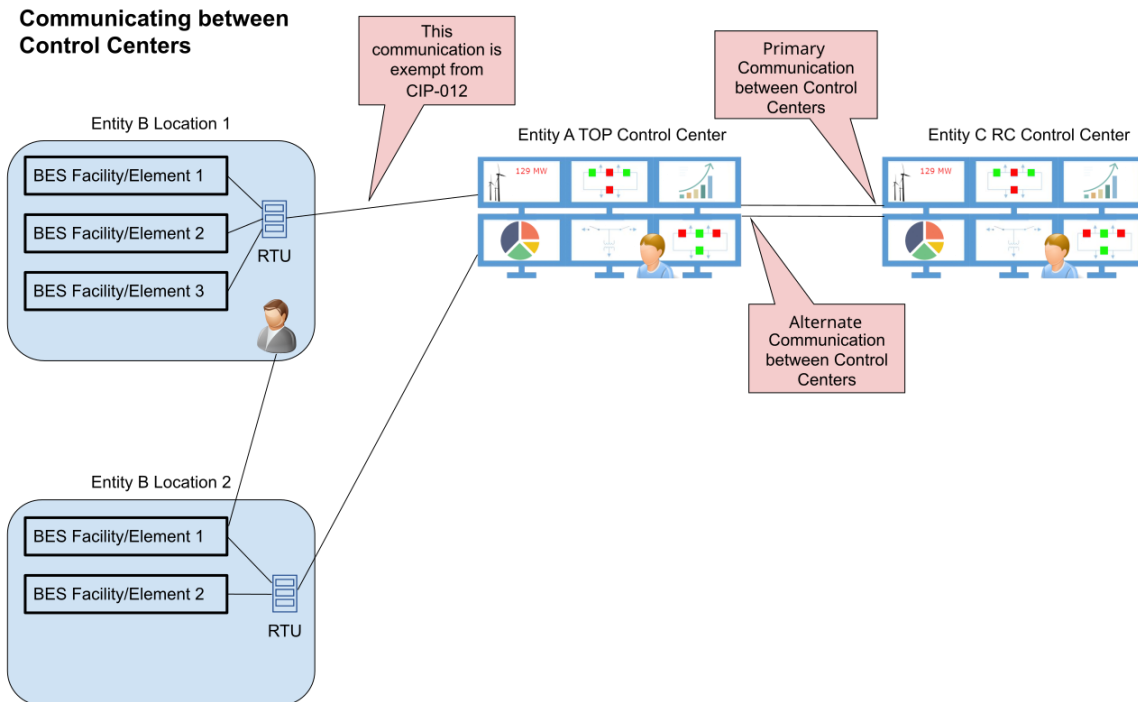


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time Monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.3.** Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1 and 1.2.

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the BES while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of data transmission capability. A loss of data transmission capability can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining availability of data circuits.

Part 1.3 addresses the need to identify methods to recover communication links. An important element of data communications is the availability of the communication links themselves. Communication links are the medium by which the data is transmitted between Control Centers (e.g. fiber, copper lines, satellite, etc.). Being able to recover

them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.4 requires the identification of where protections are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan.

Part 1.5 addresses requirements for each side of the data transfer when Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates timely restoration when there is a problem with the transmission of the data.

Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity) and transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, "Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information."³
- Integrity is defined as, "Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity."⁴
- Based on the NIST definition⁵, Availability is defined by the SDT as, "Providing timely and reliable access to information."

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operating and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the O&P Standards.

When Real-time Assessment or Real-time monitoring data is lost, an entity does not have the data needed for secure operation of the BES. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may be achieved in a number of ways. These include the use of redundant circuits traversing discrete paths, or acquiring the same data points from multiple Control Centers, among other options.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under "Availability" from 44 U.S.C., Sec. 3542 (b)(1)(C)

to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity's primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.4 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.5.

Control Center Ownership

The CIP-012 Standard Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. It also covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection

between a single Responsible Entity’s Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, “if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system.”

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

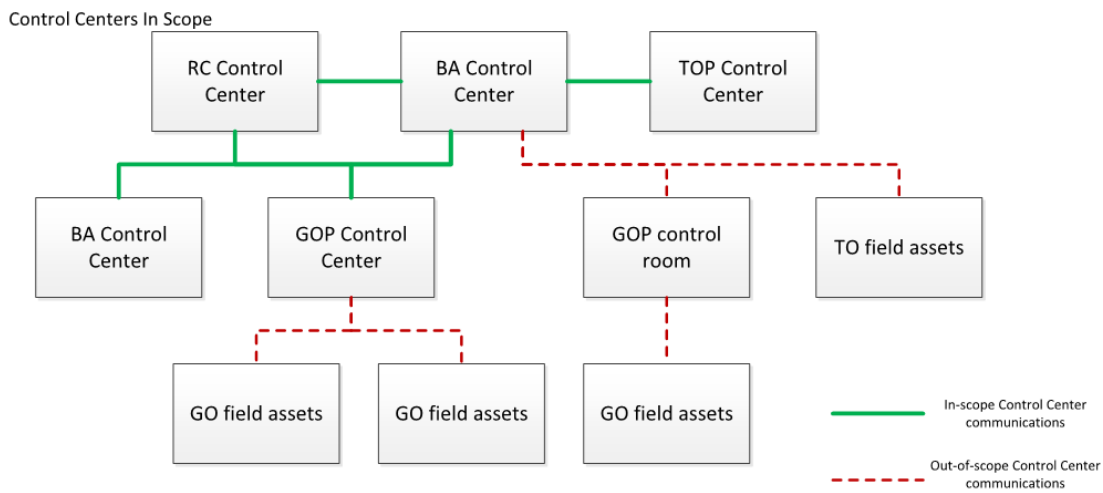


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.5 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

~~November 2021~~ October 2022

RELIABILITY | RESILIENCE | SECURITY



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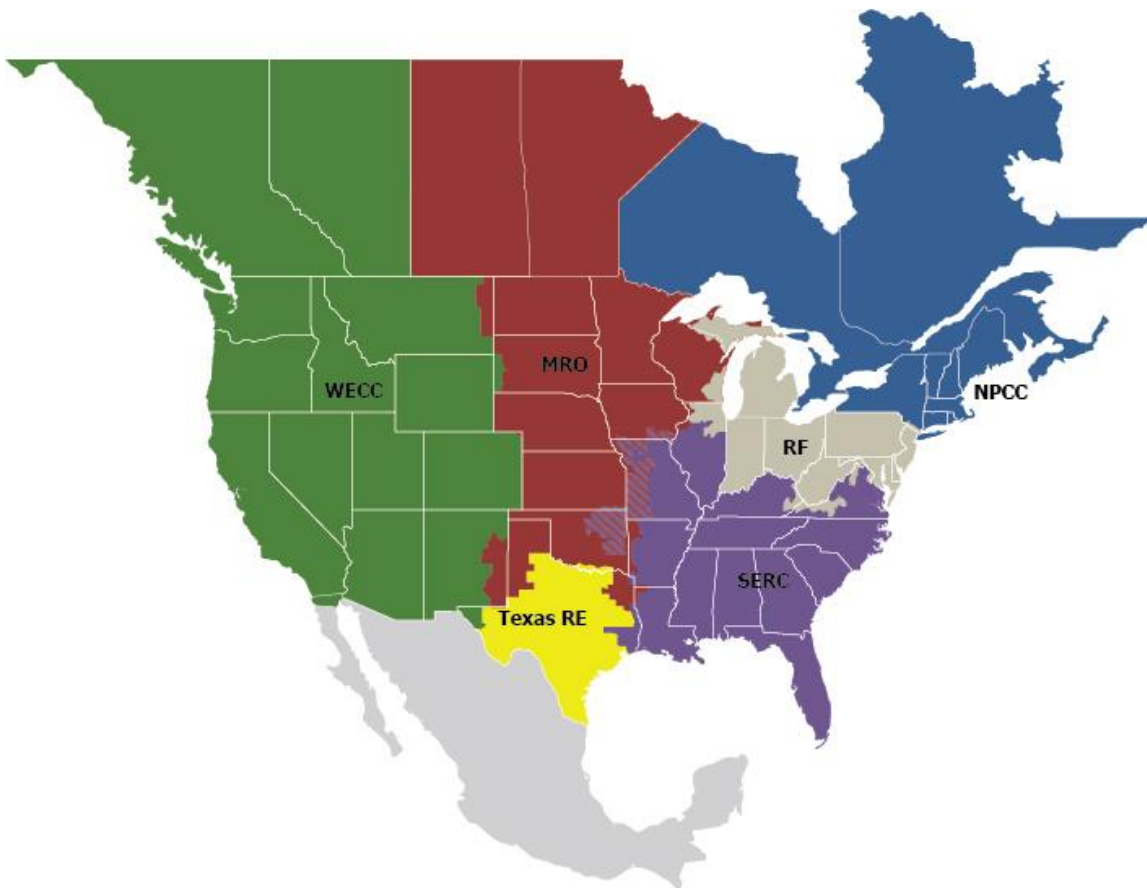
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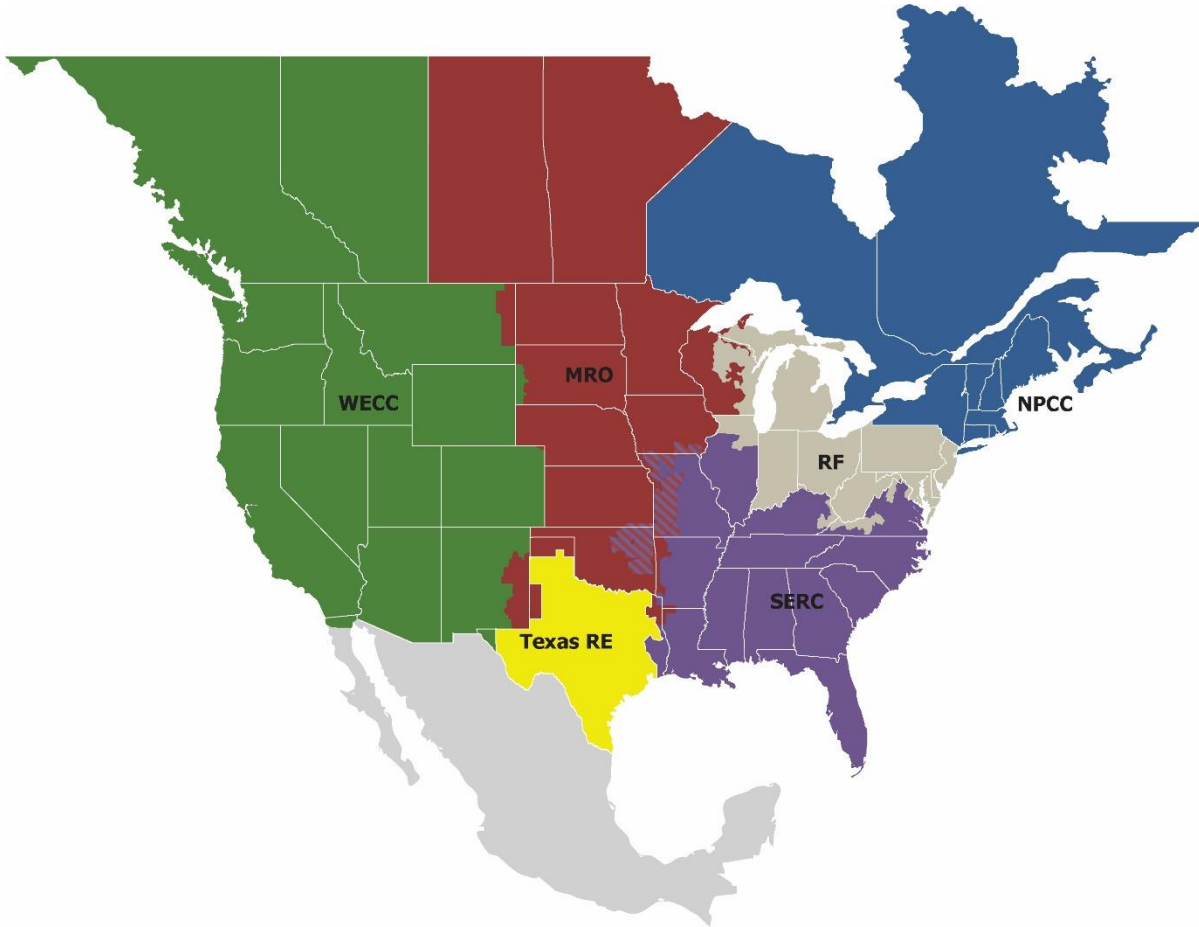
Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of ~~the North American Electric Reliability Corporation (NERC)~~ and the six Regional Entities ~~(REs)~~, is a highly reliable, resilient, and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners ~~(TOs)~~/~~Operators (TOPs)~~ participate in another.





| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the standard drafting team's (SDT's) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive ~~bulk electric system~~ Bulk Electric System (BES) data communicated between ~~bulk electric system~~ BES Control Centers in a manner that is appropriately tailored to address the risks posed to the ~~bulk electric system~~ BES by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive ~~Bulk Electric System (BES)~~ data and communications ~~communication~~ links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the ~~Bulk Electric System (BES)~~ Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT ~~developed CIP-012-2 Requirement R2~~ refined the subparts of R1, including a Part requiring entities to identify methods used to mitigate the risk of the loss of communication links transmitting Real-time Assessment and Real-time monitoring data.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity's compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication

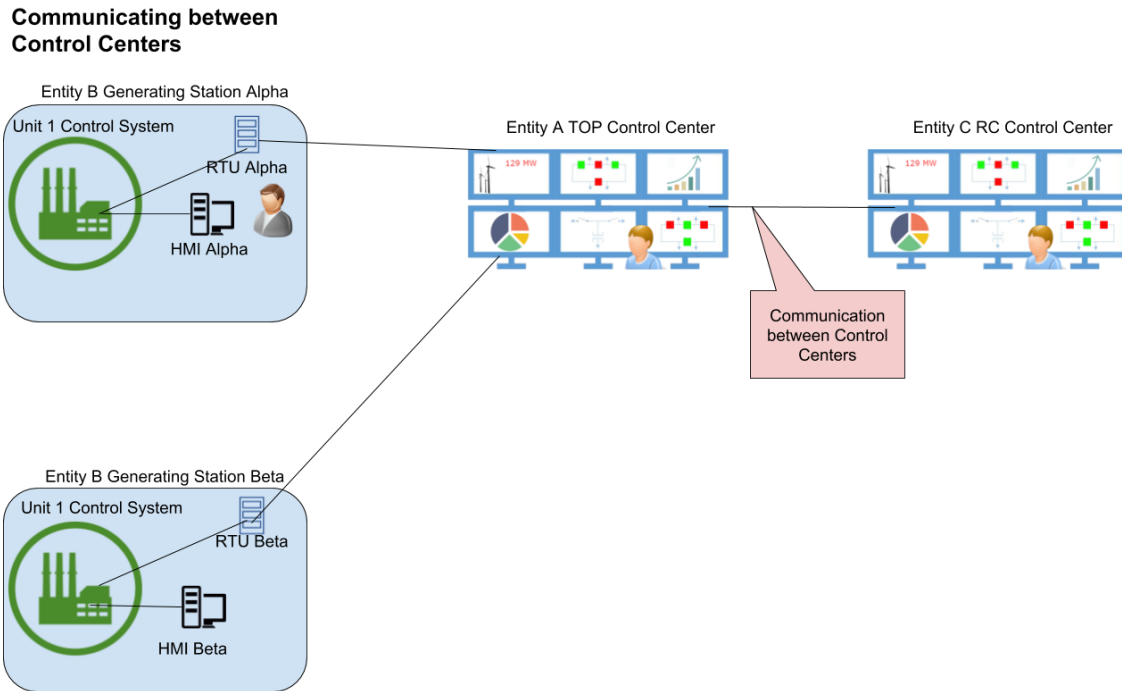
¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their ~~CIP-008 existing recovery~~ and ~~CIP-009/or incident response~~ plan(s) ~~and these could~~. These may be referenced as part of their CIP-012 plan to meet ~~the requirement and avoid~~ Requirement R1.3, avoiding duplication of effort.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity’s operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their BA or TOP Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this particular scenario, which is described in further detail below.



² See Order No. 866 at PP 35-36.

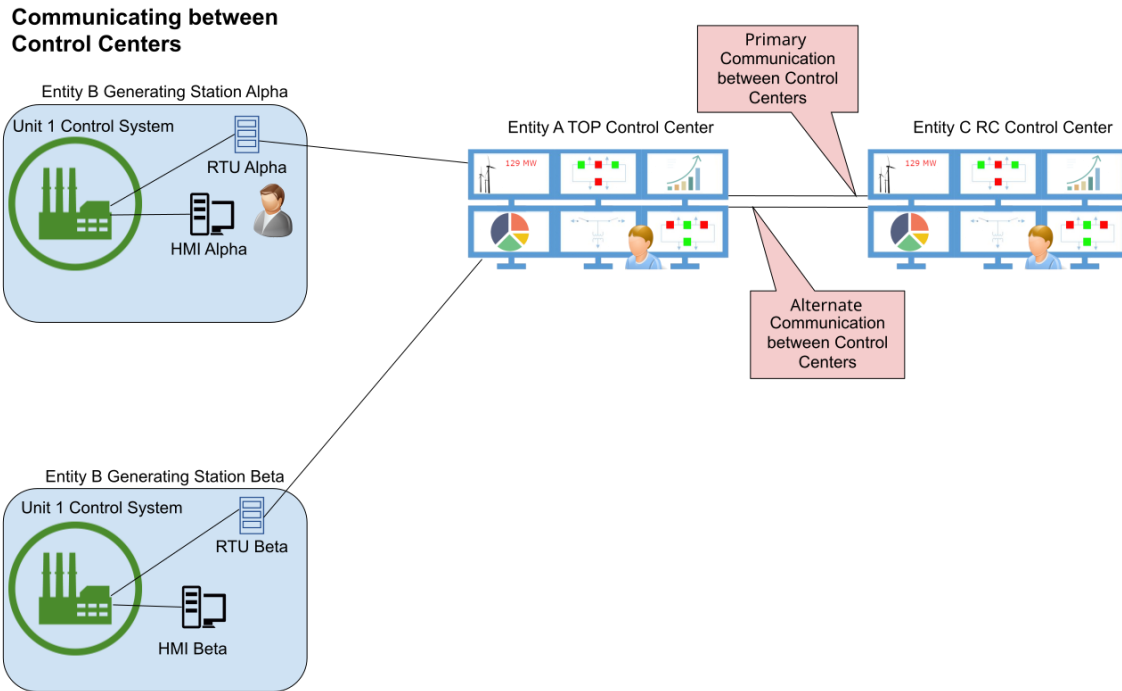


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C’s RC Control Center and Entity A’s TOP Control Center. The communication between them is the intended scope of CIP-012’s requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B’s generating plants (Stations Alpha and Beta). Those RTU’s are gathering information from each generating unit’s control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

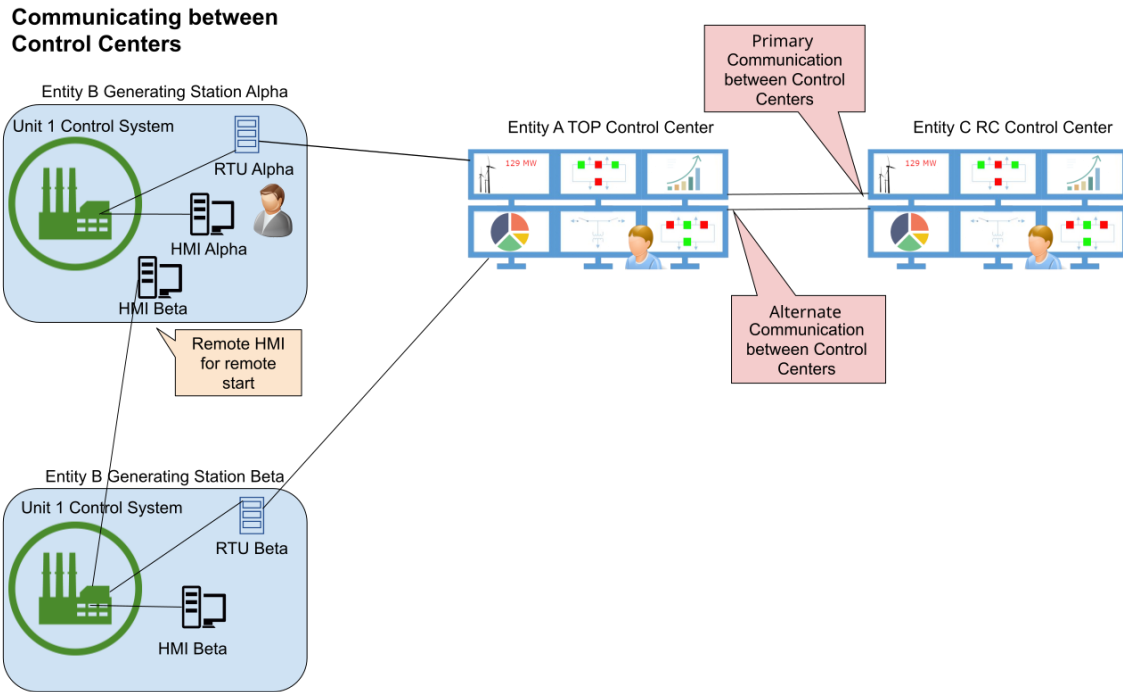
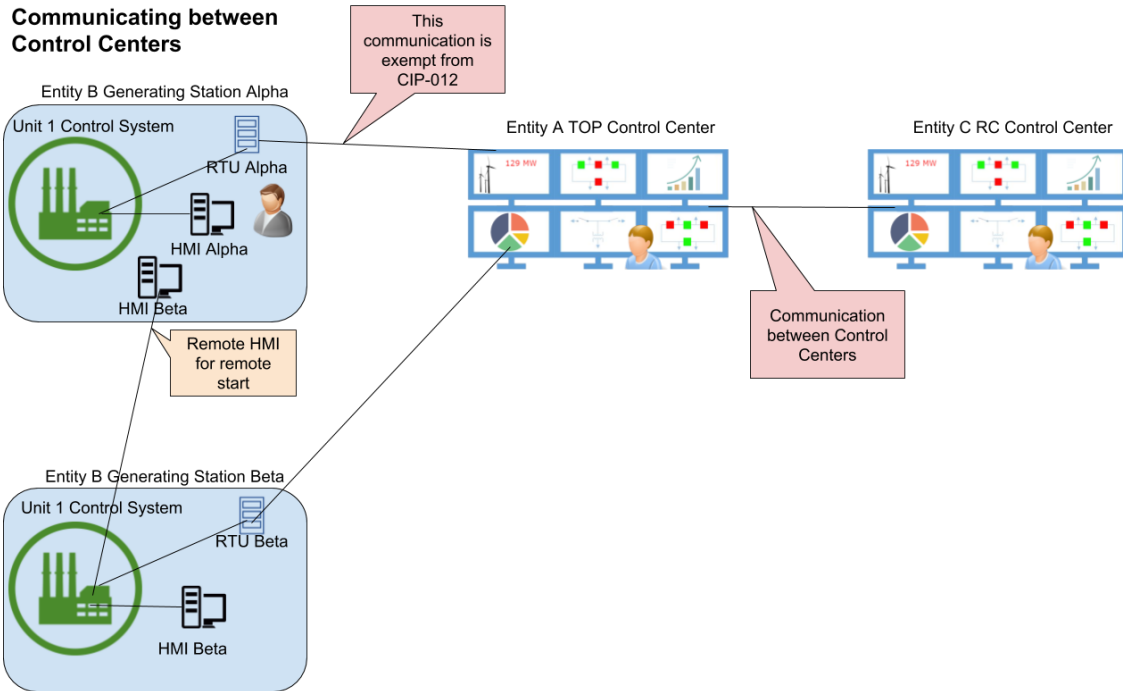


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two

different plant locations. Station Alpha can now be dual-classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

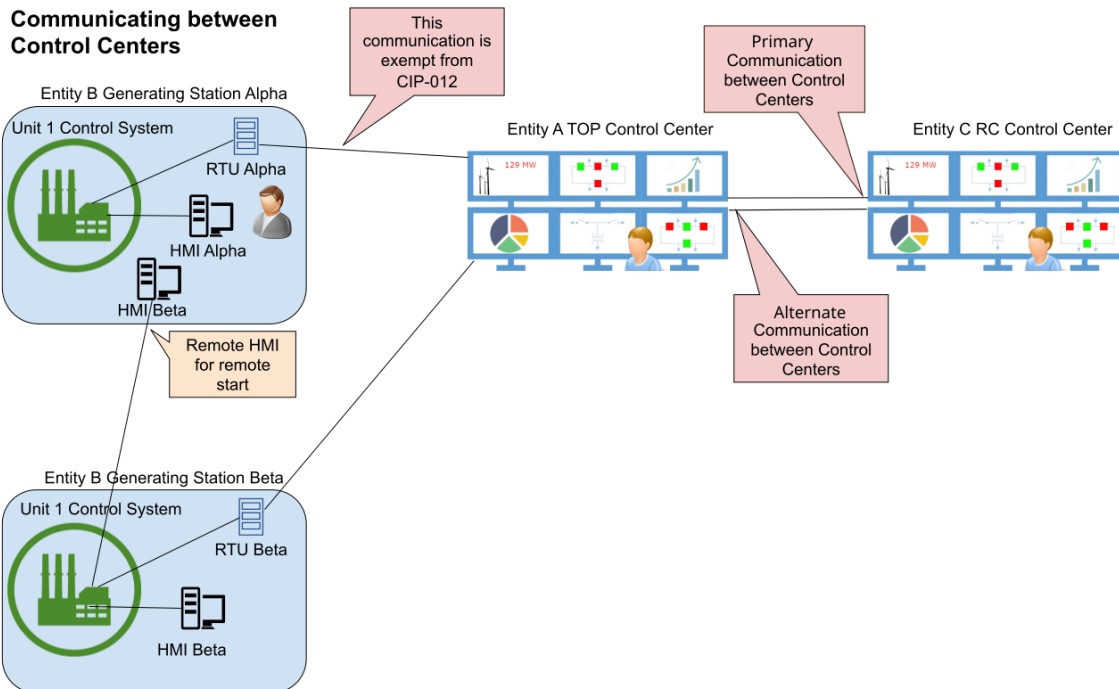
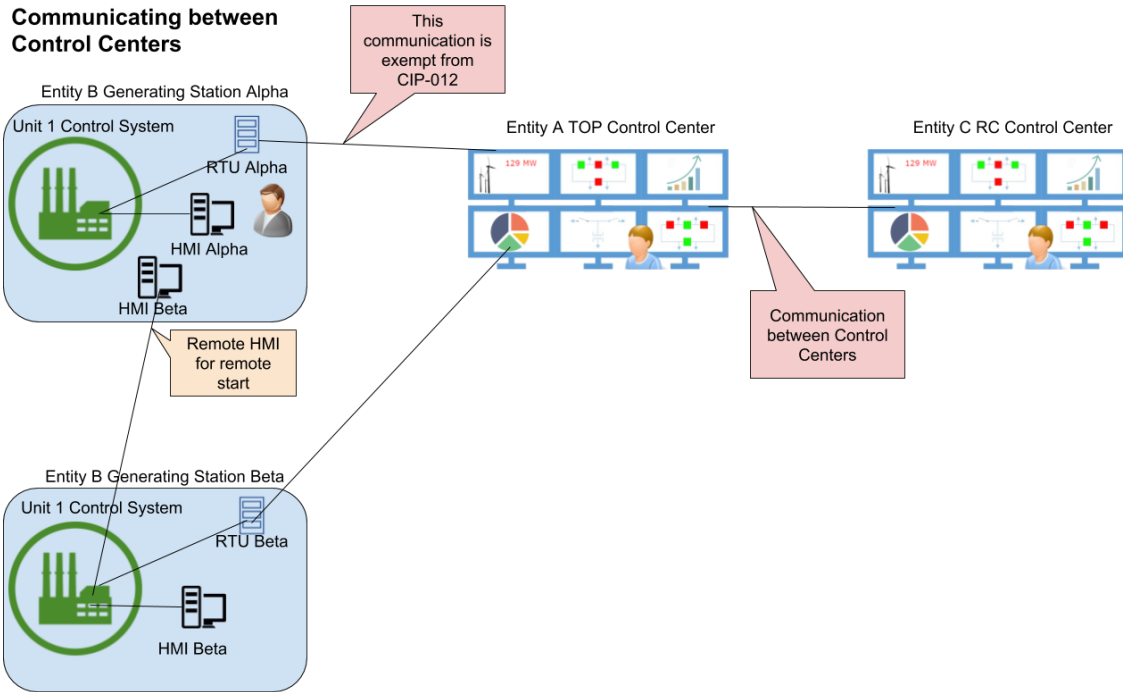


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A's TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that "operating personnel" within the substation could use to impact an adjacent substation. It is also clear that in the criteria for TOs and GOPs, the "two or more locations" is not a precise enough filter for defining what a Control Center truly is. The SDT's attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT's SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard, which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset's status. Throughout this scenario, or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

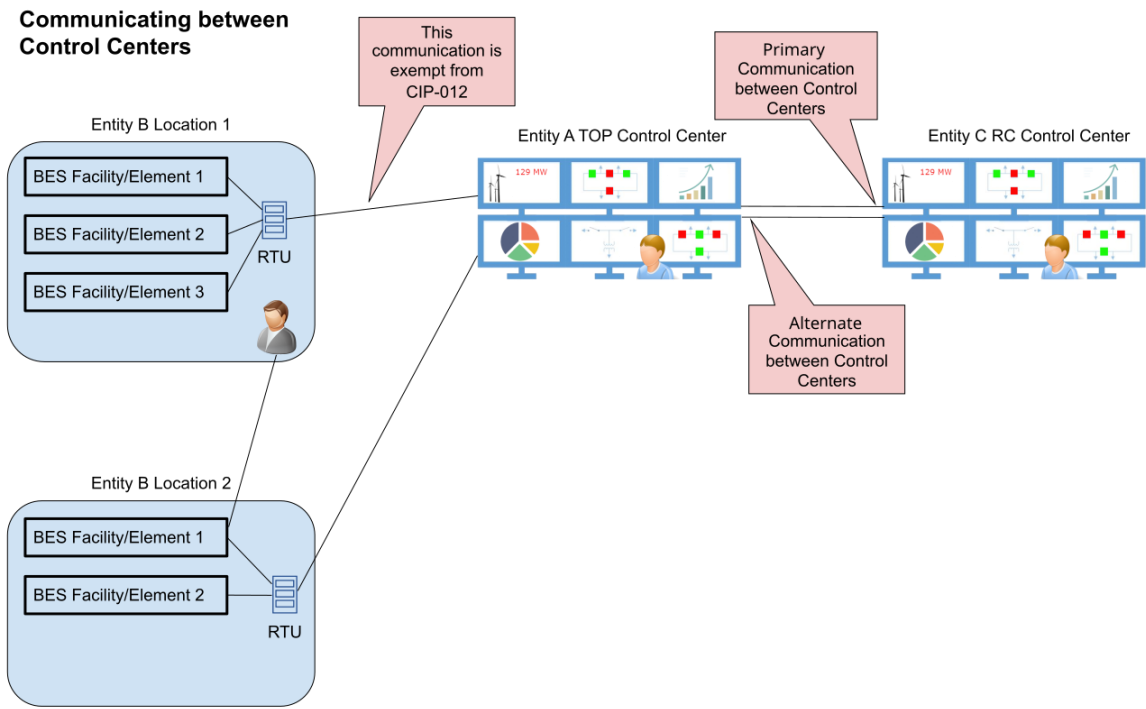
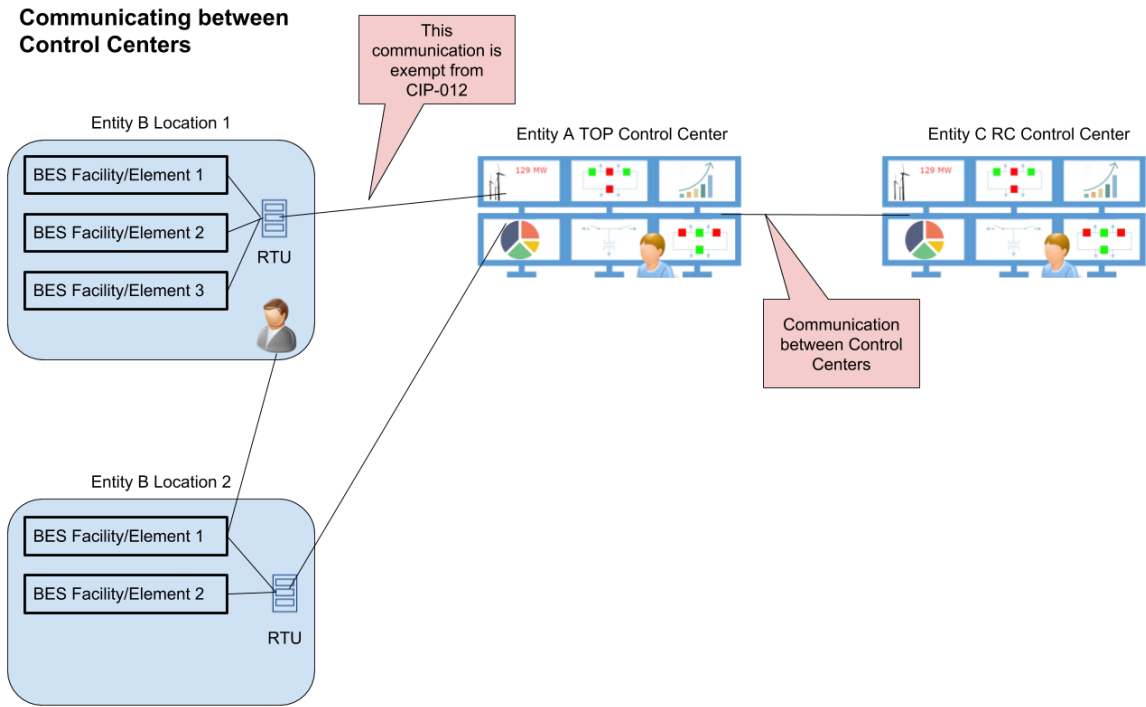


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time Monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. -The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

1.1. Identification of ~~security and availability protection~~ method(s) used to mitigate the risks posed by unauthorized disclosure, and unauthorized modification, ~~and loss of availability~~ of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

1.2. Identification of ~~methods~~ method(s) used to ~~be~~ mitigate the risk(s) posed by loss of data used for the recovery of Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

1.2.1.3. Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;

1.3.1.4. Identification of where the Responsible Entity ~~applied security and availability protection(s)~~ implemented method(s) as required in ~~Part~~ Parts 1.1 and 1.2; and

1.4.1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for ~~applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers~~ implementing method(s) as required in Parts 1.1 and 1.2.

General ~~Considers of~~ Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the ~~Bulk Electric System~~ BES while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security ~~and availability~~ protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

~~Part 1.2 addresses the need to identify measures to recover communications links.~~ Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of data transmission capability. A loss of data transmission capability can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining availability of data circuits.

Part 1.3 addresses the need to identify methods to recover communication links. An important element of data communications is the availability of the communication links themselves. ~~Communications~~Communication links are the medium by which the data is transmitted between Control Centers (e.g. fiber, copper lines, satellite, etc.). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

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Part 1.45 addresses requirements for each side of the data transfer when ~~they~~Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates timely restoration when there is a problem with the transmission of the data.

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- Based on the NIST definition⁵, Availability is defined by the SDT as, "Ensuring Providing timely and reliable access to ~~and use of~~ information"⁶.

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operating and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the O&P Standards.

When Real-time Assessment or Real-time monitoring data is lost, an entity does not have the data needed for secure operation of the BES. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may

³ NIST Special Publication 800-53A, Revision 4, page B-3

⁴ NIST Special Publication 800-53A, Revision 4, page B-6

⁵ NIST SP 800-59 under "Availability" from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁶ ~~NIST SP 800-59 under "Availability" from 44 U.S.C., Sec. 3542 (b)(1)(C)~~

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The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. –CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity's primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-~~001~~and 001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of ~~where~~Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of

where protections are applied in CIP-012 Requirement R1, Part 1.34 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.45.

Control Center Ownership

The CIP-012 Standard ~~Requirements address~~ Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. ~~They~~ It also ~~covers~~ covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. ~~The requirements do~~ requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. ~~An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."~~

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. ~~The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.~~

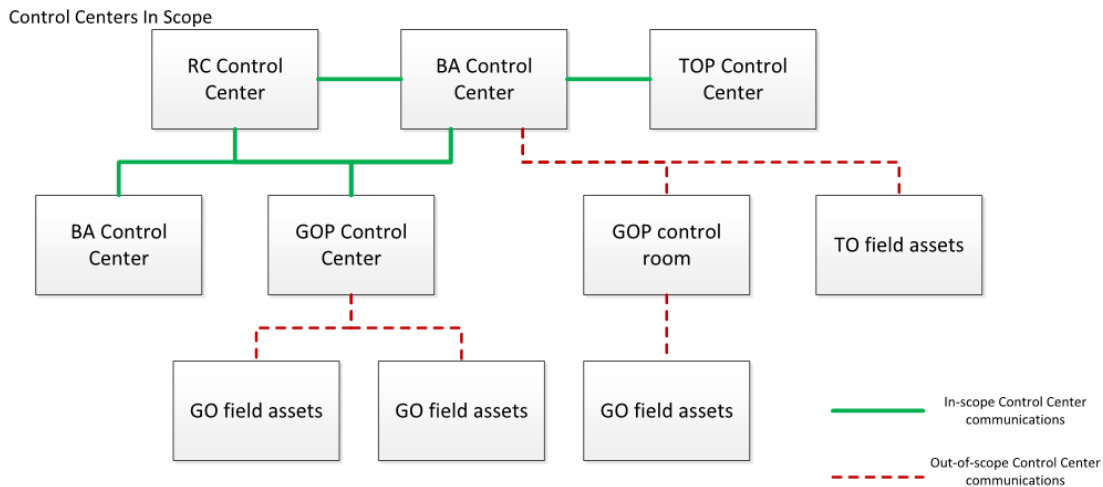


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.45 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. ~~Part 1.45 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence,~~ which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1, through 1.2 and 1.34 of the plan should correlate to the documented responsibilities in Part 1.45 of the entity's plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not substantially change from the previously FERC approved CIP-012-1 Reliability Standard. The severe VSL was modified to reflect the proposed Requirement R1 which now has four subparts.

| VSLs for CIP-012-2, Requirement R1 | | | |
|------------------------------------|--|---|--|
| Lower | Moderate | High | Severe |
| N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R2 | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirements R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R1.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language.</p> <p>The moderate VSL addresses where the Responsible Entity documented its plan(s), but failed to include one of the applicable parts of the plan as specified in Requirement R1.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s), but failed to include two of the applicable parts of the plan as specified in Requirement R1.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|---|---|
| <p>FERC VSL G4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|---|---|

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

October 2022

RELIABILITY | RESILIENCE | SECURITY



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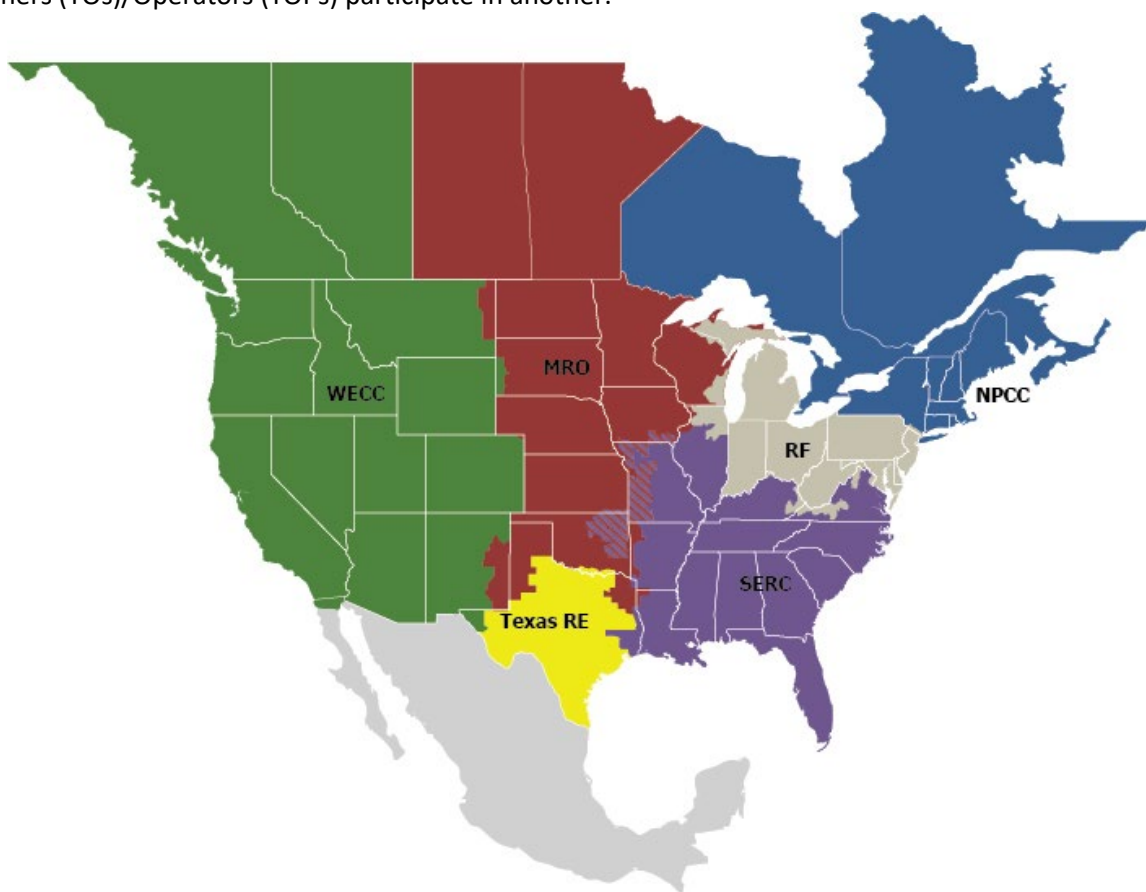
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive Bulk Electric System (BES) data communicated between BES Control Centers in a manner that is appropriately tailored to address the risks posed to the BES by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the BES Control Centers. In response to the directive in Order No. 866, the Project 2020-04 standard drafting team (SDT) developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#)

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by loss of Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers;
 - 1.3.** Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1 and 1.2.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit motion.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “Ensuring timely and reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. A Responsible Entity may also reference other CIP or Operations and Planning (O&P) plans within their CIP-012 plan that meet the required elements of the CIP-012 plan. For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their RC(s), BA(s) and TOP(s). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

³ [NIST SP 800-59](#) under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶.

For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

example, a Reliability Coordinator may be willing to pass-through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of Data During Transit (R1.2)

Mitigating the risks posed by loss of data consists of taking measures to help protect the continued flow of data. This can be accomplished a variety of ways including redundant links, diverse systems or services designed to protect against loss of data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used for Recovery (R1.3)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to recover data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should address within its CIP-012 plan any components of the availability solution that fall outside of the scope of the referenced plan. This may be achieved by inclusion within the other plan or directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section when the communications are between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an ICCP link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

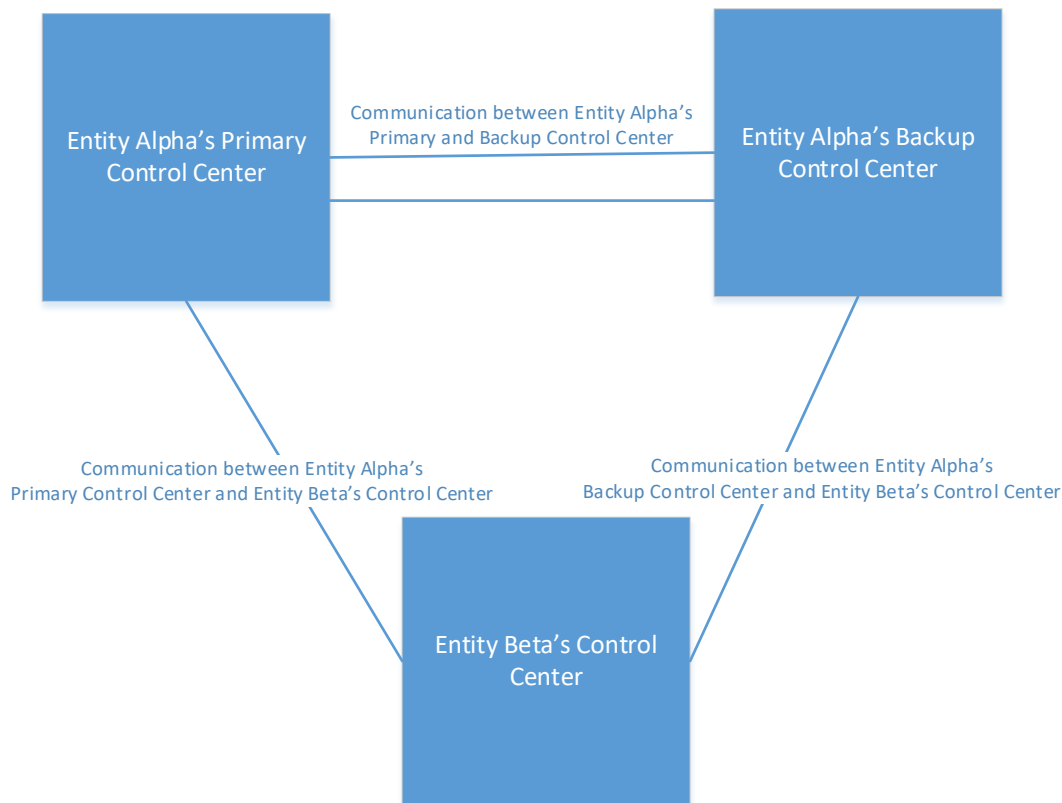


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit

Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using the Inter-Control Center Communications Protocol (ICCP).

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its required communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is within a Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used for Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its PSP and continuing for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity but are not part of the plan.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.

- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.
- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

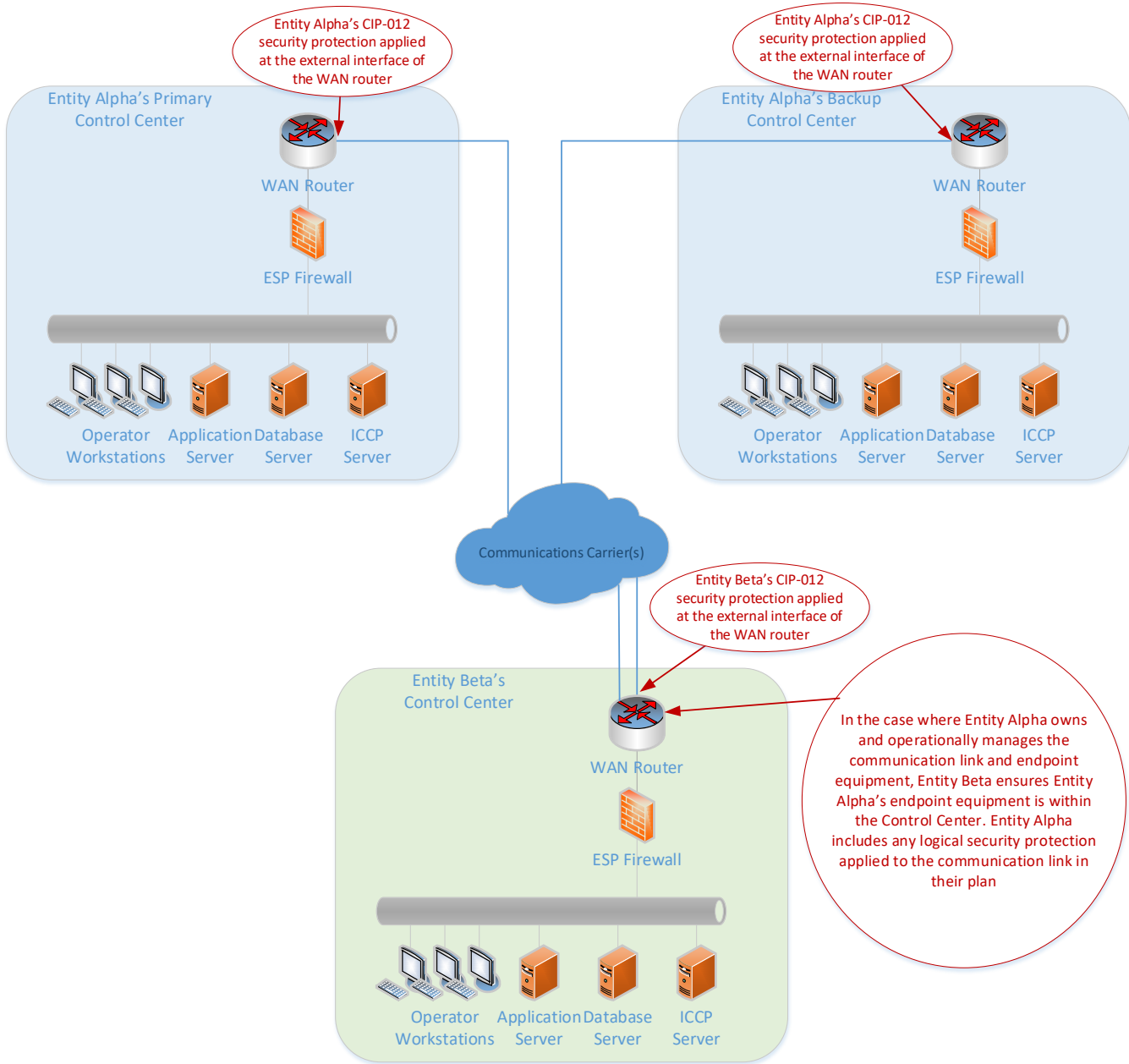


Figure 2: Network diagram and identification of where security protection is applied

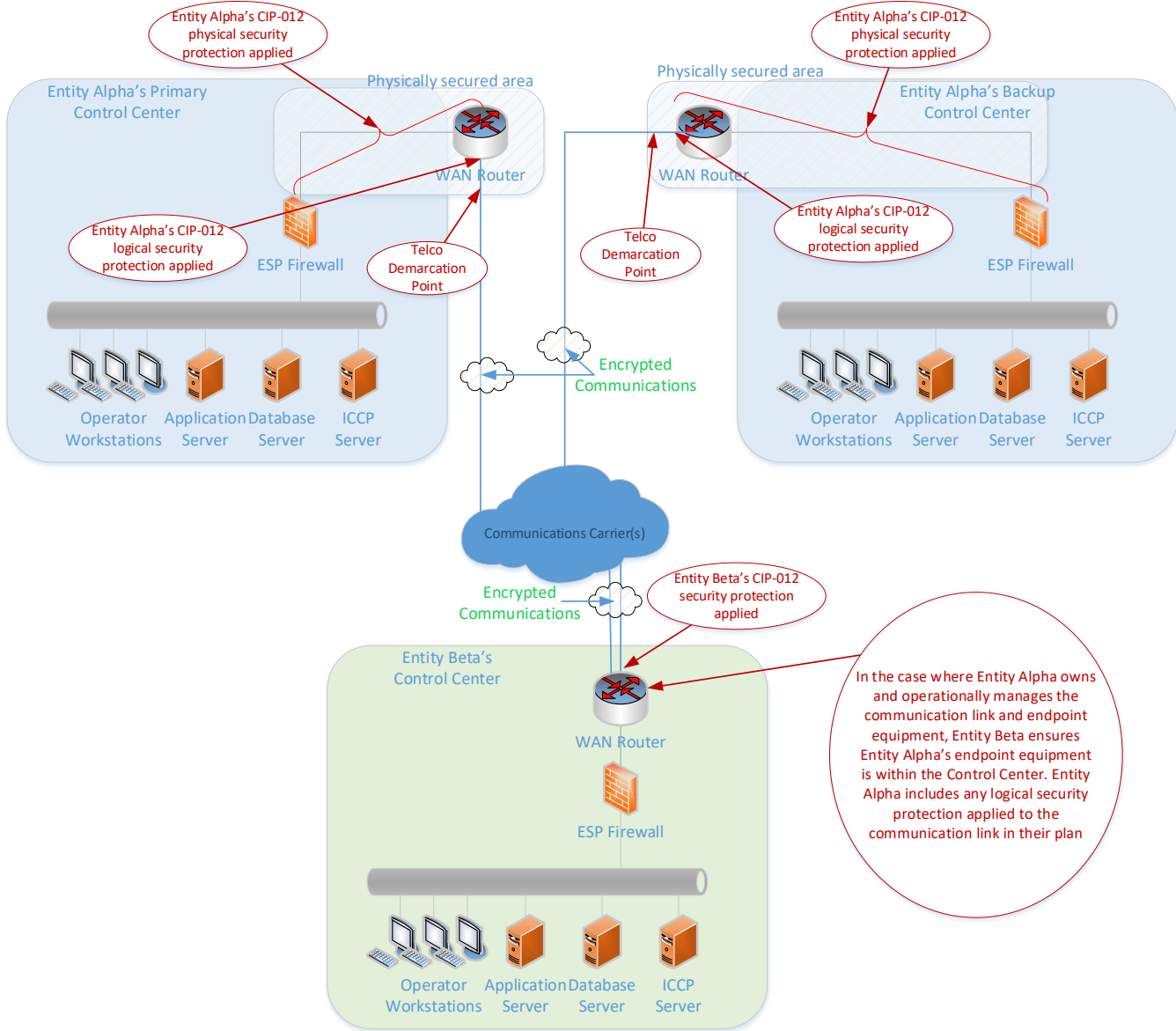


Figure 3: Network diagram using a combination of controls for CIP-012

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<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

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<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

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DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

~~November 2021~~ October 2022

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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. -Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive ~~bulk electric system~~Bulk Electric System (BES) data communicated between ~~bulk electric system~~BES Control Centers in a manner that is appropriately tailored to address the risks posed to the ~~bulk electric system~~BES by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 standard drafting team (SDT) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the ~~Bulk Electric System (BES)~~ Control Centers. In response to the directive in Order No. 866, the Project 2020-04 standard drafting team (SDT) developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#)

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of ~~security and availability protection~~ method(s) used to mitigate the risks posed by unauthorized disclosure, ~~and~~ unauthorized modification, ~~and loss of availability~~ of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of ~~methods to be~~ method(s) used ~~for~~ to mitigate the ~~recovery of risk posed by loss of Real-time Assessment and Real-time monitoring data while such data is being transmitted between Control Centers;~~
 - 1.2.1.3.** Identification of method(s) used to recover communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.1.4.** Identification of where the Responsible Entity ~~applied security and availability protections~~ implemented method(s) as required in ~~Part~~ Parts 1.1 and 1.2; and
 - 1.4.1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for ~~applying security and availability protection(s) to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers~~ implementing method(s) as required in Parts 1.1 and 1.2.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the ~~Bulk Electric System~~BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between ~~bulk electric system~~BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit motion.

For CIP-012-2, the SDT ~~relied upon a modified the~~ definition of availability as defined by National Institute of Standards and Technology (NIST)~~);~~³:

- Availability is defined as “Ensuring timely and reliable access to ~~and use of~~ information”⁴

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. A Responsible Entity may also reference other CIP or Operations and Planning (O&P) plans within their CIP-012 plan that ~~include~~meet the required elements of the CIP-012 plan. For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.~~23~~ requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1, ~~through 1.2, 1.3 and 1.45~~ of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁵.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their RC(s), BA(s) and TOP(s). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

~~⁴ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)~~

⁵ NERC Order No. 866 at PP 11.

~~Identification of Security~~ Mitigate Risks Associated with Unauthorized Disclosure and Availability Protections ~~Modification~~ (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁶. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁷.

For example, having more than one circuit path or method to deliver the data. – A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different ~~protocols~~ systems (e.g., ~~DNP3a~~ primary and ~~IEC61850~~ secondary) to mitigate against multiple failure scenarios associated with data availability.

⁶ [NIST SP 800-160v2](#), 11

⁷ [NIST SP 800-160v2](#), 11

As noted previously, availability is generally defined as ensuring timely and reliable access to ~~and use of~~ information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass-through the originator's data to your Control Center, enabling a secondary source from a discrete path. -This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple ~~protocols~~systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Identification Mitigating Risks Posed by Loss of Data During Transit (R1.2)

Mitigating the risks posed by loss of data consists of taking measures to help protect the continued flow of data. This can be accomplished a variety of ways including redundant links, diverse systems or services designed to protect against loss of data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used for the Recovery of Communication Links (R1.23)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to recover data communication links should they be interrupted. -This objective is consistent with the TOP and IRO ~~O&P~~ Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. -When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should address within its CIP-012 plan any components of the availability solution that fall outside of the scope of the referenced plan. This may be achieved by inclusion within the other plan or directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.34)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.45)

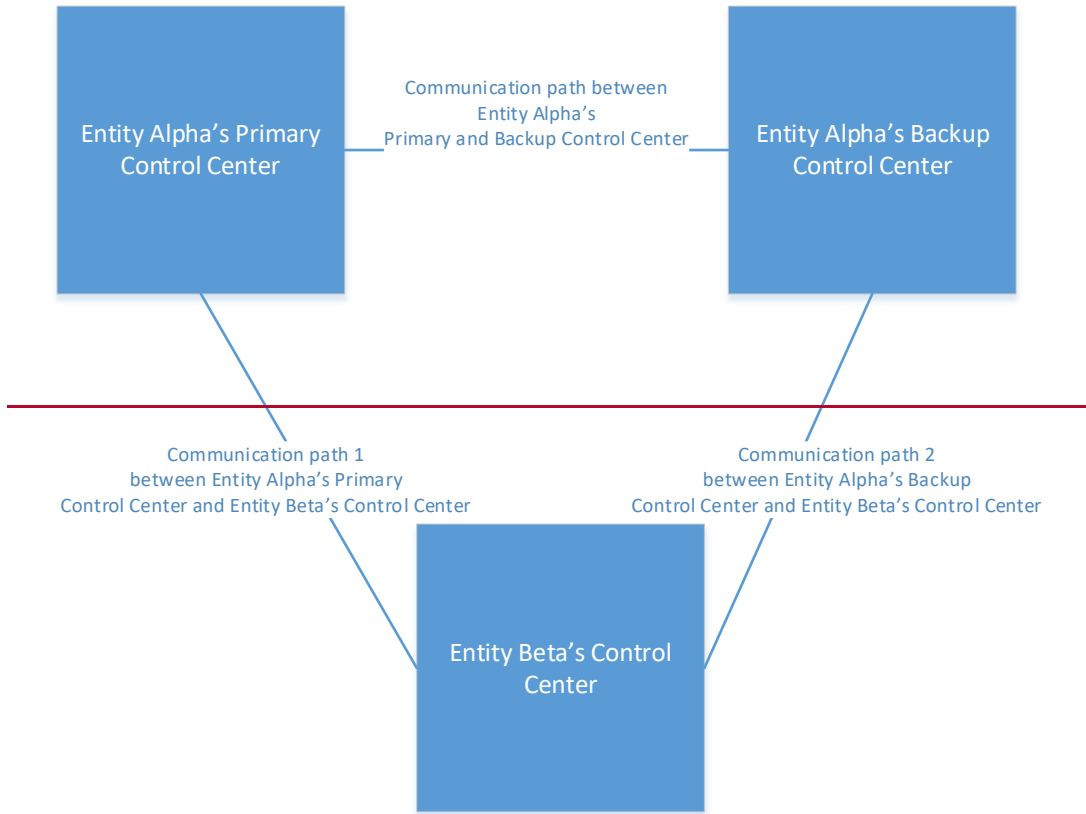
The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section when the communications are between Control Centers with different owners or operators. – Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. –Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an ICCP link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity’s Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.



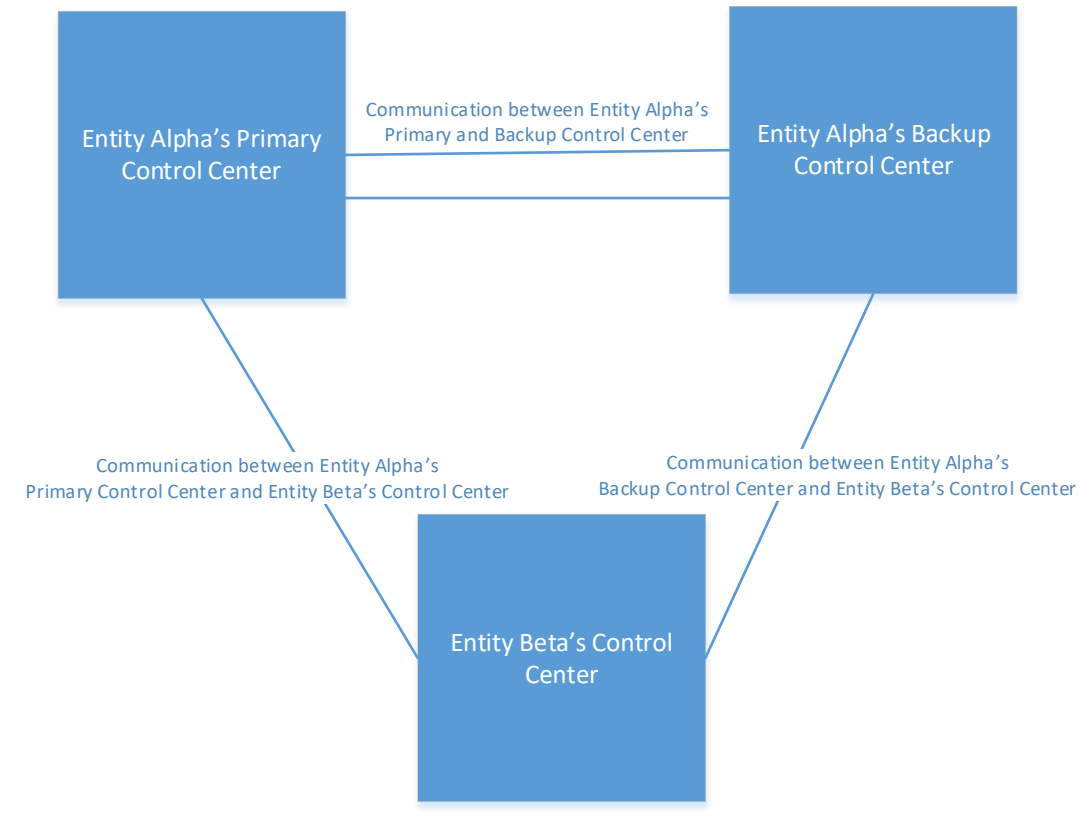


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These ~~O&P Standards~~ standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across ~~a single~~ redundant communication ~~link~~ links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using the Inter-Control Center Communications Protocol (ICCP).

With an identified scope of ~~communications~~communication links the applicable data traverses, Entity Alpha now considers the ~~four~~five required elements of its required ~~communications~~communication links between Control Centers for its plan.

Identification of Security ~~and Availability~~ Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers. ~~Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. The identification of security protection could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.~~

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective ~~as long as measures for availability are also addressed.~~ For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. ~~To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.~~

For more complex scenarios, Entity Alpha may need to use a combination of security controls. ~~For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is within a Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1 ~~and 1.2.~~~~

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data. ~~The security objective for availability is achieved via alternate communication link pathing from the backup control center.~~

Identification

Mitigating the Risk Posed by Loss of Measures Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into

the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used for the Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its PSP and continuing for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity but are not part of the plan.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a Control Center PSP. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.
- Availability protection Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

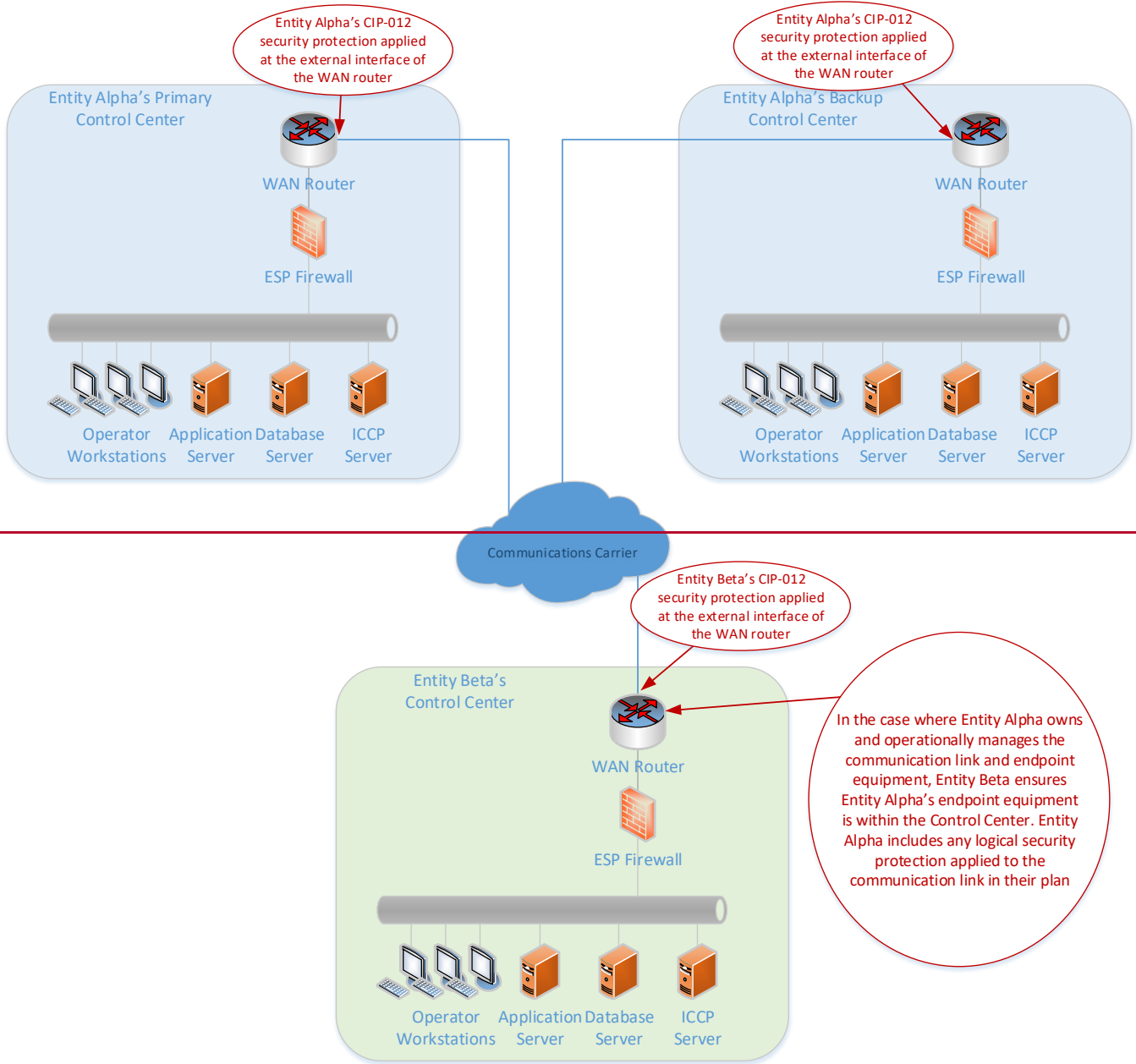
Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPSec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPSec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.45. Examples include but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model



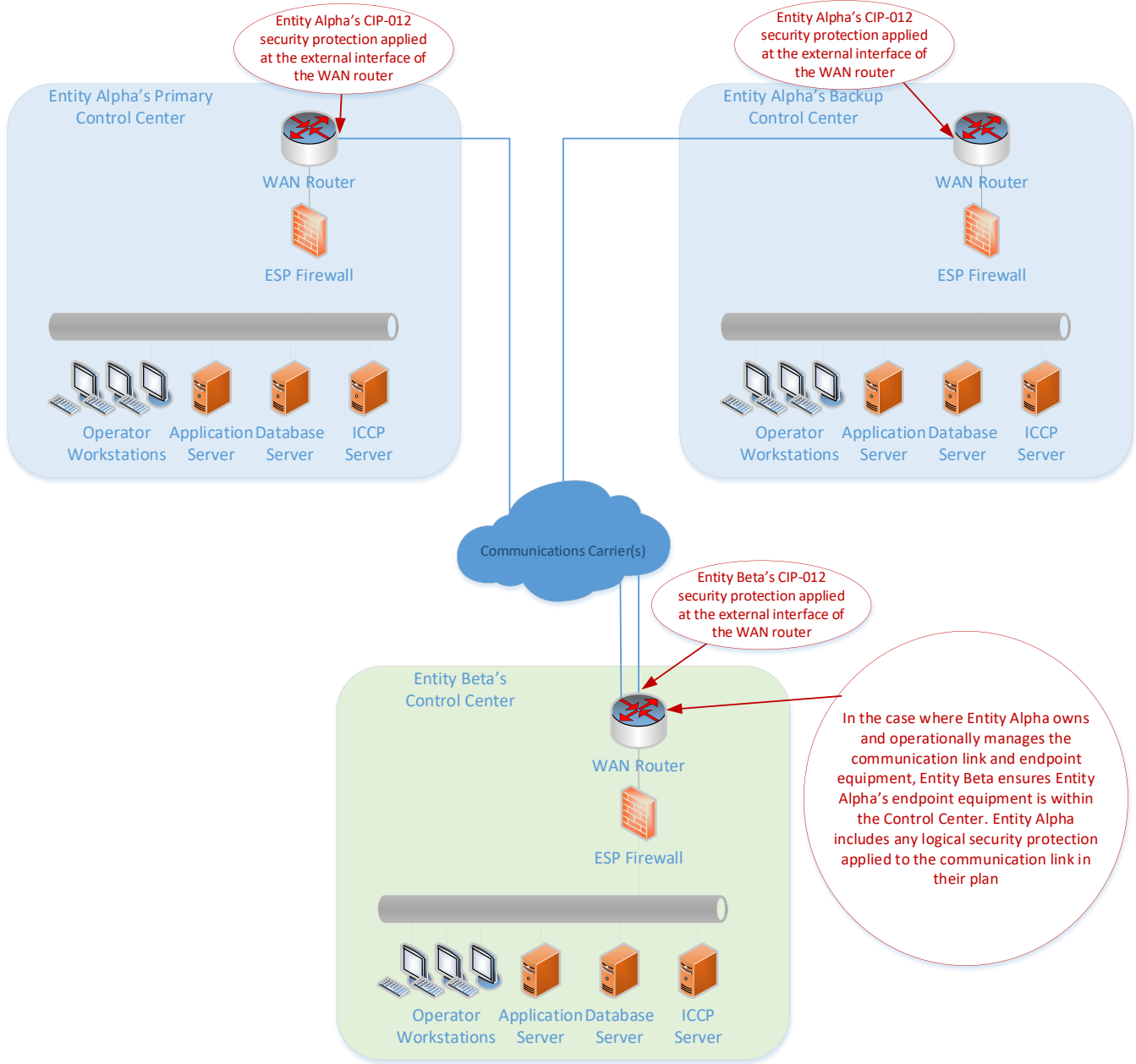
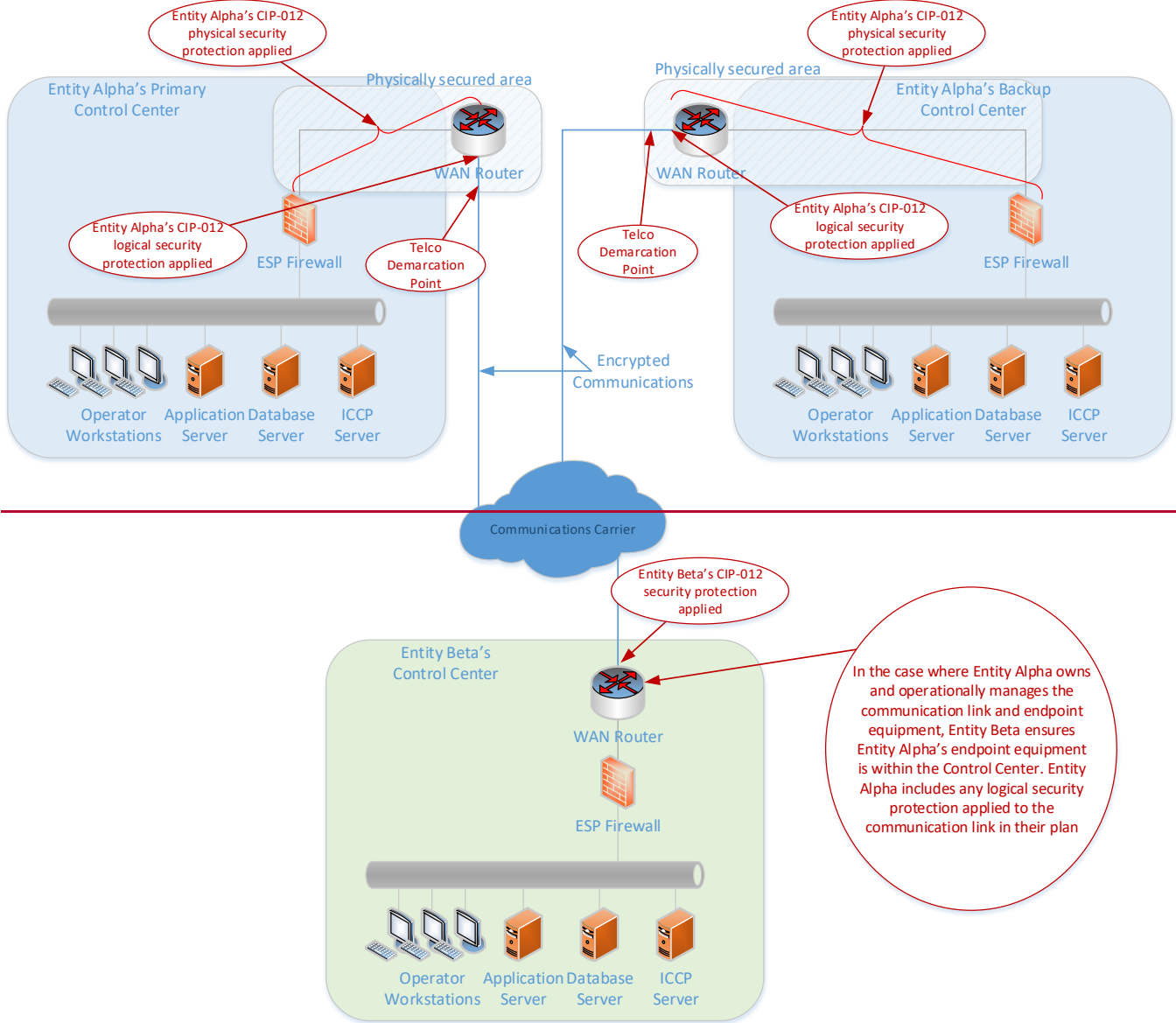


Figure 2: Network diagram and identification of where security protection is applied

Reference Model



Reference Model

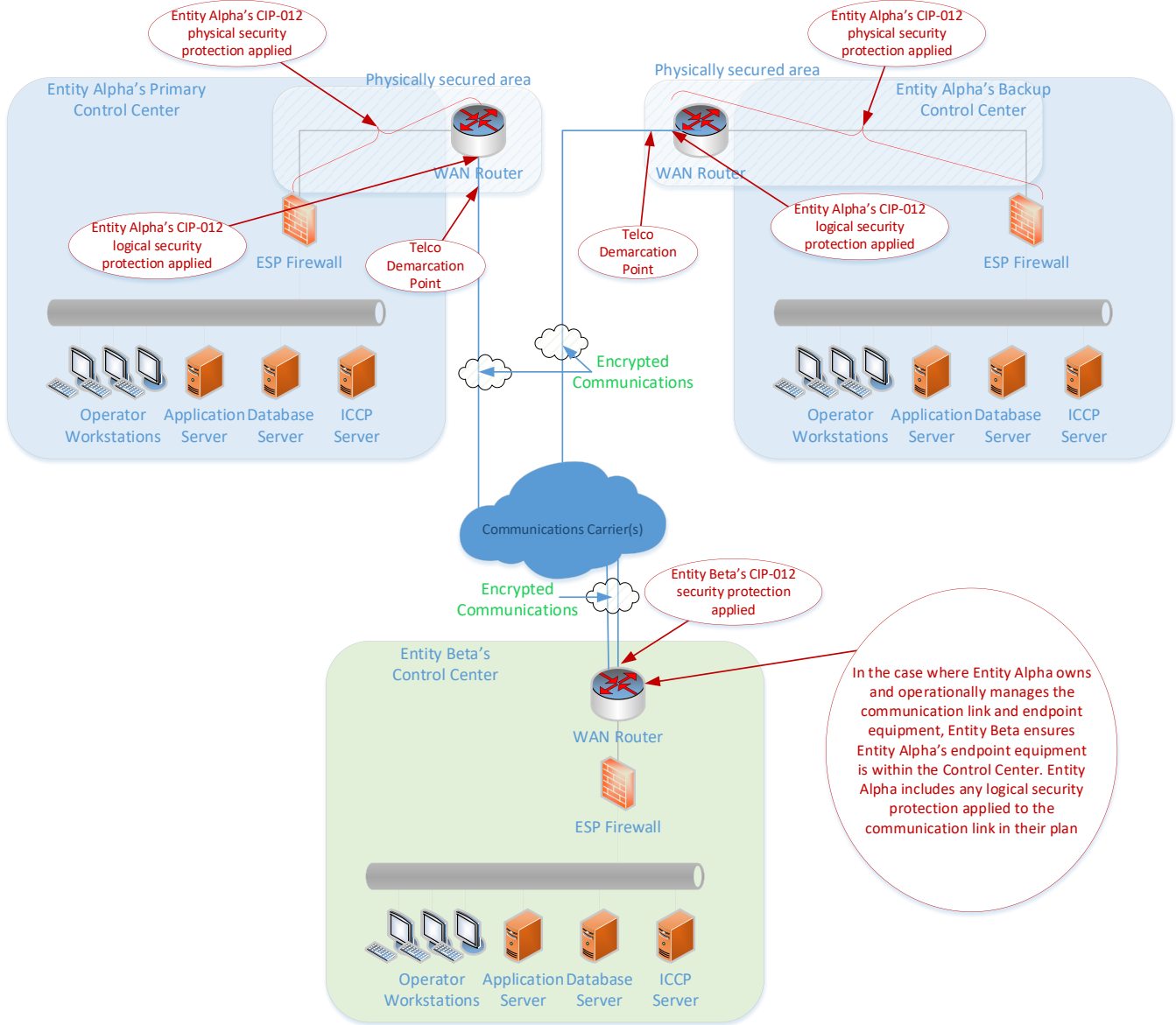


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through November 16, 2022

[Now Available](#)

A 45-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Wednesday, November 16, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the previous comment period are reflected in this draft of the standard.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS is **not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Additional ballots for the standard and implementation plan, as well as non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **November 7 – 16, 2022**.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2020-04 Modifications to CIP-012 | Draft 3
Comment Period Start Date: 10/3/2022
Comment Period End Date: 11/29/2022
Associated Ballots: 2020-04 Modifications to CIP-012 CIP-012-2 AB 3 ST
2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 3 NB
2020-04 Modifications to CIP-012 Implementation Plan AB 3 OT

There were 71 sets of responses, including comments from approximately 164 different people from approximately 110 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. The SDT revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.**
- 2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not please provide comments and suggested requirement language.**
- 3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.**
- 4. The SDT received multiple requests to provide more possible mitigation methods. Do you agree that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit?**
- 5. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.**
- 6. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.**
- 7. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|-----------------|------------|--------|------------------|------------------------|--------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| Chris Carnesi | Chris Carnesi | | WECC | NCPA | Marty Hostler | Northern California Power Agency | 4 | WECC |
| | | | | | Dennis Sismaet | Northern California Power Agency | 6 | WECC |
| Santee Cooper | Chris Wagner | 1 | | Santee Cooper | Christine Pope | Santee Cooper | 1,3,5,6 | SERC |
| | | | | | Rene' Free | Santee Cooper | 1,3,5,6 | SERC |
| WEC Energy Group, Inc. | Christine Kane | 3 | | WEC Energy Group | Christine Kane | WEC Energy Group | 3 | RF |
| | | | | | Matthew Beilfuss | WEC Energy Group, Inc. | 4 | RF |
| | | | | | Clarice Zellmer | WEC Energy Group, Inc. | 5 | RF |
| | | | | | David Boeshaar | WEC Energy Group, Inc. | 6 | RF |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | Marc Donaldson | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |

| | | | | | | | | |
|--|-----------------|---------------|-----|---------------------------|-------------------|--|-----|------|
| | | | | | Ozan Ferrin | Tacoma Public Utilities (Tacoma, WA) | 5 | WECC |
| Eversource Energy | Joshua London | 1 | | Eversource | Joshua London | Eversource Energy | 1 | NPCC |
| | | | | | Vicki O'Leary | Eversource Energy | 3 | NPCC |
| Public Utility District No. 1 of Chelan County | Joyce Gundry | 3 | | CHPD | Meaghan Connell | Public Utility District No. 1 of Chelan County | 5 | WECC |
| | | | | | Glen Pruitt | Public Utility District No. 1 of Chelan County | 6 | WECC |
| | | | | | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | Diane Landry | Public Utility District No. 1 of Chelan County | 1 | WECC |
| DTE Energy - Detroit Edison Company | Karie Barczak | 3 | | DTE Energy - DTE Electric | Adrian Raducea | DTE Energy - Detroit Edison Company | 5 | RF |
| | | | | | Patricia Ireland | DTE Energy - DTE Electric | 4 | RF |
| | | | | | Karie Barczak | DTE Energy - DTE Electric | 3 | RF |
| MRO | Kendra Buesgens | 1,2,3,4,5,6,7 | MRO | MRO NSRF | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Christopher Bills | City of Independence Power & Light | 3,5 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 3 | MRO |
| | | | | | Jamie Monette | Allete - Minnesota Power, Inc. | 1 | MRO |
| | | | | | Larry Heckert | Alliant Energy Corporation Services, Inc. | 4 | MRO |
| | | | | | Marc Gomez | Southwestern Power Administration | 1 | MRO |

| | | | | | | | | |
|---------------------------------------|------------|---|--|----------|-------------------|---------------------------------------|-----------|-----|
| | | | | | Matthew Harward | Southwest Power Pool, Inc. | 2 | MRO |
| | | | | | LaTroy Brumfield | American Transmission Company, LLC | 1 | MRO |
| | | | | | Bryan Sherrow | Kansas City Board Of Public Utilities | 1 | MRO |
| | | | | | Terry Harbour | MidAmerican Energy | 1,3 | MRO |
| | | | | | Jamison Cawley | Nebraska Public Power | 1,3,5 | MRO |
| | | | | | Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| | | | | | Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| | | | | | David Heins | Omaha Public Power District | 1,3,5,6 | MRO |
| | | | | | George Brown | Acciona Energy North America | 5 | MRO |
| | | | | | Jaimin Patel | Saskatchewan Power Corporation | 1 | MRO |
| | | | | | Kimberly Bentley | Western Area Power Administration | 1,6 | MRO |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 1,3,4,5,6 | RF |
| | | | | | Stacey Sheehan | FirstEnergy - FirstEnergy Corporation | 6 | RF |

| | | | | | | | | |
|--------------------------------------|-----------------|----------------------|------|--|-------------------------|--------------------------------------|----|------|
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |
| | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| California ISO | Monika Montez | 2 | WECC | ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4 | Monika Montez | CAISO | 2 | WECC |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | RF |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Elizabeth Davis | PJM | 2 | RF |
| | | | | | Charles Yeung | Southwest Power Pool, Inc. (RTO) | 2 | MRO |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC RSC | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Sheraz Majid | Hydro One Networks, Inc. | 1 | NPCC |
| | | | | | Deidre Altobell | Con Edison | 1 | NPCC |
| | | | | | John Hastings | National Grid | 1 | NPCC |
| | | | | | Jeffrey Streifling | NB Power Corporation | 1 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Chantal Mazza | Hydro Quebec | 1 | NPCC |
| | | | | | Stephanie Ullah-Mazzuca | Orange and Rockland | 1 | NPCC |
| | | | | | Quintin Lee | Eversource Energy | 1 | NPCC |

| | | | |
|-----------------------------------|--|---|------|
| Michael Ridolfino | Central Hudson Gas & Electric Corp. | 1 | NPCC |
| Dan Kopin | Vermont Electric Power Company | 1 | NPCC |
| James Grant | NYISO | 2 | NPCC |
| John Pearson | ISO New England, Inc. | 2 | NPCC |
| Harishkumar Subramani Vijay Kumar | Independent Electricity System Operator | 2 | NPCC |
| Nicolas Turcotte | Hydro-Québec TransEnergie | 1 | NPCC |
| Randy MacDonald | New Brunswick Power Corporation | 2 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |
| David Burke | Orange and Rockland | 3 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| David Kwan | Ontario Power Generation | 4 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 1 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |

| | | | | | | | | |
|------------|------------|--|------|-------------|-----------------|---|----|------|
| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| | | | | | Jason Chandler | Con Edison | 5 | NPCC |
| | | | | | Tracy MacNicoll | Utility Services | 5 | NPCC |
| | | | | | Shivaz Chopra | New York Power Authority | 6 | NPCC |
| | | | | | Vijay Puran | New York State Department of Public Service | 6 | NPCC |
| | | | | | ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| | | | | | David Kiguel | Independent | 7 | NPCC |
| | | | | | Joel Charlebois | AESI | 7 | NPCC |
| Tim Kelley | Tim Kelley | | WECC | SMUD / BANC | Nicole Looney | Sacramento Municipal Utility District | 3 | WECC |
| | | | | | Charles Norton | Sacramento Municipal Utility District | 6 | WECC |
| | | | | | Wei Shao | Sacramento Municipal Utility District | 1 | WECC |
| | | | | | Foung Mua | Sacramento Municipal Utility District | 4 | WECC |
| | | | | | Nicole Goi | Sacramento Municipal Utility District | 5 | WECC |
| | | | | | Kevin Smith | Balancing Authority of Northern California | 1 | WECC |

1. The SDT revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

BC Hydro appreciates the drafting team's efforts to address BC Hydro's previous comments on Draft 2. After reviewing the Standard and Technical Rationale revisions in conjunction with this Draft 3, BC Hydro offers the following comments.

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 has been removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement R1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer

No

Document Name

Comment

While AEP agrees that the proposed language addresses the mitigation of risk identified in FERC Order No. 866, we believe the language is too vague and allows for different interpretations of the requirement. AEP recommends more prescriptive language of what is required to meet compliance for R1.

Additionally, AEP recommends more explicit reference to the CIA (Confidentiality, Integrity, and Availability) triad of information security in the requirement language. The current language only specifically refers to and preserves the "availability" portion of the triad. AEP believes the standard would benefit from including all three parts.

Furthermore, AEP recommends the addition of language referring to "data exchange capabilities" similar to TOP-001-5 R20 and R21 to bring consistency between Transmission Operations standard/requirement language and that of CIP-012.

As such, AEP recommends inclusions to the R1 language regarding the CIA triad and Transmission Operations standards. Suggested requirement language for R1 reads as follows:

"R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks to data exchange capabilities posed by loss of confidentiality, loss of integrity, and loss of availability of data used for Real time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]"

1.1. Identification of method(s) used to mitigate the risks to data exchange capabilities posed by loss of confidentiality and integrity of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;"

Likes 0

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer

No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer

No

Document Name

Comment

PPL NERC Registered Affiliates do not support the proposed changes. Specifically, the proposed R1.3 is overly broad.

PPL NERC Registered Affiliates propose the following revisions to R1.3: "Identification of method(s) used to recover in the recovery of Responsible Entity owned or operated communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;"

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Request more specifics on what the elements of this plan must contain to assist the entity in meeting compliance obligation

Request a clearer definition of "availability"

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

NST believes the latest proposed changes to CIP-012, as well as the latest proposed implementation guidance, fail to clarify the limits of a Responsible Entity's CIP-012 "availability" obligations. We believe the intent of FERC's Order was to focus on protecting the availability of inter- Control Center communications links. Doing so would, by extension, protect the availability of in-transit data. We do not believe FERC intended for CIP-012 revisions to add data availability requirements that extend to sending and receiving Cyber Assets, which in most if not all instances are BES Cyber Systems in Control Centers, and therefore subject to an array of requirements that support availability (including several CIP Standards and EOP-008-2 R1). This is something NERC made note of in its comments to FERC (June 24, 2019) and that FERC acknowledged in its CIP-012 NOPR and Order, even while disagreeing that existing Standards address the availability of communication links and data between Control Centers.

NST notes that R1's proposed language fails to directly address the availability of communication links while, at the same time, including a part (R1.3) that requires Responsible Entities to identify methods to recover them. This omission should be addressed.

NST believes requirements addressing the availability of in-transit data, which in this context, as explained above, is dependent on the availability of functioning communication links between Control Centers, should be set forth in a separate, top-level Requirement, as it was in the SDT's first draft of proposed CIP-012 revisions.

NST suggests a top-level availability Requirement that includes language similar to, "The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate availability risks to communications links between Control Centers and, by extension, to in-transit Real-time Assessment and Real-time monitoring data communicated between Control Centers."

Likes 0

Dislikes 0

Response

Jamie Monette - Allele - Minnesota Power, Inc. - 1

Answer No

Document Name

Comment

MP believes the proposed revisions address the FERC Order, but doesn't feel that CIP-012 is the appropriate standard to address availability. CIP-012 should be focused on providing protection for the data and availability of the data defined in other Ops and Planning Standards.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

The SRC supports a risk-based approach to protecting the availability of data used for Real-time Assessment (RTA) and Real-time monitoring (RTM). That said, we propose a revision to the language in Part 1.2 to clarify and better align with the intent of FERC Order 866 by placing the emphasis on the desired action of "**mitigating the loss of data**" as opposed to "mitigating the [resultant] risks posed [to the BES]" following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), ***tailored according to the risk posed***, used to mitigate the loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss OF THE AVAILABILITY of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer

No

Document Name

Comment

Southern Company proposes the following wording: Identification of method(s) used to mitigate the cyber security risk(s) posed by loss of ability to transmit data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Center;

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

No

Document Name

Comment

Although the FERC order uses “availabilitiy” We suggest using “and loss of data used for ...” in R1. We feel by removing “availability”, it addresses the overall picture of availability without directly using availability and relieves the need to define it. The new measures describe what the requirement is aiming to mitigate, making it clearer for Regional Entities to construct their plans.

Likes 0

Dislikes 0

Response

Deanna Carlson - Cowlitz County PUD - 5

Answer

No

Document Name

Comment

Cowlitz PUD (District) has concern with poor word usage in part 1.1 which misdirects risk mitigation towards after-the-fact unauthorized disclosure and unauthorized modification of data used for Real-time Assessment/monitoring. Risk mitigation should be focused on preventive methods to reduce the risk of unauthorized access to the data. As written, the "methods" would include actions that must be taken to mitigate the impact of unauthorized disclosure. The focus of the requirement should be limited to prevention of unauthorized access. If the SDT desires action to be taken if unauthorized access to the data occurs, this must be limited to improvements on the protective measures upon discovery of the protective measures' failure.

Suggested R1 Part 1.1 edit (emphasis added to denote change):

Identification of method(s) used to mitigate the risks **posed by of** unauthorized disclosure and unauthorized modification of data used for Realtime Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

No

Document Name

Comment

AEPCO suggests changing the language to "**the unavailability of** instead of *loss of availability of data used for*" and adding **data** after Real-time monitoring to help clear up the confusion over the wording of "loss of availability of data":

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure , unauthorized modification, and **the unavailability of** Real-time Assessment and Real-time monitoring **data** while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

Likes 0

Dislikes 0

Response

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E agrees the revised language of Requirement R1 meets the directives outlined in FERC Order 866 on providing the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |

Comment

AZPS agrees that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEI agrees the revised language in CIP-012-1, Requirement R1 meets the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer

Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer

Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer

Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer

Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Robert Follini - Avista - Avista Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|---|-----|
| Response | |
| | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|---|-----|
| Response | |
| | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|---|-----|
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Josh Combs - Black Hills Corporation - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Micah Runner - Black Hills Corporation - 1,3,5,6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Jesus Sammy Alcaraz - Imperial Irrigation District - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Ireland - DTE Energy - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheraz Majid - Hydro One Networks, Inc. - 1

Answer

Document Name

Comment

Additional clarification and/or consistency is required between “loss of availability of data” used in R1, “loss of data” used in Part 1.2, and “loss of data transmission capability” used in the technical rationale.

Likes 0

Dislikes 0

Response

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not please provide comments and suggested requirement language.

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer No

Document Name

Comment

MGE supports the comments of the MRO NSRF.

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer No

Document Name

Comment

AEPCO suggests changing the language to "**the unavailability of** instead of *loss of availability of data used for*" and adding **data** after Real-time monitoring to help clear up the confusion over the wording of "loss of availability of data":

1.2. Identification of method(s) used to mitigate the risk(s) posed by **the unavailability of** Real-time Assessment and Real-time monitoring **data** while such data is being transmitted between Control Centers.

Likes 0

Dislikes 0

Response

Deanna Carlson - Cowlitz County PUD - 5

Answer No

Document Name

Comment

The District agrees with comment provided by Tacoma Power concerning Part 1.2. Again, the focus should not be on after-the-fact data leaks or loss. As written, the responsible entity must provide restoration of lost data; this is of no value since it would no longer be Real-time in nature.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer No

Document Name

Comment

Southern Company proposes the following wording: Identification of method(s) used to mitigate the cyber security risk(s) posed by loss of ability to transmit data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss OF THE AVAILABILITY of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer No

Document Name

Comment

Data loss is too broad and does not specifically address availability as it relates to the FERC order. Wording should include mitigating loss of availability of data while being transmitted between applicable Control Centers and not just data loss.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer

No

Document Name

Comment

As described in our response to Question 1, the SRC supports a risk-based and tailored approach to addressing protections for data availability. That said, we propose the below revision in Part 1.2 to better clarify this intent by placing the emphasis on the desired action of “**mitigating the loss of data**” as opposed to “mitigating the [resultant] risks posed [to the BES]” following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), **tailored according to the risk posed**, used to mitigate the loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

No

Document Name

Comment

LCRA is concerned with what level of risk reduction will be deemed sufficient to meet compliance. This could lead to inconsistent auditing of the standard across the ERO.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| LCRA is concerned with what level of risk reduction will be deemed sufficient to meet compliance. This could lead to inconsistent auditing of the standard across the ERO. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| MP agrees with the NSRF's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |
| R1.2, which in NST's opinion should be a part of a separate top-level Requirement, should require Responsible Entities to identify the methods used to mitigate availability risks to communication links between Control Centers and, by extension, the in-transit data they are carrying. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | No |

Document Name

Comment

While the MRO NSRF acknowledges that FERC Order 866 directed NERC to modify CIP Standards to address availability, the proposed language in CIP-012-2 does not clearly demonstrate how the objectives of the Requirements are different from some other NERC Standard Requirements already in effect. Specifically, EOP-008-2 R1 appears to require addressing the same risks. Our concern is that a single incident could result in multiple violations. The MRO NSRF requests that the SDT provide greater clarity in the proposed CIP-012-2 Requirement language to demonstrate the differences between the cyber-focused Requirement and other operational requirements, such as EOP-008-2 R1. The MRO NSRF requests the SDT address the aforementioned concern in the technical rationale.

The MRO NSRF supports a risk-based approach to protecting the availability of data used for Real-time Assessment (RTA) and Real-time monitoring (RTM). That said, we propose a revision to the language in Part 1.2 to clarify and better align with the intent of FERC Order 866 by placing the emphasis on the desired action of **“mitigating the loss of data”** as opposed to “mitigating the [resultant] risks posed [to the BES]” following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), tailored according to the risk posed, used to mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

No

Document Name

Comment

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.”

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO and TOP Standards?

Request that availability require the same level of detail as version 1’s confidentiality and integrity

Request clarification of "availability" vs "loss of data."

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

No

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Patricia Ireland - DTE Energy - 4

Answer

No

Document Name

Comment

DTE Energy agrees with SOuthern Company's comment:

R1.2 currently is about mitigating the loss of data between control centers, and we think that is way too broad and will be suggesting that this wording change to get it back into the realm of communications and things like redundant circuits. So we'll be voting no and suggesting that it say "mitigate the loss of the ability to transmit data" which we believe does that. Otherwise, it can get into this being applied to processes WITHIN control centers that are producing the data, and that's really not the scope of CIP-012 – so we want the words around the risk to be mitigated to be tightened up.

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

No

Document Name

Comment

The proposed language in CIP-012-2, Requirement R1, Part 1.2, would now require Responsible Entities to mitigate risk(s) posed by loss of data used for RTA and RTM while such data is being transmitted between Control Centers. What specific risk(s) is in scope? Per the current technical rationale for CIP-012-2, Requirement R1, Part 1.2, "the focus of CIP-012 remains cyber protections around maintaining availability". However, there appears to be a potential gap between the proposed language drafted and the intent of the proposed language. The proposed language in CIP-012-2, Requirement R1, Part 1.2, does not explicitly state "cyber security risk" or "cyber risk", so one could argue that an entity may be asked to show evidence of mitigating risks beyond cyber security, which does not appear to be the intent of the proposed language.

In addition, the language of CIP-012-2, Requirement R1, Part 1.2, leads to ambiguity in the intent. The change to the last phrase "such data is" results in a conflicting sentence requirement. Please notice the contradiction in this requirement. "Identification of method(s) used to mitigate the risk(s) posed by the loss of data [...] while such data is being transmitted" (i.e., the data is being transmitted and therefore has not been lost).

Recommend the following proposed language for CIP-012-2 Requirement R1, Part 1.2, to scope the risk(s) associated with CIP-012-2 to cyber security and remove the contradictory ambiguity:

Identification of method(s) used to mitigate cyber security risk(s) to data transmission capability between Control Centers that is used for Real-time Assessment and Real-time monitoring;

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer

No

Document Name

Comment

WEC Energy Group supports the MRO-NSRF comments.

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer

No

Document Name

Comment

PNMR agrees with the proposed language submitted by both Tacoma Power and SMUD for R1.2: "Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers." This more closely aligns with FERC Order 866, which is focused on the availability of data over the loss of data.

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer

No

Document Name

Comment

The scope needs more definition

Likes 0

Dislikes 0

Response

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer

No

Document Name

Comment

Santee Cooper recommends rewording R1.2 to read as “1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers”. Order 866 focused on the availability of data, this is why we are requesting the wording “of the availability” be included.

Likes 0

Dislikes 0

Response

Jesus Sammy Alcaraz - Imperial Irrigation District - 1

Answer

No

Document Name

Comment

The language as drafted in 1.2 focuses on the loss of data not the loss of the ability to transmit data. Proposed adding “of the availability” to 1.2 language.

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

No

Document Name

Comment

AZPS does not believe the language in R1.2 is stated clearly. Does this include data at rest?

AZPS proposes using the language within Question 2:

CURRENT: “mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

PROPOSED: “mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data between Control Centers”

Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

Likes 0

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

*1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;*

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer No

Document Name

Comment

While AEP agrees that the proposed language in R1.2 reflects the need to mitigate the risk of the loss of ability to transmit data, we have concerns similar to those mentioned in our comments on Question #1. AEP recommends more prescriptive language to ensure Responsible Entities are able to meet the sub-requirement.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer

No

Document Name

Comment

Southern Indiana Gas & Electric (SIGE) believes the phrase "risk(s) posed by **loss of data**" is not clear and may be misinterpreted to include a broader scope of data loss scenarios. SIGE believes the scope of R1.2 should clearly refer to the loss of data transmission capability (communication links). SIGE proposes the following revision to Requirement R1.2:

"Identification of method(s) used to mitigate the risk(s) **posed by a loss of data transmission capability** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;"

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

No

Document Name

Comment

BPA feels that as currently written, R1.2 is about mitigating risks arising from loss of data, not mitigating loss of data transmission capabilities. Further, this risk is already required to be mitigated in standard EOP-008-2 R1.

The discussion of physical media breaks in current Technical Rationale further complicates the ability to interpret R1.2.

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC

Answer

No

Document Name

Comment

SMUD and BANC do not feel that the existing language in CIP-012-2 Draft 3 changes the intent of the requirement part, or that the controls that would be put in place to mitigate the risk posed by loss of data or availability used for RTA and RTM would be any different; however, from a consistency perspective, we agree with Tacoma Power that the language should be changed to align with the following language used in R1:

"...one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure , unauthorized modification, **and loss of availability of data** used for Real-time Assessment and Real-time monitoring while such data is being transmitted **between any applicable Control Centers.**"

SMUD and BANC propose the following new language for R1 Part R1.2:

1.2. Identification of method(s) used to mitigate the risk(s) posed by **loss of availability of data** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between **any applicable** Control Centers;

Likes 1

Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

No

Document Name

Comment

CenterPoint Energy Houston Electric, LLC (CEHE) believes the phrase “risk(s) posed by **loss of data**” is not clear and may be misinterpreted to include a broader scope of data loss scenarios. CEHE believes the scope of R1.2 should clearly refer to the loss of data transmission capability (communication links). CEHE proposes the following revision to Requirement R1.2:

“Identification of method(s) used to mitigate the risk(s) **posed by a loss of data transmission capability** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;”

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

No

Document Name

Comment

The requirement specifically addresses: risk(s) posed by loss of data. To address the requirement the RE could list the risks, or negative outcomes that could occur, if there was a loss of data. The RE could then list mitigations to those negative outcomes. This does not involve an analysis of potential causes of data loss, for example the ability to transmit data. Although MH has no issue with the proposed wording for R1.2, the SDT could consider the

following wording to specifically address the ability to transmit: Identification of method(s) used to mitigate the risk(s) posed by the loss of data in transit or the loss of the primary method used to transmit or receive Real-time Assessment and Real-time monitoring data.

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

No

Document Name

Comment

Suggest revise language to focus on the risk of losing the data rather than the risk posed by the loss of data.

Likes 0

Dislikes 0

Response

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer Yes

Document Name [MRO-NSRF_2020-04_UCF_Final_11-16-2022.docx](#)

Comment

Please see the attached file to view MRO NSRF response to this question.

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Constellation aligns with Exelon Corporation in response to this question.</p> <p>Alison Mackellar on behalf of Constellation Segments 5 and 6.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Constellation aligns with Exelon Corporation in response to this question.</p> <p>Kimberly Turco on behalf of Constellation Segments 5 and 6</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>Exelon has elected to align with EEI in response to this question.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEI agrees that Requirement R1, subpart 1.2 addresses the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data, however, the technical rationale provides stronger language as to the intent of this requirement by including the phrase “transmission capability” to describe exactly what this requirement is intending to address. For this reason, consideration should be given to modifying subpart 1.2 as follows:

“Identification of method(s) used to mitigate the risk(s) posed by a loss of data **transmission capability** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;”

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.2.

Likes 0

Dislikes 0

Response

Brian Lindsey - Entergy - 1

Answer Yes

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer Yes

Document Name

Comment

PG&E agrees that Requirement R1, Part 1.2 adequately reflects the need to mitigate the “loss of the ability to transmit Real-time Assessment and Real-time monitoring data”.

As noted in the EEI input for Q2, the Technical Rationale document provides stronger language on the intent of Requirement R1, Part 1.2 by the inclusion of “transmission capability” to describe exactly what the Requirement is intended to address. PG&E concurs with the EEI suggested modification of Part 1.2 to include this language in the Requirement. PG&E does not see this as a substantial modification, just a clarification.

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Micah Runner - Black Hills Corporation - 1,3,5,6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Josh Combs - Black Hills Corporation - 3****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Robert Follini - Avista - Avista Corporation - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mike Magruder - Avista - Avista Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

| | |
|----------------------|---|
| Answer | |
| Document Name | |
| Comment | |
| | <p>Texas RE recommends revising the phrase “posed by” in Requirement R1.2 to “of”. This would more accurately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. As written, CIP-012 R1.2 applies to mitigating the risk posed by the loss of data communications, rather than the method used to mitigate the loss itself. An example of the risk posed by the loss of Real-time Assessment or Real-time monitoring data is not having up to date information used to perform reliability functions. An example of how to mitigate this risk is to create a set of procedures that would allow operators to make a “best guess” as to what actions they should take based on the most recently available Real-time Assessment or Real-time monitoring data.</p> <p>Texas RE also recommends in including “communication links” in the parent Requirement R1. Requirement R1 states the Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data...”. Requirement Part 1.1 refers to unauthorized disclosure, Requirement Part 1.2 refers to loss of data, and Requirement Part 1.4 refers to communication links. While unauthorized disclosure and loss of data are mentioned in the parent requirement, communication links are not. In order to ensure Parts 1.2 and 1.3 are both documented and implemented consistently; Texas RE recommends that R1 is modified to include the following, The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data and communication links...”</p> |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer No

Document Name

Comment

The requirement itself does not provide clarity. It only becomes clear by reading the examples of evidence in the measures section. Additionally, it seems that R1.4 should not be needed since this would inherently be included in R1.1 and R1.2 by themselves. The measures in R1.1 include examples of where protections are applied, which is repetitive to R1.4.

Likes 0

Dislikes 0

Response

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer No

Document Name

Comment

The requirement itself does not provide clarity. It only becomes clear by reading the examples of evidence in the measures section. Additionally, it seems that R1.4 should not be needed since this would inherently be included in R1.1 and R1.2 by themselves. The measures in R1.1 include examples of where protections are applied, which is repetitive to R1.4.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer

No

Document Name

Comment

Ameren believes that R1.4 doesn't include the terms physical or logical, so the need to identify physically or logically is not clear.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Request clarification of “availability” vs “loss of data.”

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

NST believes it is neither practical nor necessary to compel Responsible Entities to identify the “where” of its availability protections, and we therefore recommend that it be removed from R1.4. We believe R1.2’s requirement to identify and describe availability protections is sufficient.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

R1.4 could be included in R1.1 and R1.2, which would make the standard read easier.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

| | |
|--|----|
| Document Name | |
| Comment | |
| R1.4 could be included in R1.1 and R1.2, which would make the standard read easier. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

Yes

Document Name

Comment

PG&E agrees that Requirement R1, Part 1.4 provides clarity along with the Measures for Requirement R1 on the need to identify the physical or logical methods applied for Requirement R1, Parts 1.1 and 1.2.

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer

Yes

Document Name

Comment

The newly updated Measures section includes examples of physical and logical evidence for R1.4

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Yes

Document Name

Comment

While it is clear for R1.1 and R1.2 to be included in R1.4, it is not clear why R1.3 would not also be included. Suggest adding R1.3 to the scope of R1.4 scope.

Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1, 1.2 and 1.3

Likes 0

Dislikes 0

Response

Brian Lindsey - Entergy - 1

Answer

Yes

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

AZPS agrees that the language in R1.4 provides clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.4.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEl agrees that R1.4 provides Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Exelon has elected to align with EEl in response to this question.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon has elected to align with EEl in response to this question.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Robert Follini - Avista - Avista Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|---|-----|
| Response | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|-----|
| Response | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|--|
| Response | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer

Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Patricia Ireland - DTE Energy - 4****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE notes that Part 1.4, states the following, "Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and". Texas RE seeks clarification on why Part 1.3 was not added as an applicable Part needed for "Identification". As where the Responsible Entity has implemented method(s) used to recover communication links is just as important from an availability and enforceable perspective.

Additionally, Texas RE seeks clarification on why Part 1.3 was not added as an applicable Part needed for "Identification" for Part 1.5. As where each Responsible Entity has implemented method(s) used to recover communication links is just as important from an coordination, availability, and enforceable perspective.

Likes 0

Dislikes 0

Response

4. The SDT received multiple requests to provide more possible mitigation methods. Do you agree that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit?

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

The SRC appreciates the SDT's effort to modify Measure M1 to provide more examples of mitigation methods; however, we're uncertain how one example of evidence, M1, Part 1.2, bullet #3, may be shared with an auditor as CIP-013, R2 explicitly states:

"the following issues are beyond the scope of Requirement R2: (1) the actual terms and conditions of a procurement contract; and (2) vendor performance and adherence to a contract."

Therefore, the IRC SRC requests clarification on how an entity may demonstrate evidence of the measure below if it would violate an NDA that a Responsible Entity may have signed.

- service level agreements with carriers containing high availability provisions

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

More clarity on what redundancy means and what level of contingency is required.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

More clarity on what redundancy means and what level of contingency is required.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

NST believes the SDT's well-intentioned attempt to provide mitigation method examples has resulted in measures and guidance ideas that blur where an entity's CIP-012 obligations would begin and end. Examples include, "procedures explaining the use of alternative systems or methods for providing for the availability of the data," and "Methods for the recovery of links such as standard operating procedures, CIP-009 recovery plan(s), or similar technical recovery plans."

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer No

Document Name

Comment

Understand that the SDT is providing flexibilities in terms of documentations for support responsibilities and restoration assignments – but we think clear prescriptive methods would help to avoid finger pointing.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Do not agree these new Measures are consistent with a plan. Recommend the Requirements need to set clearer expectations. The Requirements want "methods." Request updates that address this feedback.

Request clarification on unavailable third-party infrastructure information.

What are the entity's responsibilities/expectations regarding third parties and their infrastructure?

Request clarification of how inadequate infrastructure availability impacts CIP-012 and the TOP-003-4/IRO-010-4 Standards. Because CIP-012 R1 mandates a plan.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

No

Document Name

Comment

The proposed language in CIP-012-2, Measure M1, Part 1.2, does not seem to meet the intent of the technical rationale or the SDT proposed language for CIP-012-2, Requirement R1, Part 1.2. For example, a report indicating uptime does not support mitigation of a risk that data might be lost due to the scenarios listed in the technical rationale.

Recommend the SDT review the proposed language for CIP-012-2 Requirement R1, Part 1.2; Measure M1, Part 1.2; and the technical rationale to ensure they are all consistent.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

BHE recommends removing the measure “availability or uptime reports” as an applicable measure for P1.2. Reports detailing uptime or availability metrics are not applicable for the mitigation of risk posed by loss of data. The SDT should consider removing this measure in order to clarify that availability targets are not required by P1.2.

Likes 0

Dislikes 0

Response**Alison MacKellar - Constellation - 5**

Answer

Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response**Kimberly Turco - Constellation - 6**

Answer

Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response**Daniel Gacek - Exelon - 1**

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that M1 provides adequate examples for entities for each subpart. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |

Comment

BHE recommends removing the measure “availability or uptime reports” as an applicable measure for P1.2. Reports detailing uptime or availability metrics are not applicable for the mitigation of risk posed by loss of data. The SDT should consider removing this measure in order to clarify that availability targets are not required by P1.2.

Likes 0

Dislikes 0

Response**Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF**

Answer

Yes

Document Name

Comment

The NAGF supports the addition of examples of methods to mitigate risk posed by loss of Real-time assessment and monitoring data while in transit.

Likes 0

Dislikes 0

Response**Marcus Bortman - APS - Arizona Public Service Co. - 6**

Answer

Yes

Document Name

Comment

AZPS agrees that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit

Likes 0

Dislikes 0

Response**Micah Runner - Black Hills Corporation - 1,3,5,6**

Answer

Yes

Document Name

Comment

Black Hills Corporation (BHP) agrees and supports EEI comments.

Likes 0

Dislikes 0

Response**Josh Combs - Black Hills Corporation - 3**

Answer

Yes

Document Name

Comment

Black Hills Corporation (BHP) agrees and supports EEI comments.

Likes 0

Dislikes 0

Response**Sheila Suurmeier - Black Hills Corporation - 5**

Answer

Yes

Document Name

Comment

Black Hills Corporation (BHP) agrees and supports EEI comments.

Likes 0

Dislikes 0

Response**Claudine Bates - Black Hills Corporation - 1,3,5,6**

Answer

Yes

Document Name

Comment

Black Hills Corporation (BHP) agrees and supports EEI comments.

Likes 0

Dislikes 0

Response

Brian Lindsey - Entergy - 1

Answer

Yes

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Yes

Document Name

Comment

There is still confusion related to acceptable controls "other than encryption" to meet the security objectives. While each measure may not meet the security objective in and of itself, could collectively be considered a measure to mitigate the risk and should be included.

WECC suggests:

Consider adding the following additional Measures to Part 1.1

- Own, operate, and manage the communication link
- Monitor, detect, alert and response

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| No comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>PG&E agrees that the Requirement R1 Measures (M1) provide adequate examples on the mitigation of risks posed by the loss of Read-time assessment and Real-time monitoring data while in transit..</p> <p>PG&E also agrees with the EEI suggestion that the text “Examples of evidence may include, but are not limited to the following examples (by subpart):” be added above the actual examples.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1</p> | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Ireland - DTE Energy - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| <p>Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| <p>Robert Follini - Avista - Avista Corporation - 3</p> | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Sheraz Majid - Hydro One Networks, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| It is unclear how fourth bullet in the measures of Part 1.2 related to availability/uptime reports would be beneficial in demonstrating compliance. Suggest to remove. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

5. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer No

Document Name

Comment

PG&E cannot determine if the proposed modifications meet the FERC directive in a cost effective manner until the Standard has been approved and then determine the actual impact on our operations.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Implementation and maintenance of redundant links to all facilities within scope of the CIP-012-2 standard would be extremely costly. Dedicated equipment and personnel would be required to maintain and preserve the integrity of the links to comply with the standard.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Please refer to BC Hydro comments in response to Question #1. BC Hydro has not yet implemented a solution for CIP-012-1, therefore it is not in a position to identify the additional costs related to the Project 2020-04 CIP-012-2 changes.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

Document Name

Comment

GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach.

Likes 0

Dislikes 0

Response

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer No

Document Name

Comment

See comments on question 2.

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer No

Document Name

Comment

An expectation from the ERO to comply with this new Standard, which would drive Responsible Entities to increase SLA levels, could result in cost-prohibitive roadblocks to implementation

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do, NST cannot comment on the cost-effectiveness of its latest proposed modifications.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

It is uncertain the cost to implement due to the SLAs with Internet Service Providers (ISPs) to achieve adequate risk mitigation.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

It is uncertain the cost to implement due to the SLAs with Internet Service Providers (ISPs) to achieve adequate risk mitigation.

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

| | |
|---|-----|
| Answer | No |
| Document Name | |
| Comment | |
| NextEra Energy does not provide feedback on cost-effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |

No comments

Likes 0

Dislikes 0

Response

Brian Lindsey - Entergy - 1

Answer

Yes

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

AZPS agrees that the proposed modifications in CIP-012-2 meet the FERC directives in a cost-effective manner.

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Yes

Document Name

Comment

BHE feels the question is difficult to answer due to the inherent dependency of inter-entity coordination as prescribed by this standard. Costs incurred by one entity may be unviable compared to the associated costs conferred upon another entity. Entities which have elected to participate in a common

data exchange hosted by a separate entity (such as an ISO) become dependent on the preferred availability solution of the hosting entity and those associated costs.

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mike Magruder - Avista - Avista Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Robert Follini - Avista - Avista Corporation - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jesus Sammy Alcaraz - Imperial Irrigation District - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Ireland - DTE Energy - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer

Document Name

Comment

No Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Josh Combs - Black Hills Corporation - 3

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Document Name

Comment

BHE feels the question is difficult to answer due to the inherent dependency of inter-entity coordination as prescribed by this standard. Costs incurred by one entity may be unviable compared to the associated costs conferred upon another entity. Entities which have elected to participate in a common data exchange hosted by a separate entity (such as an ISO) become dependent on the preferred availability solution of the hosting entity and those associated costs.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments.

Likes 0

Dislikes 0

Response

6. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer No

Document Name

Comment

Answer is based on current supply chain lead times. It has taken us over 18 months working with AT&T to install a simple circuit and receive equipment, some other sites even longer. This leaves the utility little time for other testing, implementing configuration changes, scheduling outages and placing new circuits into production.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

The SRC believes a 24-month implementation plan is inadequate. More time is needed to accommodate annual budget planning cycles required for capital expenditures and the lead-time required for supply chain considerations, which can be up to two years. Depending upon when the standard is approved, the annual budget planning cycle for some entities may have just ended. In addition, there is currently a one-year lead-time when placing orders for new equipment. Therefore, we propose an implementation time period of 36 months.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do, NST cannot comment on an implementation timetable.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

As identified in BC Hydro's answers to Questions 1 to 4 and 5, at this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012.

Likes 0

Dislikes 0

Response

Robert Follini - Avista - Avista Corporation - 3

Answer

No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past effective date. If entities have to work with ATT for further improvements to mitigate loss, then we might need some additional time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer

No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past effective date. If entities have to work with ATT for further improvements to mitigate loss, then we might need some additional time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Mike Magruder - Avista - Avista Corporation - 1

Answer

No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past the effective date. If entities have to work with ATT for further improvements to mitigate loss, then we may need more time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer

No

Document Name

Comment

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

Implementation in many cases is dependent on the availability of additional hardware to add any additional functionality to meet the standard. Additionally, data connections which may be hosted by a common entity between several other entities may be dependent on hardware provided by the hosting entity. BHE feels flexibility in implementation for entities who can establish circumstances outside their control for failure to implement on time is highly desirable.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer

Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

Yes

Document Name

Comment

We support a 24-month implementation plan pending the scope of availability.

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

Yes

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEI supports a 24 month implementation plan.

Likes 0

Dislikes 0

Response

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

Implementation in many cases is dependent on the availability of additional hardware to add any additional functionality to meet the standard. Additionally, data connections which may be hosted by a common entity between several other entities may be dependent on hardware provided by the hosting entity. BHE feels flexibility in implementation for entities who can establish circumstances outside their control for failure to implement on time is highly desirable.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed 24-month implementation plan.

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS still agrees with the proposed implementation timeframe.

Likes 0

Dislikes 0

Response

Brian Lindsey - Entergy - 1

Answer Yes

Document Name

Comment

No comment

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer Yes

Document Name

Comment

No comments

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer Yes

Document Name

Comment

PG&E supports the 24-month Implementation Plan.

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer Yes

Document Name

| | |
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| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Lindsey Mannion - ReliabilityFirst - 10****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Ireland - DTE Energy - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jesus Sammy Alcaraz - Imperial Irrigation District - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

| | |
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| Answer | Yes |
|---------------|-----|

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| Document Name | |
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| Comment |
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| Likes 0 |
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| Dislikes 0 |
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| Response |
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Josh Combs - Black Hills Corporation - 3

| | |
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| Answer | Yes |
|---------------|-----|

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| Document Name | |
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| Comment |
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| Likes 0 |
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| Dislikes 0 |
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| Response |
|-----------------|

Sheila Suurmeier - Black Hills Corporation - 5

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

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| Document Name | |
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| Comment |
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| Likes 0 |
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| Dislikes 0 |
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| Response |
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Claudine Bates - Black Hills Corporation - 1,3,5,6

| | |
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| Answer | Yes |
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| Document Name | |
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| Comment |
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Likes 0

Dislikes 0

Response

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments.

Likes 0

Dislikes 0

Response

7. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Document Name

Comment

With the advent of CIP-012 including controls for communications between Control Centers, consider retiring CIP-006 R1.10 for better alignment within the CIP standards.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

FirstEnergy feels the Implementation Guidance were very helpful

Likes 0

Dislikes 0

Response

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

Document Name

Comment

PG&E thanks the SDT for the effort in working with the industry in completing these modifications.

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

Document Name

Comment

The Implementation Guidance and Technical Rationale documents for CIP-012-2 reference the use of incident response plans (CIP-008) and recovery plans (CIP-009) as supporting evidence for CIP-012-2, Requirement R1.3. Requirement R1.3 speaks to recovery plans and the measures only refer to CIP-009 recovery plans. It appears that CIP-008 incident response plans would not be relevant for R1.3. CEHE seeks clarification on the use of CIP-008 incident response plans to satisfy R1.3.

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Document Name

Comment

The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Document Name

Comment

No additional comments

Likes 0

Dislikes 0

Response

Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC

Answer

Document Name

Comment

Xcel Energy believes that updates to the Technical Rationale and Implementation Guidance should be made to provide better clarity on the difference between the cybersecurity-related requirements of CIP-012-2 R1.2 and the operational requirements in EOP-008-2 R1.2. If Responsible Entities and ERO auditors cannot clearly distinguish between the two NERC Requirements, then the possibility of double jeopardy may exist.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

While the SDT has removed the term “availability” from the Requirements and sub-parts, the term remains in the Purpose and Measures. BPA suggests removing the term throughout the standard.CIP-012 focuses on using physical and technical means to secure data while in-transit.

Securing data while in transit requires either physical hardware encryption devices or software based encryption and integrity checks. Physical encryption is not cost effective and impacts the timely manner of data received over links that are slow. The cost of redesign of the architecture of systems to implement physical encryption is also high. Logical encryption such as SSL/TLS which uses certificate based encryption cannot be supported end to end with certain devices and impacts the real-time data that is needed instantly. Maintaining these certificates also poses additional challenges as CC to CC is not always owned by the same entity.

Likes 0

Dislikes 0

Response

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer

Document Name

Comment

The Implementation Guidance and Technical Rationale documents for CIP-012-2 reference the use of incident response plans (CIP-008) and recovery plans (CIP-009) as supporting evidence for CIP-012-2, Requirement R1.3. Requirement R1.3 speaks to recovery plans and the measures only refer to CIP-009 recovery plans. It appears that CIP-008 incident response plans would not be relevant for R1.3. SIGE seeks clarification on the use of CIP-008 incident response plans to satisfy R1.3.

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

Document Name

Comment

We recommend that the SDT be consistent and use either “risks” or “risk(s)” in R1., parts 1.1., and 1.2. We would prefer the parenthetical version. We appreciate the diligent work of the drafting team to incorporate industry feedback in this draft.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

Document Name

Comment

BC Hydro suggests adding more clarity to the term 'availability' by providing a more detailed definition.

Although the SDT has proposed the use of the NIST definition of "Ensuring timely and reliable access to and use of information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at entities to which this standard applies, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.

Likes 0

Dislikes 0

Response

Justin Kuehne - AEP - 6

| | |
|--|--|
| Answer | |
| Document Name | |
| Comment | |
| AEP appreciates the efforts of the SDT on this revision. No further comments at this time. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | |
| Document Name | |
| Comment | |
| No Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Brian Lindsey - Entergy - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jack Stamper - Clark Public Utilities - 3 - WECC | |
| Answer | |
| Document Name | |

Comment

The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.

Likes 0

Dislikes 0

Response**Marcus Bortman - APS - Arizona Public Service Co. - 6****Answer****Document Name****Comment**

AZPS has no additional comments at this time.

Likes 0

Dislikes 0

Response**Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF****Answer****Document Name****Comment**

The NAGF has no additional comments.

Likes 0

Dislikes 0

Response**Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6****Answer****Document Name****Comment**

1. Implementation Guidance

- i. On pages 2-3 of the Implementation Guidance, the STD has a section titled “Mitigate Risks Associated with Unauthorized Disclosure and Modification”. In reviewing this section, the SDT appears to comingle “preventative” measures with mitigating measures. For example, physical security of data cabling is more of a preventive measure, and does not mitigate the impact of the disclosure of the data or modification of the data once it has occurred. The SDT should review this section and specify whether they are looking for preventive or mitigating measures.
- ii. On page 3 of the redline version of the Implementation Guidance, the SDT struct different “protocol” and modified the language to different “systems”, and the examples were changed from DNP3 and ICCP to primary and secondary. Is the SDT confirming that the same type of system, e.g., two ICCP circuits, can be used as long as the paths are diverse?
- iii. On page 8 of the redlined Implementation Guidance, the SDT states “Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center.” In looking at Figure 3, the SDT has indicated that “Entity Alpha’s CIP-012 physical security protection applied” includes communication cabling “inside” the Control Center’s PSP, and not just the cabling and router outside of the PSP. We believe the SDT needs to update the Figure to only show a need for CIP-012 physical protection outside of the Control Center PSP.
- iv. On page 10 of the Implementation Guidance, in Figure 2, the SDT has indicated one communication link from the Primary Control Center. To be compliant, does not Entity Alpha have to indicate additional communication links to its back-up Control Center along with a secondary communication link to Entity Beta’s Control Center? The SDT should modify the Figure as it does not coincide well with Figure 1 provided by the SDT.

1. Technical Rationale

- i. On page v of the technical rationale, if your Control Center connects to a GOP that is owned by a separate entity, how are you supposed to verify whether the GOP is an applicable Control Center?
- ii. On page vii of the technical rationale, the SDT states “but the potential situation exists where there are substation with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation.” This language is confusing because the language of Control Center is “monitor and control”, if entities are supposed to look at “impact”, then multiple relays at different locations could be involved, including GOPs and TOPs. The SDT should revise this language and specifically note that “impact” is not to be evaluated, but only direct control.
- iii. For Figure 4 in the technical rationale, if the control room operator at Entity B location 1 provides TOP-003 data to Entity A TOP for both Location 1 and Location 2 via a manual entry messaging system directly from Entity B Location 1 to Entity A TOP Control Center, e.g., outage information, then that specific data link would be included in CIP-012, correct?

Likes 0

Dislikes 0

Response

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer

Document Name

Comment

PPL NERC Registered Affiliates do not support the proposed changes. Specifically, the proposed R1.3 is overly broad.

PPL NERC Registered Affiliates propose the following revisions to R1.3: "Identification of method(s) used to recover in the recovery of Responsible Entity owned or operated communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;"

Likes 0

Dislikes 0

Response

Silvia Mitchell - NextEra Energy - Florida Power and Light Co. - 1

Answer

Document Name

Comment

NextEra Energy supports EEI's comments

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer

Document Name

Comment

WEC Energy Group supports the MRO-NSRF comments.

Additionally, the NIST definition of Availability listed in the Implementation Guidance and the Technical Rational differs. Request the SDT to align the definitions.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

Document Name

Comment

SPP Supports all the comments filed by the NSRF.

In addition, the proposed language introduces three concepts that introduce confusion:

First, the entity becomes responsible for a documented plan to mitigate situations where data becomes unavailable without scoping that risk. Is this risk to the other party, the sending party, the receiving party, or all parties? Is it risk to the reliable operation of the BES, risk to the exchange of data, or risk to the corruption or theft of the data?

Second, a data-providing entity now bears responsibility to document a plan of action to mitigate the risk to operations at another entity when that entity loses access to data for any reason in any way. The methods used by parties to fulfill the responsibility of a RTA or RTM are varied and far-reaching. Expecting all parties in the network of exchanged data to understand the implications of lost data and to keep up with the changes to those implications is excessively burdensome when the sending party has no opportunity or ability to assist the receiving party. The responsibility of a party providing data to another, under current NERC Standards, ends at the point at which the other party receives the data. This language would expand that scope and cause entities to cover risks that (i) are already mitigated, and (ii) the responsibility of other entities.

Third, the language overlaps in Measure and evidence with existing NERC Standards that cover RTA, RTM, and data exchange agreements. If an entity, as indicated by members of the SDT, can simply point to the evidence already submitted for these existing NERC Standards, there is only added confusion instead of value.

Finally, the SDT should clarify the extent to which an entity is responsible for mitigating the risk of data loss when that data is transmitted by a third-party. For instance, if a Transmission Operator's data is consumed by a Balancing Authority that in turn shares that Transmission Operator's data with a neighboring Reliability Coordinator, would Part 1.1 now become the responsibility of the Transmission Operator to mitigate for the risk of the Reliability Coordinator losing access to the data that is provided over the Balancing Authority's network infrastructure?

Likes 0

Dislikes 0

Response

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer

Document Name

Comment

On the SDT webinar on October 24, 2022, mention was made of how existing plans for other standards can be leveraged as evidence of compliance with CIP-012-2, in order to minimize resources spent on documentation. The MRO NSRF requests the SDT further clarify the differences required in CIP-012-2 versus EOP-008-2, IRO-010-3 & TOP-003-3 in supplemental documentation and how a responsible entity can leverage such as evidence of compliance.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer**Document Name****Comment**

CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity, and availability.

Recommend CIP-012 provide greater specifications of this plan.

R1 indicates “..to mitigate the risks posed by unauthorized disclosure and, unauthorized modification of, and loss of availability of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers.” While R1.1, R1.2, and R1.3 indicate “...between Control Centers” and R1.5 indicates “if the Control Centers..” . We suggest adding the wording “applicable” to R1.1, R1.2, R.1.3, and R1.5.

Likes 0

Dislikes 0

Response

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer**Document Name****Comment**

On the SDT webinar on October 24, 2022, mention was made of how existing plans for other standards can be leveraged as evidence of compliance with CIP-012-2, in order to minimize resources spent on documentation. The MRO NSRF requests the SDT further clarify the differences required in CIP-012-2 versus EOP-008-2, IRO-010-3 & TOP-003-3 in supplemental documentation and how a responsible entity can leverage such as evidence of compliance.

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer

Document Name

Comment

CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity, and availability. Recommend CIP-012 provide greater specifications of this plan.

R1 indicates "...to mitigate the risks posed by unauthorized disclosure and, unauthorized modification of, and loss of availability of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers." While R1.1, R1.2, and R1.3 indicate "...between Control Centers" and R1.5 indicates "if the Control Centers.." . We suggest adding the wording "applicable" to R1.1, R1.2, R.1.3, and R1.5.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

As noted in our responses to Questions 1-6, NST believes the proposed changes to CIP-012 implementation guidance reduce rather than add clarity about what a Responsible Entity must or might do to address new availability requirements. We find suggestions to the effect that an Entity might rely on its CIP-008 and CIP-009 plans to address parts of CIP-012 to be of particular concern, for reasons including the fact such guidance creates at least the potential for "double jeopardy" situations in compliance audits. FERC wrote Order 866 precisely because the Commission believes CIP-002 through CIP-011 do NOT address protection and recovery of communication links between Control Centers, so in NST's opinion, the SDT should refrain from suggesting that perhaps they do and should therefore be considered for inclusion in an Entity's CIP-012 compliance narratives.

NST also believes the SDT should refrain from making suggestions such as, on page 4, " Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution." To repeat, it is NST's opinion that FERC did not intend for CIP-012 revisions to add data availability requirements that include sending and receiving Cyber Assets that are within, as opposed to between, Control Centers.

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer

Document Name

Comment

MP agrees with the NSRF's comments.

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1

Answer

Document Name

Comment

LCRA is worried about the number of connections the standard is starting to include. Recent guidance by NERC and Regional Entities suggests an expansion in scope of the CIP-012 standard to include connections with other entities that do not fit the definition of Control Center. These entities forward data to their RC, BA, or TOP and it has been suggested that the entire connection is applicable to CIP-012. This may yield inconsistent application of the standard across the ERO. Specifically, in the CIP-012-2 Implementation Guidance it is stated that "Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview." LCRA would recommend more guidance on applicability of the standard.

Furthermore, the increased scope of the standard is bringing communication networks into scope that were previously excluded under exemption 4.2.3.2. Utilizing CIP-009 as a method for achieving compliance with out-of-scope systems provides additional compliance risk.

LCRA has found that the use of "Real-time Assessment and Real-time monitoring" being used in each Requirement Part adds to the complexity of the standard. LCRA proposes the use of "data" in parentheses following the first use of the term (e.g., ... and loss of availability of data used for Real-time Assessment and Real-time monitoring (data)).

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

LCRA is worried about the number of connections the standard is starting to include. Recent guidance by NERC and Regional Entities suggests an expansion in scope of the CIP-012 standard to include connections with other entities that do not fit the definition of Control Center. These entities forward data to their RC, BA, or TOP and it has been suggested that the entire connection is applicable to CIP-012. This may yield inconsistent application of the standard across the ERO. Specifically, in the CIP-012-2 Implementation Guidance it is stated that "Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview." LCRA would recommend more guidance on applicability of the standard.

Furthermore, the increased scope of the standard is bringing communication networks into scope that were previously excluded under exemption 4.2.3.2. Utilizing CIP-009 as a method for achieving compliance with out-of-scope systems provides additional compliance risk.

LCRA has found that the use of "Real-time Assessment and Real-time monitoring" being used in each Requirement Part adds to the complexity of the standard. LCRA proposes the use of "data" in parentheses following the first use of the term (e.g., ... and loss of availability of data used for Real-time Assessment and Real-time monitoring (data)).

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer

Document Name

Comment

The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer

Document Name

Comment

Southern Company proposes 1.5 should include parts 1.1 through 1.3

Southern Company proposed Language for 1.5 - If the Control Centers are owned or operated by different Responsible Entities, **document the agreement** of identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1 and 1.2.

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Document Name

Comment

None at this time.

Likes 0

Dislikes 0

Response

Summer Esquerre - NextEra Energy - 5

Answer

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

Document Name

Comment

We would like to thank the SDT for continuing to listen to industry feedback to meet the FERC order and not create overly burdensome requirements.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments.

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

We would like to thank the SDT for allowing feedback to meet the FERC order.

Likes 0

Dislikes 0

Response

Consideration of Comments

| | |
|----------------------------|---|
| Project Name: | 2020-04 Modifications to CIP-012 Draft 3 |
| Comment Period Start Date: | 10/3/2022 |
| Comment Period End Date: | 11/29/2022 |
| Associated Ballots: | 2020-04 Modifications to CIP-012 CIP-012-2 AB 3 ST 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 3 NB 2020-04 Modifications to CIP-012 Implementation Plan AB 3 OT |

There were 71 sets of responses, including comments from approximately 164 different people from approximately 110 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Vice President of Engineering and Standards, [Soo Jin Kim](#) (via email) or at (404) 446-9742.

Questions

1. The SDT revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not please provide comments and suggested requirement language.

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

4. The SDT received multiple requests to provide more possible mitigation methods. Do you agree that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit?

5. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

6. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed,

[please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.](#)

[7. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.](#)

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|-----------------|------------|--------|------------------|------------------------|----------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| Chris Carnesi | Chris Carnesi | | WECC | NCPA | Marty Hostler | Northern California Power Agency | 4 | WECC |
| | | | | | Dennis Sismaet | Northern California Power Agency | 6 | WECC |
| Santee Cooper | Chris Wagner | 1 | | Santee Cooper | Christine Pope | Santee Cooper | 1,3,5,6 | SERC |
| | | | | | Rene' Free | Santee Cooper | 1,3,5,6 | SERC |
| WEC Energy Group, Inc. | Christine Kane | 3 | | WEC Energy Group | Christine Kane | WEC Energy Group | 3 | RF |
| | | | | | Matthew Beilfuss | WEC Energy Group, Inc. | 4 | RF |
| | | | | | Clarice Zellmer | WEC Energy Group, Inc. | 5 | RF |

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|-------------------------------|---------------|---|------|--------------|-----------------|--|-----------|------|
| | | | | | David Boeshaar | WEC Energy Group, Inc. | 6 | RF |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | Marc Donaldson | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |
| | | | | | Ozan Ferrin | Tacoma Public Utilities (Tacoma, WA) | 5 | WECC |
| Eversource Energy | Joshua London | 1 | | Eversource | Joshua London | Eversource Energy | 1 | NPCC |
| | | | | | Vicki O'Leary | Eversource Energy | 3 | NPCC |
| Public Utility District No. 1 | Joyce Gundry | 3 | | CHPD | Meaghan Connell | Public Utility District No. 1 of Chelan County | 5 | WECC |

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|-------------------------------------|-----------------|---------------|-----|---------------------------|-------------------|--|-----|------|
| of Chelan County | | | | | Glen Pruitt | Public Utility District No. 1 of Chelan County | 6 | WECC |
| | | | | | Joyce Gundry | Public Utility District No. 1 of Chelan County | 3 | WECC |
| | | | | | Diane Landry | Public Utility District No. 1 of Chelan County | 1 | WECC |
| DTE Energy - Detroit Edison Company | Karie Barczak | 3 | | DTE Energy - DTE Electric | Adrian Raducea | DTE Energy - Detroit Edison Company | 5 | RF |
| | | | | | Patricia Ireland | DTE Energy - DTE Electric | 4 | RF |
| | | | | | Karie Barczak | DTE Energy - DTE Electric | 3 | RF |
| MRO | Kendra Buesgens | 1,2,3,4,5,6,7 | MRO | MRO NSRF | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Christopher Bills | City of Independence Power & Light | 3,5 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 3 | MRO |
| | | | | | Jamie Monette | Allete - Minnesota Power, Inc. | 1 | MRO |

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|-------------------|---|---------|-----|
| Larry Heckert | Alliant Energy Corporation Services, Inc. | 4 | MRO |
| Marc Gomez | Southwestern Power Administration | 1 | MRO |
| Matthew Harward | Southwest Power Pool, Inc. | 2 | MRO |
| LaTroy Brumfield | American Transmission Company, LLC | 1 | MRO |
| Bryan Sherrow | Kansas City Board Of Public Utilities | 1 | MRO |
| Terry Harbour | MidAmerican Energy | 1,3 | MRO |
| Jamison Cawley | Nebraska Public Power | 1,3,5 | MRO |
| Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| David Heins | Omaha Public Power District | 1,3,5,6 | MRO |
| George Brown | Acciona Energy North America | 5 | MRO |

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|---------------------------------------|-----------------|---|------|-------------------|------------------|---------------------------------------|-----------|------|
| | | | | | Jaimin Patel | Saskatchewan Power Corporation | 1 | MRO |
| | | | | | Kimberly Bentley | Western Area Power Administration | 1,6 | MRO |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 1,3,4,5,6 | RF |
| | | | | | Stacey Sheehan | FirstEnergy - FirstEnergy Corporation | 6 | RF |
| Michael Johnson | Michael Johnson | | WECC | PG&E All Segments | Marco Rios | Pacific Gas and Electric Company | 1 | WECC |
| | | | | | Sandra Ellis | Pacific Gas and Electric Company | 3 | WECC |

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|--------------------------------------|---------------|----------------------|------|--|------------------|--------------------------------------|----|------|
| | | | | | James Mearns | Pacific Gas and Electric Company | 5 | WECC |
| California ISO | Monika Montez | 2 | WECC | ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4 | Monika Montez | CAISO | 2 | WECC |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | RF |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Elizabeth Davis | PJM | 2 | RF |
| | | | | | Charles Yeung | Southwest Power Pool, Inc. (RTO) | 2 | MRO |
| | | | | | | | | |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC RSC | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Sheraz Majid | Hydro One Networks, Inc. | 1 | NPCC |
| | | | | | Deidre Altobell | Con Edison | 1 | NPCC |

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|--------------------------------------|---|---|------|
| John Hastings | National Grid | 1 | NPCC |
| Jeffrey Streifling | NB Power Corporation | 1 | NPCC |
| Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| Chantal Mazza | Hydro Quebec | 1 | NPCC |
| Stephanie Ullah-Mazzuca | Orange and Rockland | 1 | NPCC |
| Quintin Lee | Eversource Energy | 1 | NPCC |
| Michael Ridolfino | Central Hudson Gas & Electric Corp. | 1 | NPCC |
| Dan Kopin | Vermont Electric Power Company | 1 | NPCC |
| James Grant | NYISO | 2 | NPCC |
| John Pearson | ISO New England, Inc. | 2 | NPCC |
| Harishkumar Subramani Vijay Kumar | Independent Electricity System Operator | 2 | NPCC |
| Nicolas Turcotte | Hydro-Quebec TransEnergie | 1 | NPCC |

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|--------------------|--|---|------|
| Randy MacDonald | New Brunswick Power Corporation | 2 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| Michael Jones | National Grid | 3 | NPCC |
| David Burke | Orange and Rockland | 3 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| David Kwan | Ontario Power Generation | 4 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 1 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |

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| | | | | | Sean Cavote | PSEG | 4 | NPCC |
| | | | | | Jason Chandler | Con Edison | 5 | NPCC |
| | | | | | Tracy MacNicoll | Utility Services | 5 | NPCC |
| | | | | | Shivaz Chopra | New York Power Authority | 6 | NPCC |
| | | | | | Vijay Puran | New York State Department of Public Service | 6 | NPCC |
| | | | | | ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| | | | | | David Kiguel | Independent | 7 | NPCC |
| | | | | | Joel Charlebois | AESI | 7 | NPCC |
| Tim Kelley | Tim Kelley | | WECC | SMUD / BANC | Nicole Looney | Sacramento Municipal Utility District | 3 | WECC |
| | | | | | Charles Norton | Sacramento Municipal Utility District | 6 | WECC |
| | | | | | Wei Shao | Sacramento Municipal Utility District | 1 | WECC |

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|--|--|--|--|--|-------------|--|---|------|
| | | | | | Foung Mua | Sacramento Municipal Utility District | 4 | WECC |
| | | | | | Nicole Goi | Sacramento Municipal Utility District | 5 | WECC |
| | | | | | Kevin Smith | Balancing Authority of Northern California | 1 | WECC |

1. The SDT revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not please provide comments and suggested requirement language.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

| | |
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| Answer | No |
|---------------|----|

| | |
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| Document Name | |
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Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
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| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

| | |
|--|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>BC Hydro appreciates the drafting team’s efforts to address BC Hydro's previous comments on Draft 2. After reviewing the Standard and Technical Rationale revisions in conjunction with this Draft 3, BC Hydro offers the following comments.</p> <p>Although the wording in Requirement R2 of Draft 3 of CIP-012-2 has been removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement R1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.</p> <p>The changes in Requirement R1 in Draft 3 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).</p> <p>BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.</p> <p>Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. Please see the updated Measures section within the standard and the Technical Rationale regarding redundancy as a *potential* method to mitigate the cyber risks addressed in CIP-012. Regarding the ability of an entity to use redundancy to meet the cyber security objectives of the requirements, FERC Order 866 clearly indicates in the Commission Determination that redundancy is an acceptable method of achieving part of the cyber security objective of the standard. In Order 866, in the Commission Determination, they state, “We (the Commission) recognize that the redundancy of communication links cannot always be guaranteed; responsible entities should therefore plan for both recovery of compromised communication links and use of backup communication capability should it be needed for redundancy (i.e., satellite or other alternate backup communications).”¹

While CIP-002-5.1a does mention redundancy in the “Real-time Operations” section, it is mentioned in a context specific to BES Cyber Assets and BES Cyber Systems. The controls for CIP-012 are scoped via R1 specifically to the transmission of RTA and RTM data while in transit *between* Control Centers. Should an entity choose not to employ redundancy as part of their plan to meet the CIP-012 requirements, other measures are also available for consideration.

The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive (emphasis added), “...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers”. As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk.

Please see the updated Measures in the standard, the Technical Rationale, and the Implementation Guidance regarding a definition for availability and examples of controls that may be implemented as part of the Responsible Entity’s plan.

Justin Kuehne - AEP - 6

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

¹ FERC Order 866 P 35

While AEP agrees that the proposed language addresses the mitigation of risk identified in FERC Order No. 866, we believe the language is too vague and allows for different interpretations of the requirement. AEP recommends more prescriptive language of what is required to meet compliance for R1.

Additionally, AEP recommends more explicit reference to the CIA (Confidentiality, Integrity, and Availability) triad of information security in the requirement language. The current language only specifically refers to and preserves the "availability" portion of the triad. AEP believes the standard would benefit from including all three parts.

Furthermore, AEP recommends the addition of language referring to "data exchange capabilities" similar to TOP-001-5 R20 and R21 to bring consistency between Transmission Operations standard/requirement language and that of CIP-012.

As such, AEP recommends inclusions to the R1 language regarding the CIA triad and Transmission Operations standards. Suggested requirement language for R1 reads as follows:

*"R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks **to data exchange capabilities** posed by **loss of confidentiality, loss of integrity, and loss of availability** of data used for Real time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]"*

*1.1. Identification of method(s) used to mitigate the risks **to data exchange capabilities** posed by **loss of confidentiality and integrity** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;"*

Likes 0

Dislikes 0

Response

Thank you for your comment and suggested modifications to the draft language. Please see the updated Measures section within the standard and the Technical Rationale regarding examples of evidence that may be used to meet the mitigation objectives of CIP-012. The SDT agrees that more clarity in the scoping of the standard language was needed regarding the risks and a loss of data transmission capability. As

such, please see the revised language of the draft standard. While the loss of data communication capability may accompany a loss of confidentiality and integrity, this may also occur independently.

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

*1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;*

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly.

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

PPL NERC Registered Affiliates do not support the proposed changes. Specifically, the proposed R1.3 is overly broad.

PPL NERC Registered Affiliates propose the following revisions to R1.3: “Identification of method(s) used to recover in the recovery of Responsible Entity owned or operated communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;”

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that additional clarity was needed in part 1.3 and has modified the language accordingly. Please see the revised draft standard language.

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the responses to ISO-RTO council and NPCC.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

No

Document Name

Comment

Request more specifics on what the elements of this plan must contain to assist the entity in meeting compliance obligation

Request a clearer definition of “availability”

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the revised standard language, the Measures section of the standard and the Implementation Guidance regarding examples of how an entity may document and meet the security objectives. Please see the Technical Rationale and Implementation Guidance regarding the concept of availability.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

NST believes the latest proposed changes to CIP-012, as well as the latest proposed implementation guidance, fail to clarify the limits of a Responsible Entity's CIP-012 "availability" obligations. We believe the intent of FERC's Order was to focus on protecting the availability of inter- Control Center communications links. Doing so would, by extension, protect the availability of in-transit data. We do not believe FERC intended for CIP-012 revisions to add data availability requirements that extend to sending and receiving Cyber Assets, which in most if not all instances are BES Cyber Systems in Control Centers, and therefore subject to an array of requirements that support availability (including several CIP Standards and EOP-008-2 R1). This is something NERC made note of in its comments to FERC (June 24, 2019) and that FERC acknowledged in its CIP-012 NOPR and Order, even while disagreeing that existing Standards address the availability of communication links and data between Control Centers.

NST notes that R1's proposed language fails to directly address the availability of communication links while, at the same time, including a part (R1.3) that requires Responsible Entities to identify methods to recover them. This omission should be addressed.

NST believes requirements addressing the availability of in-transit data, which in this context, as explained above, is dependent on the availability of functioning communication links between Control Centers, should be set forth in a separate, top-level Requirement, as it was in the SDT's first draft of proposed CIP-012 revisions.

NST suggests a top-level availability Requirement that includes language similar to, "The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate availability risks to communications links between Control Centers and, by extension, to in-transit Real-time Assessment and Real-time monitoring data communicated between Control Centers."

Likes 0

Dislikes 0

Response

Thank you for your comment and suggested modifications. The SDT has considered this and has revised the language to better reflect the scoping. Please see the revised language, Technical Rationale, and Implementation Guidance for more details.

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer No

Document Name

Comment

MP believes the proposed revisions address the FERC Order, but doesn't feel that CIP-012 is the appropriate standard to address availability. CIP-012 should be focused on providing protection for the data and availability of the data defined in other Ops and Planning Standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive (emphasis added), "...the Commission directs NERC to develop modifications to the **CIP Reliability Standards**

to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers”. As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk.

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

The SRC supports a risk-based approach to protecting the availability of data used for Real-time Assessment (RTA) and Real-time monitoring (RTM). That said, we propose a revision to the language in Part 1.2 to clarify and better align with the intent of FERC Order 866 by placing the emphasis on the desired action of **“mitigating the loss of data”** as opposed to “mitigating the [resultant] risks posed [to the BES]” following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), **tailored according to the risk posed**, used to mitigate the loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment and suggested modifications. The SDT has modified the language to better reflect the scoping of CIP-012, while maintaining the risk-based approach.

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss OF THE AVAILABILITY of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

Southern Company proposes the following wording: Identification of method(s) used to mitigate the cyber security risk(s) posed by loss of ability to transmit data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Center;

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in subpart R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer No

Document Name

Comment

Although the FERC order uses “availablitiy” We suggest using “and loss of data used for ...” in R1. We feel by removing “availability”, it addresses the overall picture of availability without directly using availability and relieves the need to define it. The new measures describe what the requirement is aiming to mitigate, making it clearer for Regional Entities to construct their plans.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in subpart R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Deanna Carlson - Cowlitz County PUD - 5

Answer No

Document Name

Comment

Cowlitz PUD (District) has concern with poor word usage in part 1.1 which misdirects risk mitigation towards after-the-fact unauthorized disclosure and unauthorized modification of data used for Real-time Assessment/monitoring. Risk mitigation should be focused on preventive methods to reduce the risk of unauthorized access to the data. As written, the “methods” would include actions that must be taken to mitigate the impact of unauthorized disclosure. The focus of the requirement should be limited to prevention of unauthorized access. If the

SDT desires action to be taken if unauthorized access to the data occurs, this must be limited to improvements on the protective measures upon discovery of the protective measures' failure.

Suggested R1 Part 1.1 edit (emphasis added to denote change):

Identification of method(s) used to mitigate the risks **posed by of** unauthorized disclosure and unauthorized modification of data used for Realtime Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. Please review R1 regarding the requirement to implement a CIP-012 plan to mitigate the risks in part 1.1.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

AEPCO suggests changing the language to "**the unavailability of** instead of *loss of availability of data used for*" and adding **data** after Real-time monitoring to help clear up the confusion over the wording of "loss of availability of data":

R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure , unauthorized modification, and **the unavailability of** Real-time Assessment and Real-time monitoring **data** while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [Violation Risk Factor: Medium] [Time Horizon: Operations Planning]

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment and revised language suggestion. After consideration, the SDT agrees that more clarity was needed for the language and modified the language in subpart R1.2. Please see the revised standard language regarding data transmission capability.

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your response.

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your response.

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer No

Document Name

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your response. | |
| Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E agrees the revised language of Requirement R1 meets the directives outlined in FERC Order 866 on providing the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. | |

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comments | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No Comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Thank you for your support. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The NAGF supports the proposed language for Requirement 1. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| EEI agrees the revised language in CIP-012-1, Requirement R1 meets the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please see the response to EEI. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Exelon has elected to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see the response to EEI. | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see the response to Exelon Corporation. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Thank you for your support. Please see the response to Exelon Corporation.

Summer Esquerre - NextEra Energy - 5

Answer Yes

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Thank you for your support. Please see the response to EEI.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Robert Follini - Avista - Avista Corporation - 3 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your support.

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer Yes

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Jesus Sammy Alcaraz - Imperial Irrigation District - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Patricia Ireland - DTE Energy - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joshua London - Eversource Energy - 1, Group Name Eversource | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

| | |
|---|--|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Sheraz Majid - Hydro One Networks, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| Additional clarification and/or consistency is required between “loss of availability of data” used in R1, “loss of data” used in Part 1.2, and “loss of data transmission capability” used in the technical rationale. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly. | |

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not please provide comments and suggested requirement language.

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer No

Document Name

Comment

MGE supports the comments of the MRO NSRF.

Likes 0

Dislikes 0

Response

Thank you for your response. Please see response to MRO NSRF.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer No

Document Name

Comment

AEPCO suggests changing the language to "**the unavailability of** instead of *loss of availability of data used for*" and adding **data** after Real-time monitoring to help clear up the confusion over the wording of "loss of availability of data":

1.2. Identification of method(s) used to mitigate the risk(s) posed by **the unavailability of** Real-time Assessment and Real-time monitoring **data** while such data is being transmitted between Control Centers.

Likes 0

| | |
|--|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly. | |
| Deanna Carlson - Cowlitz County PUD - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| The District agrees with comment provided by Tacoma Power concerning Part 1.2. Again, the focus should not be on after-the-fact data leaks or loss. As written, the responsible entity must provide restoration of lost data; this is of no value since it would no longer be Real-time in nature. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | No |
| Document Name | |
| Comment | |

Southern Company proposes the following wording: Identification of method(s) used to mitigate the cyber security risk(s) posed by loss of ability to transmit data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

Answer

No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss OF THE AVAILABILITY of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer No

Document Name

Comment

Data loss is too broad and does not specifically address availability as it relates to the FERC order. Wording should include mitigating loss of availability of data while being transmitted between applicable Control Centers and not just data loss.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

As described in our response to Question 1, the SRC supports a risk-based and tailored approach to addressing protections for data availability. That said, we propose the below revision in Part 1.2 to better clarify this intent by placing the emphasis on the desired action of

“mitigating the loss of data” as opposed to “mitigating the [resultant] risks posed [to the BES]” following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), tailored according to the risk posed, used to mitigate the loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the language to better address the scoping of CIP-012 while maintaining the risk-based approach.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

LCRA is concerned with what level of risk reduction will be deemed sufficient to meet compliance. This could lead to inconsistent auditing of the standard across the ERO.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the associated VSL for Requirement R1. Please also see the expanded measure section for ways in which the responsible entity may demonstrate compliance. Additionally, the implementation guidance has additional details regarding risk mitigation.

James Baldwin - Lower Colorado River Authority - 1

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| LCRA is concerned with what level of risk reduction will be deemed sufficient to meet compliance. This could lead to inconsistent auditing of the standard across the ERO. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see the associated VSL for Requirement R1. Please also see the expanded measure section for ways in which the responsible entity may demonstrate compliance. Additionally, the implementation guidance has additional details regarding risk mitigation. | |
| Jamie Monette - Allele - Minnesota Power, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| MP agrees with the NSRF's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to MRO NSRF. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |

Comment

R1.2, which in NST's opinion should be a part of a separate top-level Requirement, should require Responsible Entities to identify the methods used to mitigate availability risks to communication links between Control Centers and, by extension, the in-transit data they are carrying.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer

No

Document Name

Comment

While the MRO NSRF acknowledges that FERC Order 866 directed NERC to modify CIP Standards to address availability, the proposed language in CIP-012-2 does not clearly demonstrate how the objectives of the Requirements are different from some other NERC Standard Requirements already in effect. Specifically, EOP-008-2 R1 appears to require addressing the same risks. Our concern is that a single incident could result in multiple violations. The MRO NSRF requests that the SDT provide greater clarity in the proposed CIP-012-2 Requirement language to demonstrate the differences between the cyber-focused Requirement and other operational requirements, such as EOP-008-2 R1. The MRO NSRF requests the SDT address the aforementioned concern in the technical rationale.

The MRO NSRF supports a risk-based approach to protecting the availability of data used for Real-time Assessment (RTA) and Real-time monitoring (RTM). That said, we propose a revision to the language in Part 1.2 to clarify and better align with the intent of FERC Order 866 by placing the emphasis on the desired action of “**mitigating the loss of data**” as opposed to “mitigating the [resultant] risks posed [to the BES]” following a loss of data which could be interpreted to be a much broader task.

1.2. Identification of method(s), tailored according to the risk posed, used to mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to MRO NSRF comments.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.”

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO and TOP Standards?

Request that availability require the same level of detail as version 1’s confidentiality and integrity

Request clarification of “availability” vs “loss of data.”

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive, “...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers”. As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure **within** the primary control center and do not address data in motion **between** other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer No

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to MRO NSRF.

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| ISO-NE is in support of comments developed by ISO-RTO council and NPCC. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment, please see response to NPCC and the ISO-RTO council. | |
| Patricia Ireland - DTE Energy - 4 | |
| Answer | No |
| Document Name | |
| Comment | |
| DTE Energy agrees with SOuthern Company's comment: | |
| <p><i>R1.2 currently is about mitigating the loss of data between control centers, and we think that is way too broad and will be suggesting that this wording change to get it back into the realm of communications and things like redundant circuits. So we'll be voting no and suggesting that it say "mitigate the loss of the ability to transmit data" which we believe does that. Otherwise, it can get into this being applied to processes WITHIN control centers that are producing the data, and that's really not the scope of CIP-012 – so we want the words around the risk to be mitigated to be tightened up.</i></p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your comment, the team does not see this as Southern Company’s comment from this ballot. However, the SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

| | |
|----------------------|----|
| Answer | No |
| Document Name | |

Comment

The proposed language in CIP-012-2, Requirement R1, Part 1.2, would now require Responsible Entities to mitigate risk(s) posed by loss of data used for RTA and RTM while such data is being transmitted between Control Centers. What specific risk(s) is in scope? Per the current technical rationale for CIP-012-2, Requirement R1, Part 1.2, “the focus of CIP-012 remains cyber protections around maintaining availability”. However, there appears to be a potential gap between the proposed language drafted and the intent of the proposed language. The proposed language in CIP-012-2, Requirement R1, Part 1.2, does not explicitly state “cyber security risk” or “cyber risk”, so one could argue that an entity may be asked to show evidence of mitigating risks beyond cyber security, which does not appear to be the intent of the proposed language.

In addition, the language of CIP-012-2, Requirement R1, Part 1.2, leads to ambiguity in the intent. The change to the last phrase “such data is” results in a conflicting sentence requirement. Please notice the contradiction in this requirement. “Identification of method(s) used to mitigate the risk(s) posed by the loss of data [...] while such data is being transmitted” (i.e., the data is being transmitted and therefore has not been lost).

Recommend the following proposed language for CIP-012-2 Requirement R1, Part 1.2, to scope the risk(s) associated with CIP-012-2 to cyber security and remove the contradictory ambiguity:

Identification of method(s) used to mitigate cyber security risk(s) to data transmission capability between Control Centers that is used for Real-time Assessment and Real-time monitoring;

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT agrees that more clarity was needed. Please see the revised Technical Rationale and draft standard language for additional clarity.

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer No

Document Name

Comment

WEC Energy Group supports the MRO-NSRF comments.

Likes 0

Dislikes 0

Response

Thank you for your comment, please see response to MRO-NSRF.

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer No

Document Name

Comment

PNMR agrees with the proposed language submitted by both Tacoma Power and SMUD for R1.2: "Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers." This more closely aligns with FERC Order 866, which is focused on the availability of data over the loss of data.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has revised the language based on the suggestions.

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer No

Document Name

Comment

The scope needs more definition

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has modified the language to better address the scoping of CIP-012 while maintaining the risk-based approach.

Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper

Answer No

Document Name

Comment

Santee Cooper recommends rewording R1.2 to read as “1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers”. Order 866 focused on the availability of data, this is why we are requesting the wording “of the availability” be included.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Jesus Sammy Alcaraz - Imperial Irrigation District - 1

Answer No

Document Name

Comment

The language as drafted in 1.2 focuses on the loss of data not the loss of the ability to transmit data. Proposed adding “of the availability” to 1.2 language.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer No

Document Name

Comment

AZPS does not believe the language in R1.2 is stated clearly. Does this include data at rest?

AZPS proposes using the language within Question 2:

CURRENT: “mitigate the risk(s) posed by loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers.

PROPOSED: “mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data between Control Centers”

Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

Likes 0

Dislikes 0

Response

Thank you for your comment. Regarding data at rest, please see R1 which states “while such data is being transmitted” which scopes the requirement to data in motion.

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

*1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;*

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Justin Kuehne - AEP - 6

Answer No

Document Name

Comment

While AEP agrees that the proposed language in R1.2 reflects the need to mitigate the risk of the loss of ability to transmit data, we have concerns similar to those mentioned in our comments on Question #1. AEP recommends more prescriptive language to ensure Responsible Entities are able to meet the sub-requirement.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has updated the language in both the parent requirement for R1 as well as sub part R1.2 to provide better clarity in the risk that this cyber security standard is addressing.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it

would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. The SDT has updated the language in both the parent requirement for R1 as well as sub part R1.2 to provide better clarity in the risk that this cyber security standard is addressing. Please see the updated Measures section within the standard and the Technical Rationale regarding redundancy as a potential method to mitigate the cyber risks addressed in CIP-012. Regarding the ability of an entity to use redundancy to meet the cyber security objectives of the requirements, FERC Order 866 clearly indicates in the Commission Determination that redundancy is an acceptable method of achieving part of the cyber security objective of the standard. In Order 866, in the Commission Determination, they state, “We (the Commission) recognize that the redundancy of communication links cannot always be guaranteed; responsible entities should therefore plan for both recovery of compromised communication links and use of backup communication capability should it be needed for redundancy (i.e., satellite or other alternate backup communications).” Please see the revised Requirement R1 language reinforcing the cyber aspect of this Requirement.

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

Southern Indiana Gas & Electric (SIGE) believes the phrase “risk(s) posed by **loss of data**” is not clear and may be misinterpreted to include a broader scope of data loss scenarios. SIGE believes the scope of R1.2 should clearly refer to the loss of data transmission capability (communication links). SIGE proposes the following revision to Requirement R1.2:

“Identification of method(s) used to mitigate the risk(s) **posed by a loss of data transmission capability** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;”

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

No

Document Name

Comment

BPA feels that as currently written, R1.2 is about mitigating risks arising from loss of data, not mitigating loss of data transmission capabilities. Further, this risk is already required to be mitigated in standard EOP-008-2 R1.

The discussion of physical media breaks in current Technical Rationale further complicates the ability to interpret R1.2.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Regarding EOP-008-2, the SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive, “...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers”. As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk. Also, in Section 29 of FERC order 866, FERC states: *“The contention in NERC’s comments that Reliability Standard EOP-008-2 could also help maintain the availability of communication links between bulk electric system Control Centers, rests on the same reasoning that the ancillary benefits of an existing Reliability Standard addresses the reliability gap identified by the Commission and concomitant availability directive in Order No. 822. While we agree that a requirement to maintain a backup Control Center arguably provides a level of redundancy for a responsible entity’s overall operations, it does not require redundant and diversely routed communication paths between either the primary and backup Control Centers or third- party Control Centers.”*

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

SMUD and BANC do not feel that the existing language in CIP-012-2 Draft 3 changes the intent of the requirement part, or that the controls that would be put in place to mitigate the risk posed by loss of data or availability used for RTA and RTM would be any different; however, from a consistency perspective, we agree with Tacoma Power that the language should be changed to align with the following language used in R1:

“...one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure , unauthorized modification, **and loss of availability of data** used for Real-time Assessment and Real-time monitoring while such data is being transmitted **between any applicable**

Control Centers."

SMUD and BANC propose the following new language for R1 Part R1.2:

1.2. Identification of method(s) used to mitigate the risk(s) posed by **loss of availability of data** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between **any applicable** Control Centers;

Likes 1

Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

No

Document Name

Comment

As worded in CIP-012 Draft 3, it appears that R1 Part R1.2 is focused on a different security concern than FERC Order 866. FERC Order 866 is focused on the availability of data, while the proposed wording of R1 Part 1.2 is focused on the loss of data, which could be interpreted as data loss as a result of a breach, as opposed to the loss of data availability. Data Availability is a very different concern, with a very different impact and risk profile.

Suggested R1 Part 1.2 edit (emphasis added to denote change):

1.2. Identification of method(s) used to mitigate the risk(s) posed by loss **OF THE AVAILABILITY** of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer No

Document Name

Comment

CenterPoint Energy Houston Electric, LLC (CEHE) believes the phrase “risk(s) posed by **loss of data**” is not clear and may be misinterpreted to include a broader scope of data loss scenarios. CEHE believes the scope of R1.2 should clearly refer to the loss of data transmission capability (communication links). CEHE proposes the following revision to Requirement R1.2:

“Identification of method(s) used to mitigate the risk(s) **posed by a loss of data transmission capability** used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;”

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly.

| | |
|---|----|
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The requirement specifically addresses: risk(s) posed by loss of data. To address the requirement the RE could list the risks, or negative outcomes that could occur, if there was a loss of data. The RE could then list mitigations to those negative outcomes. This does not involve an analysis of potential causes of data loss, for example the ability to transmit data. Although MH has no issue with the proposed wording for R1.2, the SDT could consider the following wording to specifically address the ability to transmit: Identification of method(s) used to mitigate the risk(s) posed by the loss of data in transit or the loss of the primary method used to transmit or receive Real-time Assessment and Real-time monitoring data.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.</p> | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Suggest revise language to focus on the risk of losing the data rather than the risk posed by the loss of data.</p> | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. Please see the revised standard language regarding data transmission capability.

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer No

Document Name

Comment

NA

Likes 0

Dislikes 0

Response

NA

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

Likes 0

Dislikes 0

Response

NA

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

Answer No

| | |
|--|--|
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| NA | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | MRO-NSRF_2020-04_UCF_Final_11-16-2022.docx |
| Comment | |
| Please see the attached file to view MRO NSRF response to this question. | |
| (Inserted from document) | |
| <p>While the MRO NSRF acknowledges that FERC Order 866 directed NERC to modify CIP Standards to address availability, the proposed language in CIP-012-2 does not clearly demonstrate how the objectives of the Requirements are different from some other NERC Standard Requirements already in effect. Specifically, EOP-008-2 R1 appears to require addressing the same risks. Our concern is that a single incident could result in multiple violations. The MRO NSRF requests that the SDT provide greater clarity in the proposed CIP-012-2 Requirement language to demonstrate the differences between the cyber-focused Requirement and other operational requirements, such as EOP-008-2 R1. The MRO NSRF requests the SDT address the aforementioned concern in the technical rationale.</p> <p>The MRO NSRF supports a risk-based approach to protecting the availability of data used for Real-time Assessment (RTA) and Real-time monitoring (RTM). That said, we propose a revision to the language in Part 1.2 to clarify and better align with the intent of FERC Order 866 by placing the emphasis on the desired action of "mitigating the loss of data" as opposed to "mitigating the [resultant] risks posed [to the BES]" following a loss of data which could be interpreted to be a much broader task.</p> | |

1.2. Identification of method(s), tailored according to the risk posed, used to mitigate the ~~risk(s) posed by~~ loss of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

Likes 0

Dislikes 0

Response

Thank you for your comment. To further clarify the distinction between CIP-012 and Operation and Planning Standards, the Standard Drafting Team has updated language in the parent requirement and language in R1.2 to better reflect the focus on the cyber risk to include the risk of the loss of the ability to communicate RTA and RTM data between Control Centers.

The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive, "...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers". As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk. Also, in Section 29 of FERC order 866, FERC states: *"The contention in NERC's comments that Reliability Standard EOP-008-2 could also help maintain the availability of communication links between bulk electric system Control Centers, rests on the same reasoning that the ancillary benefits of an existing Reliability Standard addresses the reliability gap identified by the Commission and concomitant availability directive in Order No. 822. While we agree that a requirement to maintain a backup Control Center arguably provides a level of redundancy for a responsible entity's overall operations, it does not require redundant and diversely routed communication paths between either the primary and backup Control Centers or third- party Control Centers."*

While the SDT asserts that CIP-012 Cyber Security Requirements pertain only to communications between Control Centers, the SDT cannot offer specific guidance on how to comply with the Requirement and would refer questions of compliance guidance back to the ERO or respective Regional Entities.

Summer Esquerre - NextEra Energy - 5

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| please reference EEI's comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please See response to EEI's comment. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please see response to EEI's question. | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Thank you for your support. Please see response to EEI's question.

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your support. Please see response to EEI's question.

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Exelon has elected to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI's question. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>EEI agrees that Requirement R1, subpart 1.2 addresses the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data, however, the technical rationale provides stronger language as to the intent of this requirement by including the phrase "transmission capability" to describe exactly what this requirement is intending to address. For this reason, consideration should be given to modifying subpart 1.2 as follows:</p> <p>"Identification of method(s) used to mitigate the risk(s) posed by a loss of data transmission capability used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;"</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| The NAGF supports the proposed language for Requirement 1.2. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | Yes |
| Document Name | |
| Comment | |

PG&E agrees that Requirement R1, Part 1.2 adequately reflects the need to mitigate the “loss of the ability to transmit Real-time Assessment and Real-time monitoring data”.

As noted in the EEI input for Q2, the Technical Rationale document provides stronger language on the intent of Requirement R1, Part 1.2 by the inclusion of “transmission capability” to describe exactly what the Requirement is intended to address. PG&E concurs with the EEI suggested modification of Part 1.2 to include this language in the Requirement. PG&E does not see this as a substantial modification, just a clarification.

Likes 0

Dislikes 0

Response

Thank you for your support.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joshua London - Eversource Energy - 1, Group Name Eversource | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|---|-----|
| Thank you for your support. | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Robert Follini - Avista - Avista Corporation - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Texas RE recommends revising the phrase “posed by” in Requirement R1.2 to “of”. This would more accurately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. As written, CIP-012 R1.2 applies to mitigating the risk posed by the loss of data communications, rather than the method used to mitigate the loss itself. An example of the risk posed by the loss of Real-time Assessment or Real-time monitoring data is not having up to date information used to perform reliability functions. An example of how to mitigate this risk is to create a set of procedures that would allow operators to make a “best guess” as to what actions they should take based on the most recently available Real-time Assessment or Real-time monitoring data.</p> <p>Texas RE also recommends in including “communication links” in the parent Requirement R1. Requirement R1 states the Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data...”. Requirement Part 1.1 refers to unauthorized disclosure, Requirement Part 1.2 refers to loss of data, and Requirement Part 1.4 refers to communication links. While unauthorized disclosure and loss of data are mentioned in the parent requirement, communication links are not. In order to ensure Parts 1.2 and 1.3 are both documented and implemented consistently; Texas RE recommends that R1 is modified to include the following, The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data and communication links...”</p> | |
| Likes | 0 |

Dislikes 0

Response

Thank you for your comment. The Standard Drafting Team has updated R1.2 to better reflect the focus on the cyber risk to include the risk of the loss of the ability to communicate RTA and RTM data between Control Centers.

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not please provide comments and suggested requirement language.

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer No

Document Name

Comment

The requirement itself does not provide clarity. It only becomes clear by reading the examples of evidence in the measures section. Additionally, it seems that R1.4 should not be needed since this would inherently be included in R1.1 and R1.2 by themselves. The measures in R1.1 include examples of where protections are applied, which is repetitive to R1.4.

Likes 0

Dislikes 0

Response

Thank you for your comment. The Standard Drafting Team has reviewed your recommendation. Requirements R1.1. and R1.2 as demonstrated in Measures M1.1 and M1.2 are required to be identified in the CIP-012 plan, whereas Requirement R1.4 is meant to be demonstrated through separate documentation as identified in M1.4. In CIP-012-1, the question of “Where” was addressed as a separate element that needed to be covered in its own part. Please see the technical rationale and implementation guidance; specifically, page three (3) of the NERC endorsed guidance for CIP-0012-1 and the currently proposed standard language of R1.4 provides clarity with respect to these concerns. The SDT has updated the language in Measure 1 Part 1.1 to provide clarity around the types of evidence that may be used to demonstrate compliance.

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer No

Document Name

Comment

The requirement itself does not provide clarity. It only becomes clear by reading the examples of evidence in the measures section. Additionally, it seems that R1.4 should not be needed since this would inherently be included in R1.1 and R1.2 by themselves. The measures in R1.1 include examples of where protections are applied, which is repetitive to R1.4.

Likes 0

Dislikes 0

Response

Thank you for your comment. The Standard Drafting Team has reviewed your recommendation. Requirements R1.1. and R1.2 as demonstrated in Measures M1.1 and M1.2 are required to be identified in the CIP-012 plan, whereas Requirement R1.4 is meant to be demonstrated through separate documentation as identified in M1.4. In CIP-012-1, the question of “Where” was addressed as a separate element that needed to be covered in its own part. Please see the technical rationale and implementation guidance; specifically, page three (3) of the NERC endorsed guidance for CIP-0012-1 and the currently proposed standard language of R1.4 provides clarity with respect to these concerns. The SDT has updated the language in Measure 1 Part 1.1 to provide clarity around the types of evidence that may be used to demonstrate compliance.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it

would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comments. The SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between Bulk Electric System Control Centers.” The SDT understands that the directives are seeking that we address availability from a cyber-perspective. Please see the updated Measures section within the standard and the Technical Rationale regarding redundancy as a potential method to mitigate the cyber risks addressed in CIP-012. Regarding the ability of an entity to use redundancy to meet the cyber security objectives of the requirements, FERC Order 866 clearly indicates in the Commission Determination that redundancy is an acceptable method of achieving part of the cyber security objective of the standard. In Order 866, in the Commission Determination, they state, “We (the Commission) recognize that the redundancy of communication links cannot always be guaranteed; responsible entities should therefore plan for both recovery of compromised communication links and use of backup communication capability should it be needed for redundancy (i.e., satellite or other alternate backup communications).” Please see the revised Requirement R1 language reinforcing the cyber aspect of this Requirement.

David Jendras Sr - Ameren - Ameren Services - 3

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|---------------|--|
| Document Name | |
|---------------|--|

Comment

Ameren believes that R1.4 doesn't include the terms physical or logical, so the need to identify physically or logically is not clear.

Likes 0

Dislikes 0

Response

Thank you for your comment. In staying consistent with CIP-012-1, the Requirement language does not prescribe how an Entity may choose to demonstrate compliance. The Measures, as well as the updated Implementation Guidance and Technical Rationale, provide clarity regarding the types of physical and logical controls that may be implemented.

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer No

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Request clarification of “availability” vs “loss of data.”

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive, “...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers”. As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure **within** the primary control center and do not address data in motion **between** other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

No

Document Name

Comment

NST believes it is neither practical nor necessary to compel Responsible Entities to identify the “where” of its availability protections, and we therefore recommend that it be removed from R1.4. We believe R1.2’s requirement to identify and describe availability protections is sufficient.

Likes 0

Dislikes 0

Response

Thank you for your comment. The question about identifying “where” protections are addressed has been included in the revised Measures section 1.4 and described in the updated implementation guidance and technical rationale.

James Baldwin - Lower Colorado River Authority - 1

Answer No

Document Name

Comment

R1.4 could be included in R1.1 and R1.2, which would make the standard read easier.

Likes 0

Dislikes 0

Response

Thank you for your comment. The Standard Drafting Team has reviewed your recommendation. Looking back at Version 1 of the CIP-012 language, the question of “Where” was addressed as a separate element that needed to be covered in its own part. Please see the technical rationale and implementation guidance for more information about this topic.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

Document Name

Comment

R1.4 could be included in R1.1 and R1.2, which would make the standard read easier.

Likes 0

Dislikes 0

Response

Thank you for your comment. The Standard Drafting Team has reviewed your recommendation. Looking back at Version 1 of the CIP-012 language, the question of “Where” was addressed as a separate element that needed to be covered in its own part. Please see the technical rationale and implementation guidance for more information about this topic.

Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you for your response.

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you for your response.

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E agrees that Requirement R1, Part 1.4 provides clarity along with the Measures for Requirement R1 on the need to identify the physical or logical methods applied for Requirement R1, Parts 1.1 and 1.2. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| The newly updated Measures section includes examples of physical and logical evidence for R1.4 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| While it is clear for R1.1 and R1.2 to be included in R1.4, it is not clear why R1.3 would not also be included. Suggest adding R1.3 to the scope of R1.4 scope. | |
| <i>Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1, 1.2 and 1.3</i> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT has updated the language of R1.3 to provide additional clarity. | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |

| Comment | |
|---|-----|
| No comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees that the language in R1.4 provides clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| The NAGF supports the proposed language for Requirement 1.4. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that R1.4 provides Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Summer Esquerre - NextEra Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| please reference EEI's comments | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Thank you for your support. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Mike Magruder - Avista - Avista Corporation - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Glen Farmer - Avista - Avista Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Robert Follini - Avista - Avista Corporation - 3

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Justin Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jack Stamper - Clark Public Utilities - 3 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| Thank you for your support. | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Patricia Ireland - DTE Energy - 4

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

| | |
|--|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Texas RE notes that Part 1.4, states the following, “Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and”. Texas RE seeks clarification on why Part 1.3 was not added as an applicable Part needed for “Identification”. As where the Responsible Entity has implemented method(s) used to recover communication links is just as important from an availability and enforceable perspective.</p> <p>Additionally, Texas RE seeks clarification on why Part 1.3 was not added as an applicable Part needed for “Identification” for Part 1.5. As where each Responsible Entity has implemented method(s) used to recover communication links is just as important from an coordination, availability, and enforceable perspective.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. With regards to including 1.3 as one of the requirements that are identified in R1.4 “where the Responsible Entity implemented methods...”, the Standard Drafting Team assets the “where” of R1.3 is identified in the parent Requirement of R1 where it states: “The Responsible Entity shall implement... one or more documented plan(s)...”. The identification of where the physical location exists | |

only applies to R1.1 and R1.2 because those methods will exist in a real-world location whereas 1.3 would only be identified in a written document.

4. The SDT received multiple requests to provide more possible mitigation methods. Do you agree that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit?

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

Answer No

Document Name

Comment

The SRC appreciates the SDT’s effort to modify Measure M1 to provide more examples of mitigation methods; however, we’re uncertain how one example of evidence, M1, Part 1.2, bullet #3, may be shared with an auditor as CIP-013, R2 explicitly states:

“the following issues are beyond the scope of Requirement R2: (1) the actual terms and conditions of a procurement contract; and (2) vendor performance and adherence to a contract.”

Therefore, the IRC SRC requests clarification on how an entity may demonstrate evidence of the measure below if it would violate an NDA that a Responsible Entity may have signed.

- service level agreements with carriers containing high availability provisions

Likes 0

Dislikes 0

Response

Thank you for your comment. Please keep in mind that the stated measures are a way in which a Registered Entity may demonstrate compliance, they are not Requirements in and of themselves. A Registered Entity may choose to use any of the measures, all of the measures, or none of the measures at all in demonstrating compliance.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer No

| | |
|--|----|
| Document Name | |
| Comment | |
| More clarity on what redundancy means and what level of contingency is required. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see revised Technical Rationale and Implementation Guidance documents. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| More clarity on what redundancy means and what level of contingency is required. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see revised Technical Rationale and Implementation Guidance documents. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |

NST believes the SDT's well-intentioned attempt to provide mitigation method examples has resulted in measures and guidance ideas that blur where an entity's CIP-012 obligations would begin and end. Examples include, "procedures explaining the use of alternative systems or methods for providing for the availability of the data," and "Methods for the recovery of links such as standard operating procedures, CIP-009 recovery plan(s), or similar technical recovery plans."

Likes 0

Dislikes 0

Response

Thank you for the comment. Please refer to the NERC ROP Standard Processes Manual App'x 3A section 2.5 -- "Measure: Provides identification of the evidence or types of evidence that *may* demonstrate compliance with the associated requirement." (emphasis added)

Joshua London - Eversource Energy - 1, Group Name Eversource

Answer

No

Document Name

Comment

Understand that the SDT is providing flexibilities in terms of documentations for support responsibilities and restoration assignments – but we think clear prescriptive methods would help to avoid finger pointing.

Likes 0

Dislikes 0

Response

Thank you for the comment. The Standard Drafting Team asserts the standard language and measures were created to be objective based rather than perspective. This provides Registered Entities the latitude to implement controls specific to their programs to meet the objectives of the standards.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

No

| | |
|---|----|
| Document Name | |
| Comment | |
| <p>Do not agree these new Measures are consistent with a plan. Recommend the Requirements need to set clearer expectations. The Requirements want “methods.” Request updates that address this feedback.</p> <p>Request clarification on unavailable third-party infrastructure information.</p> <p>What are the entity's responsibilities/expectations regarding third parties and their infrastructure?</p> <p>Request clarification of how inadequate infrastructure availability impacts CIP-012 and the TOP-003-4/IRO-010-4 Standards. Because CIP-012 R1 mandates a plan.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for the comment. The SDT asserts that the Requirement language sets clear expectations to develop and implement a plan to mitigate the risks posed by unauthorized disclosure or modification of real-time assessment and monitoring data, and inability to communicate that data. This is additionally supported by the updated measures, Implementation Guidance, and Technical Rationale. Please see updates made to measure Part 1.4 addressing third parties.</p> | |
| John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway | |
| Answer | No |
| Document Name | |

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see response to the NPCC comments above. NPCC (Ruida Shu will reach out to TFIST for clarification then get back to the SDT).

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

No

Document Name

Comment

The proposed language in CIP-012-2, Measure M1, Part 1.2, does not seem to meet the intent of the technical rationale or the SDT proposed language for CIP-012-2, Requirement R1, Part 1.2. For example, a report indicating uptime does not support mitigation of a risk that data might be lost due to the scenarios listed in the technical rationale.

Recommend the SDT review the proposed language for CIP-012-2 Requirement R1, Part 1.2; Measure M1, Part 1.2; and the technical rationale to ensure they are all consistent.

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see the updated Measures section within the standard and the Technical Rationale regarding potential methods to mitigate the cyber risks addressed in CIP-012. Please refer to the NERC ROP Standard Processes Manual App'x 3A section 2.5 -- "Measure: Provides identification of the evidence or types of evidence that *may* demonstrate compliance with the associated requirement."

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Although the wording in Requirement R2 of Draft 3 of CIP-012-2 is removed, it appears that the wording of the Requirement 2 from Draft 1 and Draft 2 has only been moved or merged into Requirement 1 of Draft 3. BC Hydro's previous concerns raised on CIP-012-2 Draft 1 and Draft 2 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 3 of CIP-012-2 still implies a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) within the Operations and Planning (O&P) domains (e.g., IRO-010, TOP-003, TOP-001).

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 2, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Thank you for your comments. The SDT has been charged with addressing the FERC directive which states in P3 “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between Bulk

Electric System Control Centers.” The SDT understands that the directives are seeking that we address availability from a cyber-perspective. Please see the updated Measures section within the standard and the Technical Rationale regarding redundancy as a potential method to mitigate the cyber risks addressed in CIP-012. Regarding the ability of an entity to use redundancy to meet the cyber security objectives of the requirements, FERC Order 866 clearly indicates in the Commission Determination that redundancy is an acceptable method of achieving part of the cyber security objective of the standard. In Order 866, in the Commission Determination, they state, “We (the Commission) recognize that the redundancy of communication links cannot always be guaranteed; responsible entities should therefore plan for both recovery of compromised communication links and use of backup communication capability should it be needed for redundancy (i.e., satellite or other alternate backup communications).” Please see the revised Requirement R1 language reinforcing the cyber aspect of this Requirement.

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

NA

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

| | |
|---|-----|
| NA | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Summer Esquerre - NextEra Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| please reference EEI's comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please see response to EEI comments. | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |

Comment

BHE recommends removing the measure “availability or uptime reports” as an applicable measure for P1.2. Reports detailing uptime or availability metrics are not applicable for the mitigation of risk posed by loss of data. The SDT should consider removing this measure in order to clarify that availability targets are not required by P1.2.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the updated Measures section within the standard and the Technical Rationale regarding potential methods to mitigate the cyber risks addressed in CIP-012. Please refer to the NERC ROP Standard Processes Manual App'x 3A section 2.5 -- "Measure: Provides identification of the evidence or types of evidence that *may* demonstrate compliance with the associated requirement." (emphasis added). Keep in mind that each individual bullet in the measures may or may not fully address demonstration of compliance with each sub-part.

Alison MacKellar - Constellation - 5

Answer Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

Dislikes 0

Response

Thank you for your support. Please see response to Exelon comment

| | |
|--|-----|
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to Exelon comment | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI comment | |

| | |
|--|-----|
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please see response to EEI comment | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that M1 provides adequate examples for entities for each subpart. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |

Comment

BHE recommends removing the measure “availability or uptime reports” as an applicable measure for P1.2. Reports detailing uptime or availability metrics are not applicable for the mitigation of risk posed by loss of data. The SDT should consider removing this measure in order to clarify that availability targets are not required by P1.2.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the updated Measures section within the standard and the Technical Rationale regarding potential methods to mitigate the cyber risks addressed in CIP-012. Please refer to the NERC ROP Standard Processes Manual App'x 3A section 2.5 -- "Measure: Provides identification of the evidence or types of evidence that *may* demonstrate compliance with the associated requirement." (emphasis added). Keep in mind that each individual bullet in the measures may or may not fully address demonstration of compliance with each sub-part.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Yes

Document Name

Comment

The NAGF supports the addition of examples of methods to mitigate risk posed by loss of Real-time assessment and monitoring data while in transit.

Likes 0

Dislikes 0

Response

Thank you for your support.

Marcus Bortman - APS - Arizona Public Service Co. - 6

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees that the expanded measures section of the standard adequately demonstrates examples of methods that could be used to mitigate the risk posed by loss of Real-time assessment and Real-time monitoring data while in transit | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Black Hills Corporation (BHP) agrees and supports EEI comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. Please see response to EEI comments | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| Black Hills Corporation (BHP) agrees and supports EEI comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI comments | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Black Hills Corporation (BHP) agrees and supports EEI comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI comments | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Black Hills Corporation (BHP) agrees and supports EEI comments. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. Please see response to EEI comments | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comment | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>There is still confusion related to acceptable controls "other than encryption" to meet the security objectives. While each measure may not meet the security objective in and of itself, could collectively be considered a measure to mitigate the risk and should be included.</p> <p>WECC suggests:</p> | |

Consider adding the following additional Measures to Part 1.1

- Own, operate, and manage the communication link
- Monitor, detect, alert and response

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see the revised language Requirement R1 M1.1.

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer Yes

Document Name

Comment

No comments

Likes 0

Dislikes 0

Response

Thank you for your support.

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer Yes

Document Name

Comment

PG&E agrees that the Requirement R1 Measures (M1) provide adequate examples on the mitigation of risks posed by the loss of Read-time assessment and Real-time monitoring data while in transit..

PG&E also agrees with the EEI suggestion that the text “Examples of evidence may include, but are not limited to the following examples (by subpart):” be added above the actual examples.

Likes 0

Dislikes 0

Response

Thank you for the comments. Please see modified languages in the Requirement R1 Measures (M1).

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

| | |
|----------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support
Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez

| | |
|----------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support
Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

| | |
|---------------|-----|
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

| | |
|--|-----|
| Thank you for your support | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Patricia Ireland - DTE Energy - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jack Stamper - Clark Public Utilities - 3 - WECC | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Justin Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|---|-----|
| Thank you for your support | |
| Robert Follini - Avista - Avista Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Thank you for your support

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Sheraz Majid - Hydro One Networks, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| It is unclear how fourth bullet in the measures of Part 1.2 related to availability/uptime reports would be beneficial in demonstrating compliance. Suggest to remove. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. Please see the updated Measures section within the standard and the Technical Rationale regarding potential methods to mitigate the cyber risks addressed in CIP-012. Please refer to the NERC ROP Standard Processes Manual App'x 3A section 2.5 -- "Measure: Provides identification of the evidence or types of evidence that *may* demonstrate compliance with the associated requirement." (emphasis added). Keep in mind that each individual bullet in the measures may or may not fully address demonstration of compliance with each sub-part.

5. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer No

Document Name

Comment

PG&E cannot determine if the proposed modifications meet the FERC directive in a cost effective manner until the Standard has been approved and then determine the actual impact on our operations.

Likes 0

Dislikes 0

Response

Thank you for your comment. The standard drafting team recommends entities consider the cost of implementation to be balanced against the cost of the risk of loss of availability.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer No

Document Name

Comment

Implementation and maintenance of redundant links to all facilities within scope of the CIP-012-2 standard would be extremely costly. Dedicated equipment and personnel would be required to maintain and preserve the integrity of the links to comply with the standard.

Likes 0

Dislikes 0

Response

Thank you for your comment. While the standard does not impose a requirement for redundancy to meet its objectives, some entities may choose to use redundancy to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability. The revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Please refer to BC Hydro comments in response to Question #1. BC Hydro has not yet implemented a solution for CIP-012-1, therefore it is not in a position to identify the additional costs related to the Project 2020-04 CIP-012-2 changes.

Likes 0

Dislikes 0

Response

Thank you for your comment. The standard drafting team recommends entities consider the cost of implementation to be balanced against the cost of the risk of loss of availability.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

| | |
|---|----|
| Document Name | |
| Comment | |
| GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. The standard drafting team recommends entities consider the cost of implementation to be balanced against the cost of the risk of loss of availability. | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | No |
| Document Name | |
| Comment | |
| See comments on question 2. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see response to question 2. | |
| Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC | |
| Answer | No |
| Document Name | |
| Comment | |

An expectation from the ERO to comply with this new Standard, which would drive Responsible Entities to increase SLA levels, could result in cost-prohibitive roadblocks to implementation

Likes 0

Dislikes 0

Response

Thank you for your comment. While the standard does not impose a requirement for service level agreement (SLA) to meet its objectives, some entities may choose to use SLA to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability. The revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do, NST cannot comment on the cost-effectiveness of its latest proposed modifications.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has updated language in the Standard and associated Measure to provide greater clarity on ways to meet objectives of the Requirements.

James Baldwin - Lower Colorado River Authority - 1

Answer No

| | |
|--|----|
| Document Name | |
| Comment | |
| It is uncertain the cost to implement due to the SLAs with Internet Service Providers (ISPs) to achieve adequate risk mitigation. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. While the standard does not impose a requirement for service level agreement (SLA) to meet its objectives, some entities may choose to use SLA to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability. The revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard. | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | No |
| Document Name | |
| Comment | |
| It is uncertain the cost to implement due to the SLAs with Internet Service Providers (ISPs) to achieve adequate risk mitigation. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. While the standard does not impose a requirement for service level agreement (SLA) to meet its objectives, some entities may choose to use SLA to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability. The revised language is focused now on identification of methods for recovery and examples of those methods are now in the Measures section of the draft Standard. | |

| | |
|---|----|
| Summer Esquerre - NextEra Energy - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| NextEra Energy does not provide feedback on cost-effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF | |
| Answer | No |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Thank you for your support

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS agrees that the proposed modifications in CIP-012-2 meet the FERC directives in a cost-effective manner.

Likes 0

Dislikes 0

Response

Thank you for your support

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

BHE feels the question is difficult to answer due to the inherent dependency of inter-entity coordination as prescribed by this standard. Costs incurred by one entity may be unviable compared to the associated costs conferred upon another entity. Entities which have elected to participate in a common data exchange hosted by a separate entity (such as an ISO) become dependent on the preferred availability solution of the hosting entity and those associated costs.

Likes 0

Dislikes 0

Response

Thank you for your comment. While the standard does not impose any one measure to meet its objectives, some entities may choose to use one or more measures to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Mike Magruder - Avista - Avista Corporation - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Glen Farmer - Avista - Avista Corporation - 5 | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Robert Follini - Avista - Avista Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support

Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Justin Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jack Stamper - Clark Public Utilities - 3 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Patricia Ireland - DTE Energy - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Joshua London - Eversource Energy - 1, Group Name Eversource | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|--|--|
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | |
| Document Name | |
| Comment | |
| No Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Sheila Suurmeier - Black Hills Corporation - 5

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Josh Combs - Black Hills Corporation - 3

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer

Document Name

Comment

Black Hills Corporation (BHP) will not provide a response to the cost effectiveness question.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer

Document Name

Comment

BHE feels the question is difficult to answer due to the inherent dependency of inter-entity coordination as prescribed by this standard. Costs incurred by one entity may be unviable compared to the associated costs conferred upon another entity. Entities which have elected to

participate in a common data exchange hosted by a separate entity (such as an ISO) become dependent on the preferred availability solution of the hosting entity and those associated costs.

Likes 0

Dislikes 0

Response

Thank you for your comment. While the standard does not impose any one measure to meet its objectives, some entities may choose to use one or more measures to meet the requirements. The standard drafting team recommends entities consider the cost of this method to be balanced against the cost of alternative methods to mitigate the risk of loss of availability.

Kinte Whitehead - Exelon - 3

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see responses to the EEI's comment.

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

| | |
|--|---|
| Exelon has elected to align with EEI in response to this question. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see responses to the EEI's comment. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE does not have comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| NA | |

6. The last ballot showed industry approval of the proposed 24-month implementation plan. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Answer is based on current supply chain lead times. It has taken us over 18 months working with AT&T to install a simple circuit and receive equipment, some other sites even longer. This leaves the utility little time for other testing, implementing configuration changes, scheduling outages and placing new circuits into production.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) 2020-04 CIP-012-2v4

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

The SRC believes a 24-month implementation plan is inadequate. More time is needed to accommodate annual budget planning cycles required for capital expenditures and the lead-time required for supply chain considerations, which can be up to two years. Depending upon when the standard is approved, the annual budget planning cycle for some entities may have just ended. In addition, there is currently a one-year lead-time when placing orders for new equipment. Therefore, we propose an implementation time period of 36 months.

Likes 0

Dislikes 0

Response

Thank you for your support.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do, NST cannot comment on an implementation timetable.

Likes 0

Dislikes 0

Response

Thank you for your comment.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

As identified in BC Hydro's answers to Questions 1 to 4 and 5, at this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012.

Likes 0

Dislikes 0

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Robert Follini - Avista - Avista Corporation - 3

Answer No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past effective date. If entities have to work with ATT for further improvements to mitigate loss, then we might need some additional time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Glen Farmer - Avista - Avista Corporation - 5

Answer No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past effective date. If entities have to work with ATT for further improvements to mitigate loss, then we might need some additional time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Mike Magruder - Avista - Avista Corporation - 1

Answer No

Document Name

Comment

Avista's experience with ATT contracts folks, supply chain delays, etc, delayed completion of our CIP-012 project by several months past the effective date. If entities have to work with ATT for further improvements to mitigate loss, then we may need more time than we had for the initial CIP-012-1 implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your comment. Industry was supportive of the 24-month timeframe in the previous ballot.

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer No

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | No |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Summer Esquerre - NextEra Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| please reference EEI's comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

Comment

Implementation in many cases is dependent on the availability of additional hardware to add any additional functionality to meet the standard. Additionally, data connections which may be hosted by a common entity between several other entities may be dependent on hardware provided by the hosting entity. BHE feels flexibility in implementation for entities who can establish circumstances outside their control for failure to implement on time is highly desirable.

Likes 0

Dislikes 0

Response

Thank you for your support.

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| We support a 24-month implementation plan pending the scope of availability. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your support.

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer Yes

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Thank you for your support.

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

Dislikes 0

Response

Thank you for your support.

Kinte Whitehead - Exelon - 3

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI supports a 24 month implementation plan. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Implementation in many cases is dependent on the availability of additional hardware to add any additional functionality to meet the standard. Additionally, data connections which may be hosted by a common entity between several other entities may be dependent on hardware provided by the hosting entity. BHE feels flexibility in implementation for entities who can establish circumstances outside their control for failure to implement on time is highly desirable.

Likes 0

Dislikes 0

Response

Thank you for your support.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed 24-month implementation plan.

Likes 0

Dislikes 0

Response

Thank you for your support.

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

| | |
|---|-----|
| AZPS still agrees with the proposed implementation timeframe. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Brian Lindsey - Entergy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comments | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments | |
| Answer | Yes |
| Document Name | |
| Comment | |
| PG&E supports the 24-month Implementation Plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |

James Baldwin - Lower Colorado River Authority - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jamie Monette - Allele - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joshua London - Eversource Energy - 1, Group Name Eversource | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Patricia Ireland - DTE Energy - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Erik Gustafson - PNM Resources - Public Service Company of New Mexico - 1,3 - WECC,Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Karie Barczak - DTE Energy - Detroit Edison Company - 3, Group Name DTE Energy - DTE Electric | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jesus Sammy Alcaraz - Imperial Irrigation District - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Josh Combs - Black Hills Corporation - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

Thank you for your support.

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jack Stamper - Clark Public Utilities - 3 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

David Jendras Sr - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Justin Kuehne - AEP - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Joyce Gundry - Public Utility District No. 1 of Chelan County - 3, Group Name CHPD | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Thank you for your support.

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD / BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| Thank you for your support. | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC | |
| Answer | Yes |
| Document Name | |

| | |
|---|--|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE does not have comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |

7. Provide any additional comments for the standard drafting team to consider, including the provided technical rationale and implementation guidance document, if desired.

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer

Document Name

Comment

With the advent of CIP-012 including controls for communications between Control Centers, consider retiring CIP-006 R1.10 for better alignment within the CIP standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. This is out of scope of the SAR that the SDT is working on.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

FirstEnergy feels the Implementation Guidance were very helpful

Likes 0

Dislikes 0

Response

Thank you for your support.

Michael Johnson - Michael Johnson On Behalf of: Frank Lee, Pacific Gas and Electric Company, 3, 1, 5; Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer

Document Name

Comment

PG&E thanks the SDT for the effort in working with the industry in completing these modifications.

Likes 0

Dislikes 0

Response

Thank you for your support.

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

Document Name

Comment

The Implementation Guidance and Technical Rationale documents for CIP-012-2 reference the use of incident response plans (CIP-008) and recovery plans (CIP-009) as supporting evidence for CIP-012-2, Requirement R1.3. Requirement R1.3 speaks to recovery plans and the measures only refer to CIP-009 recovery plans. It appears that CIP-008 incident response plans would not be relevant for R1.3. CEHE seeks clarification on the use of CIP-008 incident response plans to satisfy R1.3.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see updated Implementation Guidance and Technical Rationale documents.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Document Name

Comment

The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.

Likes 0

Dislikes 0

Response

Thank you for your comment and revised language suggestion. The SDT agrees that more clarity was needed for the language of part R1.2 and has modified the language accordingly.

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer

Document Name

Comment

No additional comments

Likes 0

| | |
|--|---|
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Joseph Gatten - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC | |
| Answer | |
| Document Name | |
| Comment | |
| Xcel Energy believes that updates to the Technical Rationale and Implementation Guidance should be made to provide better clarity on the difference between the cybersecurity-related requirements of CIP-012-2 R1.2 and the operational requirements in EOP-008-2 R1.2. If Responsible Entities and ERO auditors cannot clearly distinguish between the two NERC Requirements, then the possibility of double jeopardy may exist. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comments. Please see revised language in the Standard, Technical Rationale, and Implementation Guidance. | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| While the SDT has removed the term “availability” from the Requirements and sub-parts, the term remains in the Purpose and Measures. BPA suggests removing the term throughout the standard.CIP-012 focuses on using physical and technical means to secure data while in-transit. | |

Securing data while in transit requires either physical hardware encryption devices or software based encryption and integrity checks. Physical encryption is not cost effective and impacts the timely manner of data received over links that are slow. The cost of redesign of the architecture of systems to implement physical encryption is also high. Logical encryption such as SSL/TLS which uses certificate based encryption cannot be supported end to end with certain devices and impacts the real-time data that is needed instantly. Maintaining these certificates also poses additional challenges as CC to CC is not always owned by the same entity.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT included availability in the Purpose statement and Measures to remain in line with the previous SDT and FERC Order 866 in addressing confidentiality, integrity, and availability (the CIA triad).

Jennifer Buckman - Southern Indiana Gas and Electric Co. - 3,5,6 - RF

Answer

Document Name

Comment

The Implementation Guidance and Technical Rationale documents for CIP-012-2 reference the use of incident response plans (CIP-008) and recovery plans (CIP-009) as supporting evidence for CIP-012-2, Requirement R1.3. Requirement R1.3 speaks to recovery plans and the measures only refer to CIP-009 recovery plans. It appears that CIP-008 incident response plans would not be relevant for R1.3. SIGE seeks clarification on the use of CIP-008 incident response plans to satisfy R1.3.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see updated Implementation Guidance and Technical Rationale documents.

Ellese Murphy - Duke Energy - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF

| | |
|---|---|
| Answer | |
| Document Name | |
| Comment | |
| <p>We recommend that the SDT be consistent and use either “risks” or “risk(s)” in R1., parts 1.1., and 1.2. We would prefer the parenthetical version. We appreciate the diligent work of the drafting team to incorporate industry feedback in this draft.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT has made changes to align with each other.</p> | |
| <p>Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro</p> | |
| Answer | |
| Document Name | |
| Comment | |
| <p>BC Hydro suggests adding more clarity to the term 'availability' by providing a more detailed definition.</p> <p>Although the SDT has proposed the use of the NIST definition of "Ensuring timely and reliable access to and use of information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at entities to which this standard applies, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. The SDT has removed the term “availability” from the Requirements. Additionally, the SDT has modified the National Institute of Standards and Technology (NIST) definition used in current Implementation Guidance and Technical Rationale documents. The SDT modified the definition of availability as defined by (NIST) to read “Ensuring timely and reliable access to information”.

Justin Kuehne - AEP - 6

Answer

Document Name

Comment

AEP appreciates the efforts of the SDT on this revision. No further comments at this time.

Likes 0

Dislikes 0

Response

Thank you for your support.

David Jendras Sr - Ameren - Ameren Services - 3

Answer

Document Name

Comment

No Comment

Likes 0

Dislikes 0

Response

NA

| | |
|--|--|
| Brian Lindsey - Entergy - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| No comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| NA | |
| Jack Stamper - Clark Public Utilities - 3 - WECC | |
| Answer | |
| Document Name | |
| Comment | |
| <p><i>The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.</i></p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your response. Please see the response to Tacoma Power's comments on Q1 and Q2. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| AZPS has no additional comments at this time. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | |
| Document Name | |
| Comment | |
| The NAGF has no additional comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Melanie Wong - Seminole Electric Cooperative, Inc. - 1,3,4,5,6 | |
| Answer | |
| Document Name | |
| Comment | |

1. Implementation Guidance

- i. On pages 2-3 of the Implementation Guidance, the STD has a section titled “Mitigate Risks Associated with Unauthorized Disclosure and Modification”. In reviewing this section, the SDT appears to comingle “preventative” measures with mitigating measures. For example, physical security of data cabling is more of a preventive measure, and does not mitigate the impact of the disclosure of the data or modification of the data once it has occurred. The SDT should review this section and specify whether they are looking for preventive or mitigating measures.
- ii. On page 3 of the redline version of the Implementation Guidance, the SDT struct different “protocol” and modified the language to different “systems”, and the examples were changed from DNP3 and ICCC to primary and secondary. Is the SDT confirming that the same type of system, e.g., two ICCP circuits, can be used as long as the paths are diverse?
- iii. On page 8 of the redlined Implementation Guidance, the SDT states “Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center.” In looking at Figure 3, the SDT has indicated that “Entity Alpha’s CIP-012 physical security protection applied” includes communication cabling “inside” the Control Center’s PSP, and not just the cabling and router outside of the PSP. We believe the SDT needs to update the Figure to only show a need for CIP-012 physical protection outside of the Control Center PSP.
- iv. On page 10 of the Implementation Guidance, in Figure 2, the SDT has indicated one communication link from the Primary Control Center. To be compliant, does not Entity Alpha have to indicate additional communication links to its back-up Control Center along with a secondary communication link to Entity Beta’s Control Center? The SDT should modify the Figure as it does not coincide well with Figure 1 provided by the SDT.

1. Technical Rationale

- i. On page v of the technical rationale, if your Control Center connects to a GOP that is owned by a separate entity, how are you supposed to verify whether the GOP is an applicable Control Center?
- ii. On page vii of the technical rationale, the SDT states “but the potential situation exists where there are substation with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation.” This language is confusing because the language of Control Center is “monitor and control”, if entities are supposed to look at “impact”, then multiple relays at different locations could be involved, including GOPs and TOPs. The SDT should revise this language and specifically note that “impact” is not to be evaluated, but only direct control.

- iii. For Figure 4 in the technical rationale, if the control room operator at Entity B location 1 provides TOP-003 data to Entity A TOP for both Location 1 and Location 2 via a manual entry messaging system directly from Entity B Location 1 to Entity A TOP Control Center, e.g., outage information, then that specific data link would be included in CIP-012, correct?

Likes 0

Dislikes 0

Response

Thank you for your comments.

1. Implementation Guidance

- i. Thank you for your comment. The SDT does not want to be prescriptive in how an entity defines or classifies the security controls it selects. As indicated on page two of the IG, entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.
- ii. The SDT has removed the specification of protocol (e.g., the redundancy of systems).
- iii. Thank you for your response. The SDT agrees that more clarity could be added to figure 3 within the Implementation Guidance. The figure has been updated; specifically, it has been labeled to clearly show the PSP with a physically secured area (e.g., physical security boundary) adjacent and within the same facility/BES Asset. This is one example of the implementation of physical security controls that can be used to mitigate the risk of the loss of the ability to communicate Real-time Assessment and Real-time monitoring data
- iv. Thank you for your response. The SDT agrees that more clarity could be added to figure 2 within the Implementation Guidance. The figure has been updated; specifically, it has been labeled to clearly show the communication link between Entity Alpha’s primary and back-up Control Centers. This is one example of the implementation of alternate paths that can be used to mitigate the risk of the loss of the ability to communicate Real-time Assessment and Real-time monitoring data

2. Technical Rationale

- i. This question of identification of Control Centers is addressed in CIP-002 and is out of scope for CIP-012
- ii. Thank you for your comment. The Technical Rationale (pg. vii) states: “SDT’s attempts to address by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address.” The SDT continues to assert that a given Entity may find clarity around the Control Center definition by referring to Exemption 4.2.3. Moreover, the SDT believes that there is sufficient clarity within the TR regarding Control Center definition/function within Section ‘CIP-012 Exemption (4.2.3) for certain Control Centers’ on pg. v. The SDT cannot offer specific guidance on how to comply with the Requirement and would refer questions of compliance guidance back to the ERO or respective Regional Entities.
- iii. The intent of Figure 4 is to illustrate a generic example of an exemption. The question provided is requesting a clarification on specific compliance obligation. The SDT cannot advise how Registered Entities comply.

Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF

Answer

Document Name

Comment

PPL NERC Registered Affiliates do not support the proposed changes. Specifically, the proposed R1.3 is overly broad.

PPL NERC Registered Affiliates propose the following revisions to R1.3: “Identification of method(s) used to recover in the recovery of Responsible Entity owned or operated communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;”

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the modified language of R1.3.

Silvia Mitchell - NextEra Energy - Florida Power and Light Co. - 1

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| NextEra Energy supports EEI's comments | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see response to EEI comments | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | |
| Document Name | |
| Comment | |
| Exelon has elected to align with EEI in response to this question. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see response to EEI comments | |
| Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group | |
| Answer | |
| Document Name | |
| Comment | |

WEC Energy Group supports the MRO-NSRF comments.

Additionally, the NIST definition of Availability listed in the Implementation Guidance and the Technical Rational differs. Request the SDT to align the definitions.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see updated Technical Rationale and Implementation Guidance.

FOR REVIEW:

Tech Rationale

- Based on the NIST definition⁵, Availability is defined by the SDT and based on the NIST definition as, “Ensuring Providing timely and reliable access to ~~and use of~~ information.”⁵

IG

- Based on the NIST definition⁵, Availability is defined by the SDT and based on the NIST definition as, “Ensuring Providing timely and reliable access to ~~and use of~~ information.”⁵

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon has elected to align with EEI in response to this question.

Likes 0

| | |
|---|---|
| Dislikes | 0 |
| Response | |
| Please see response to EEI comments | |
| Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC | |
| Answer | |
| Document Name | |
| Comment | |
| <p>SPP Supports all the comments filed by the NSRF.</p> <p>In addition, the proposed language introduces three concepts that introduce confusion:</p> <p>First, the entity becomes responsible for a documented plan to mitigate situations where data becomes unavailable without scoping that risk. Is this risk to the other party, the sending party, the receiving party, or all parties? Is it risk to the reliable operation of the BES, risk to the exchange of data, or risk to the corruption or theft of the data?</p> <p>Second, a data-providing entity now bears responsibility to document a plan of action to mitigate the risk to operations at another entity when that entity loses access to data for any reason in any way. The methods used by parties to fulfill the responsibility of a RTA or RTM are varied and far-reaching. Expecting all parties in the network of exchanged data to understand the implications of lost data and to keep up with the changes to those implications is excessively burdensome when the sending party has no opportunity or ability to assist the receiving party. The responsibility of a party providing data to another, under current NERC Standards, ends at the point at which the other party receives the data. This language would expand that scope and cause entities to cover risks that (i) are already mitigated, and (ii) the responsibility of other entities.</p> <p>Third, the language overlaps in Measure and evidence with existing NERC Standards that cover RTA, RTM, and data exchange agreements. If an entity, as indicated by members of the SDT, can simply point to the evidence already submitted for these existing NERC Standards, there is only added confusion instead of value.</p> <p>Finally, the SDT should clarify the extent to which an entity is responsible for mitigating the risk of data loss when that data is transmitted by a third-party. For instance, if a Transmission Operator’s data is consumed by a Balancing Authority that in turn shares that</p> | |

Transmission Operator’s data with a neighboring Reliability Coordinator, would Part 1.1 now become the responsibility of the Transmission Operator to mitigate for the risk of the Reliability Coordinator losing access to the data that is provided over the Balancing Authority’s network infrastructure?

Likes 0

Dislikes 0

Response

Thank you for your comments. Please see responses to MRO NSRF regarding revised language in Requirement R1 addressing scoping of risk to Cyber security and ability to communicate language identified in R1.2.

Please see updated Implementation Guidance and Technical Rationale documents. Specifically, the IG (pg.5) states: “Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section when communications between Control Centers with different owners or operators.”

The SDT agrees with the delegation of authority as described in the CIP-012-2 Implementation Guidance stating that “Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha’s purview.” The SDT cannot offer specific guidance on how to comply with the Requirement and would refer questions of compliance guidance back to the ERO or respective Regional Entities. Security measures identified in CIP-012 Requirement R1 are intended to provide cyber security protection for the transfer of RTA and RTM only between the communicating Control Centers. The SDT asserts that responsible entities are responsible to protect/secure data while in transit.

The SDT references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately. As long as Registered Entities’ EOP-008, IRO-010, and TOP-003 plans address all of the required elements for CIP-012-2, that may be used as part your CIP-012 plan. The referenced EOP-008 Standard applies only within Registered Entities’ own Control Center environments. Therefore, to use those plans it would be modified to include

the CIP-012 elements required. To further clarify the distinction between CIP-012 and Operation and Planning Standards, the Standard Drafting Team has updated language in the parent requirement and language in R1.2 to better reflect the focus on the cyber risk to include the risk of the loss of the ability to communicate RTA and RTM data between Control Centers.

John Galloway - John Galloway On Behalf of: John Pearson, ISO New England, Inc., 2; - John Galloway

Answer

Document Name

Comment

ISO-NE is in support of comments developed by ISO-RTO council and NPCC.

Likes 0

Dislikes 0

Response

Please see response to ISO-RTO and NPCC.

Kendra Buesgens - MRO - 1,2,3,4,5,6,7 - MRO, Group Name MRO NSRF

Answer

Document Name

Comment

On the SDT webinar on October 24, 2022, mention was made of how existing plans for other standards can be leveraged as evidence of compliance with CIP-012-2, in order to minimize resources spent on documentation. The MRO NSRF requests the SDT further clarify the differences required in CIP-012-2 versus EOP-008-2, IRO-010-3 & TOP-003-3 in supplemental documentation and how a responsible entity can leverage such as evidence of compliance.

Likes 0

| | |
|---|---|
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comments. The SDT references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately. As long as Registered Entities’ EOP-008, IRO-010, and TOP-003 plans address all of the required elements for CIP-012-2, that may be used as part your CIP-012 plan. The referenced EOP-008 Standard applies only within Registered Entities’ own Control Center environments. Therefore, to use those plans it would be modified to include the CIP-012 elements required.</p> | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | |
| Document Name | |
| Comment | |
| <p>MPC supports comments submitted by the MRO NERC Standards Review Forum.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Please see response to MRO NSRF comments.</p> | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | |
| Document Name | |

Comment

CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity, and availability.

Recommend CIP-012 provide greater specifications of this plan.

R1 indicates “..to mitigate the risks posed by unauthorized disclosure and, unauthorized modification of, and loss of availability of data used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers.” While R1.1, R1.2, and R1.3 indicate “...between Control Centers” and R1.5 indicates “if the Control Centers..” . We suggest adding the wording “applicable” to R1.1, R1.2, R.1.3, and R1.5.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the revised language, Technical Rationale, and Implementation Guidance for more specific information regarding an Entity’s plan. The SDT has updated the parent language in R1 to include “applicable” Control Centers.

Larry Brusseau - Corn Belt Power Cooperative - 1 - MRO

Answer

Document Name

Comment

On the SDT webinar on October 24, 2022, mention was made of how existing plans for other standards can be leveraged as evidence of compliance with CIP-012-2, in order to minimize resources spent on documentation. The MRO NSRF requests the SDT further clarify the

differences required in CIP-012-2 versus EOP-008-2, IRO-010-3 & TOP-003-3 in supplemental documentation and how a responsible entity can leverage such as evidence of compliance.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT is performing these modifications to the CIP Standards as directed by FERC in Order 866, which specifically states in the directive, "...the Commission directs NERC to develop modifications to the **CIP Reliability Standards** to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers". As such, the SDT is working within the constraints of the directive to ensure that the modifications to the language reflect addressing an appropriate cyber security risk. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure **within** the primary control center and do not address data in motion **between** other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. The SDT agrees that more clarity was needed for the language in R1 and subpart R1.2 and has modified the language accordingly.

Finally, the SDT cannot offer specific guidance on how to comply with the Requirement and would refer questions of compliance guidance back to the ERO or respective Regional Entities.

Alison MacKellar - Constellation - 5

Answer

Document Name

Comment

Constellation aligns with Exelon Corporation in response to this question.

Alison Mackellar on behalf of Constellation Segments 5 and 6.

Likes 0

| | |
|--|---|
| Dislikes | 0 |
| Response | |
| Please see response to Exelon comments. | |
| Kimberly Turco - Constellation - 6 | |
| Answer | |
| Document Name | |
| Comment | |
| Constellation aligns with Exelon Corporation in response to this question. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to Exelon comments. | |
| Michael Russell - Massachusetts Municipal Wholesale Electric Company - 5 - NPCC | |
| Answer | |
| Document Name | |
| Comment | |
| CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity, and availability. Recommend CIP-012 provide greater specifications of this plan. R1 indicates “..to mitigate the risks posed by unauthorized disclosure and, unauthorized modification of, and loss of availability of data | |

used for Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers.” While R1.1, R1.2, and R1.3 indicate “...between Control Centers” and R1.5 indicates “if the Control Centers..” . We suggest adding the wording “applicable” to R1.1, R1.2, R.1.3, and R1.5.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see response to NPCC.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nicholas Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

As noted in our responses to Questions 1-6, NST believes the proposed changes to CIP-012 implementation guidance reduce rather than add clarity about what a Responsible Entity must or might do to address new availability requirements. We find suggestions to the effect that an Entity might rely on its CIP-008 and CIP-009 plans to address parts of CIP-012 to be of particular concern, for reasons including the fact such guidance creates at least the potential for "double jeopardy" situations in compliance audits. FERC wrote Order 866 precisely because the Commission believes CIP-002 through CIP-011 do NOT address protection and recovery of communication links between Control Centers, so in NST's opinion, the SDT should refrain from suggesting that perhaps they do and should therefore be considered for inclusion in an Entity's CIP-012 compliance narratives.

NST also believes the SDT should refrain from making suggestions such as, on page 4, " Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution." To repeat, it is NST's opinion that FERC did not intend for CIP-012 revisions to add data availability requirements that include sending and receiving Cyber Assets that are within, as opposed to between, Control Centers.

Likes 0

| | |
|--|---|
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately.</p> <p>To address the second comment. FERC Order 866 directs that protections be placed on data being communicated between Control Centers only. Communications from Control Center to field Cyber assets (i.e., SCADA) are not in scope of CIP-012.</p> | |
| Jamie Monette - Allete - Minnesota Power, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| MP agrees with the NSRF’s comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to MRO NSRF comments. | |
| James Baldwin - Lower Colorado River Authority - 1 | |
| Answer | |
| Document Name | |
| Comment | |

LCRA is worried about the number of connections the standard is starting to include. Recent guidance by NERC and Regional Entities suggests an expansion in scope of the CIP-012 standard to include connections with other entities that do not fit the definition of Control Center. These entities forward data to their RC, BA, or TOP and it has been suggested that the entire connection is applicable to CIP-012. This may yield inconsistent application of the standard across the ERO. Specifically, in the CIP-012-2 Implementation Guidance it is stated that “Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha’s purview.” LCRA would recommend more guidance on applicability of the standard.

Furthermore, the increased scope of the standard is bringing communication networks into scope that were previously excluded under exemption 4.2.3.2. Utilizing CIP-009 as a method for achieving compliance with out-of-scope systems provides additional compliance risk.

LCRA has found that the use of “Real-time Assessment and Real-time monitoring” being used in each Requirement Part adds to the complexity of the standard. LCRA proposes the use of “data” in parentheses following the first use of the term (e.g., ... and loss of availability of data used for Real-time Assessment and Real-time monitoring (data)).

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT agrees with the delegation of authority as described in the CIP-012-2 Implementation Guidance stating that “Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha’s purview.” The SDT cannot offer specific guidance on how to comply with the Requirement and would refer questions of compliance guidance back to the ERO or respective Regional Entities.

[The SDT references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately.

The SDT thanks LCRA for the verbiage suggestion; however, the SDT believes the continued use of “Real-time Assessment and Real-time monitoring data” provides needed clarity to the Standard.

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

LCRA is worried about the number of connections the standard is starting to include. Recent guidance by NERC and Regional Entities suggests an expansion in scope of the CIP-012 standard to include connections with other entities that do not fit the definition of Control Center. These entities forward data to their RC, BA, or TOP and it has been suggested that the entire connection is applicable to CIP-012. This may yield inconsistent application of the standard across the ERO. Specifically, in the CIP-012-2 Implementation Guidance it is stated that “Entity Alpha does not need to consider whether Entity Beta further share its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha’s purview.” LCRA would recommend more guidance on applicability of the standard.

Furthermore, the increased scope of the standard is bringing communication networks into scope that were previously excluded under exemption 4.2.3.2. Utilizing CIP-009 as a method for achieving compliance with out-of-scope systems provides additional compliance risk.

LCRA has found that the use of “Real-time Assessment and Real-time monitoring” being used in each Requirement Part adds to the complexity of the standard. LCRA proposes the use of “data” in parentheses following the first use of the term (e.g., ... and loss of availability of data used for Real-time Assessment and Real-time monitoring (data)).

Likes 0

Dislikes 0

Response

Please see previous response to LCRA comment.

| | |
|---|--|
| | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 5, 1, 6; Mathew Weber, Salt River Project, 3, 5, 1, 6; Sarah Blankenship, Salt River Project, 3, 5, 1, 6; - Israel Perez | |
| Answer | |
| Document Name | |
| Comment | |
| <p>The measures in M1 Part 1.2 provide example evidence for loss of availability of data, and not loss of data. The SDT should consider updating the R1 Part 1.2 Requirement language to "loss of the availability of data", as suggested in Tacoma Power's responses to Q1 and Q2. The suggested change to R1 Part 1.2 will align the examples provided in M1 with the Requirement language.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. Please see updated language in R1 Part 1.2. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC | |
| Answer | |
| Document Name | |
| Comment | |
| Southern Company proposes 1.5 should include parts 1.1 through 1.3 | |

Southern Company proposed Language for 1.5 - If the Control Centers are owned or operated by different Responsible Entities, **document the agreement** of identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1 and 1.2.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT agrees and has updated the Standard language in R1 Part 1.5 to include Part 1.3.

Regarding the proposed verbiage addition to R1 part 1.5, the SDT has added measures for Part 1.5 which highlights the variety of documentation that may be acceptable as evidence. The SDT does not believe adding verbiage to R1 Part 1.5 adds any clarity and may in fact be interpreted as more narrow.

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Document Name

Comment

None at this time.

Likes 0

Dislikes 0

Response

Thank you for your support.

Summer Esquerre - NextEra Energy - 5

Answer

Document Name

Comment

please reference EEI's comments

Likes 0

Dislikes 0

Response

Please see response to EEI comments

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF

Answer

Document Name

Comment

We would like to thank the SDT for continuing to listen to industry feedback to meet the FERC order and not create overly burdensome requirements.

Likes 0

Dislikes 0

Response

Thank you for your support.

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments.

Likes 0

Dislikes 0

Response

Thank you for your support.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

We would like to thank the SDT for allowing feedback to meet the FERC order.

Likes 0

Dislikes 0

Response

Thank you for your support.

REMINDER

Standards Announcement

Project 2020-04 Modifications to CIP-012

Additional Ballots and Non-binding Polls Open through November 16, 2022

Now Available

Additional ballots for **Project 2020-04 Modifications to CIP-012** and non-binding polls of the associated Violation Risk Factors and Violation Severity Levels are open through **8 p.m. Eastern, Wednesday, November 16, 2022** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the last comment period are reflected in this draft of the standard.

Balloting

Members of the ballot pools associated with this project can log in and submit their votes by accessing the Standards Balloting and Commenting System (SBS) [here](#).

Note: If a member cast a vote in the previous ballot, that vote will not carry over to this additional ballot. It is the responsibility of the registered voter in the ballot pool to cast a vote again in this ballot. To ensure a quorum is reached, if you do not want to vote affirmative or negative, cast an abstention.

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The ballot results will be announced and posted on the project page. The drafting team will review all responses received during the comment period and determine the next steps of the project.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/261)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 AB 3 ST**Voting Start Date:** 11/7/2022 12:01:00 AM**Voting End Date:** 11/29/2022 8:00:00 PM**Ballot Type:** ST**Ballot Activity:** AB**Ballot Series:** 3**Total # Votes:** 231**Total Ballot Pool:** 294**Quorum:** 78.57**Quorum Established Date:** 11/23/2022 9:25:57 AM**Weighted Segment Value:** 57.87

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 83 | 1 | 33 | 0.559 | 26 | 0.441 | 0 | 3 | 21 |
| Segment: 2 | 7 | 0.5 | 1 | 0.1 | 4 | 0.4 | 0 | 0 | 2 |
| Segment: 3 | 68 | 1 | 34 | 0.63 | 20 | 0.37 | 0 | 4 | 10 |
| Segment: 4 | 16 | 0.9 | 5 | 0.5 | 4 | 0.4 | 0 | 1 | 6 |
| Segment: 5 | 68 | 1 | 29 | 0.58 | 21 | 0.42 | 0 | 4 | 14 |
| Segment: 6 | 44 | 1 | 18 | 0.545 | 15 | 0.455 | 0 | 2 | 9 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 5 | 0.5 | 0 | 0 | 0 | 1 | 1 |
| Totals: | 294 | 5.9 | 125 | 3.414 | 90 | 2.486 | 0 | 16 | 63 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|----------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allete - Minnesota Power, Inc. | Jamie Monette | | Negative | Comments Submitted |
| 1 | Ameren - Ameren Services | Tamara Evey | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Negative | Comments Submitted |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | None | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Negative | Third-Party Comments |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | None | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Negative | Third-Party Comments |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | None | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Third-Party Comments |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Affirmative | N/A |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|-------------------|-------------|----------------------|
| 1 | Georgia Transmission Corporation | Greg Davis | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Negative | Third-Party Comments |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Sheraz Majid | | Negative | Comments Submitted |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Third-Party Comments |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | None | N/A |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | Imperial Irrigation District | Jesus Sammy Alcaraz | Denise Sanchez | Negative | Comments Submitted |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | None | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | Pjoy Chua | | Abstain | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Abstain | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Third-Party Comments |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | None | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | None | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | None | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | None | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Affirmative | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Negative | Third-Party Comments |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------------|------------------|-------------|----------------------|
| 1 | Portland General Electric Co. | Brooke Jockin | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Negative | Comments Submitted |
| 1 | Santee Cooper | Chris Wagner | | Negative | Comments Submitted |
| 1 | SaskPower | Wayne Guttormson | | None | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | None | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | None | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Negative | Comments Submitted |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | None | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | None | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | None | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | None | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Third-Party Comments |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Third-Party Comments |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Negative | Comments Submitted |
| 3 | AEP | Kent Feliks | | Negative | Comments Submitted |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Negative | Comments Submitted |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corp ERD | Robert Follini | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|----------------------|
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | None | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Cowlitz County PUD | Russell Noble | | Negative | Comments Submitted |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Negative | Comments Submitted |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Eergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Negative | Comments Submitted |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Sam Christensen | | Affirmative | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Abstain | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | None | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Benjamin Widder | | None | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Abstain | N/A |
| 3 | National Grid USA | Brian Shanahan | | Negative | Third-Party Comments |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|-------------------|-------------|----------------------|
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Negative | Third-Party Comments |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | None | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Affirmative | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Negative | Third-Party Comments |
| 3 | Portland General Electric Co. | Adam Menendez | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Negative | Comments Submitted |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Negative | Comments Submitted |
| 3 | Santee Cooper | James Poston | | Negative | Comments Submitted |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | Negative | Comments Submitted |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Negative | Comments Submitted |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Negative | Comments Submitted |
| 3 | Xcel Energy, Inc. | Nicholas Friebel | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Abstain | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Alice Wright | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|----------------------|
| 4 | Austin Energy | Tony Hua | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Negative | Third-Party Comments |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | None | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | None | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Negative | Comments Submitted |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | None | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Negative | Comments Submitted |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Negative | Comments Submitted |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | None | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | None | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Cowlitz County PUD | Deanna Carlson | | Negative | Comments Submitted |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Third-Party Comments |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Negative | Comments Submitted |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Abstain | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | None | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Negative | Comments Submitted |
| 5 | Lakeland Electric | Carmen Rodriguez | | None | N/A |
| 5 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Abstain | N/A |
| 5 | Manitoba Hydro | Kristy-Lee Young | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | None | N/A |
| 5 | National Grid USA | Robin Berry | | Negative | Third-Party Comments |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Summer Esquerre | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Third-Party Comments |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Third-Party Comments |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|----------------------|
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Affirmative | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Negative | Third-Party Comments |
| 5 | Portland General Electric Co. | Ryan Olson | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Negative | Comments Submitted |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | None | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Negative | Comments Submitted |
| 5 | Santee Cooper | Don Cribb | | None | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Negative | Comments Submitted |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | None | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Negative | Comments Submitted |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Justin Kuehne | | Negative | Comments Submitted |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Negative | Comments Submitted |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | None | N/A |
| 6 | Cleco Corporation | Robert Hirchak | Clay Walker | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Jennifer Flandermeyer | Alan Kloster | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|----------------------|
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | None | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Negative | Comments Submitted |
| 6 | Lakeland Electric | Paul Shipps | | None | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Abstain | N/A |
| 6 | Manitoba Hydro | Simon Tanapat-Andre | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | None | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Third-Party Comments |
| 6 | Platte River Power Authority | Sabrina Martz | | Negative | Third-Party Comments |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Third-Party Comments |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Negative | Comments Submitted |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | None | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | None | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Negative | Comments Submitted |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Negative | Comments Submitted |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------|------------------|-------------|-----------|
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | None | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Affirmative | N/A |

Showing 1 to 294 of 294 entries

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/261)

Ballot Name: 2020-04 Modifications to CIP-012 Implementation Plan AB 3 OT

Voting Start Date: 11/7/2022 12:01:00 AM

Voting End Date: 11/29/2022 8:00:00 PM

Ballot Type: OT

Ballot Activity: AB

Ballot Series: 3

Total # Votes: 225

Total Ballot Pool: 289

Quorum: 77.85

Quorum Established Date: 11/23/2022 2:28:17 PM

Weighted Segment Value: 71.28

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 81 | 1 | 37 | 0.661 | 19 | 0.339 | 0 | 4 | 21 |
| Segment: 2 | 7 | 0.4 | 2 | 0.2 | 2 | 0.2 | 0 | 1 | 2 |
| Segment: 3 | 67 | 1 | 42 | 0.764 | 13 | 0.236 | 0 | 3 | 9 |
| Segment: 4 | 16 | 1 | 7 | 0.7 | 3 | 0.3 | 0 | 0 | 6 |
| Segment: 5 | 67 | 1 | 34 | 0.694 | 15 | 0.306 | 0 | 3 | 15 |
| Segment: 6 | 43 | 1 | 22 | 0.688 | 10 | 0.313 | 0 | 1 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 5 | 0.5 | 0 | 0 | 0 | 1 | 1 |
| Totals: | 289 | 5.9 | 149 | 4.206 | 62 | 1.694 | 0 | 14 | 64 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 1 | Allele - Minnesota Power, Inc. | Jamie Monette | | Negative | Comments Submitted |
| 1 | Ameren - Ameren Services | Tamara Evey | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | None | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Negative | Comments Submitted |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Negative | Third-Party Comments |
| 1 | BC Hydro and Power Authority | Adrian Andreou | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | None | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Negative | Third-Party Comments |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Third-Party Comments |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Affirmative | N/A |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkman | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|----------------------|
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Sheraz Majid | | Abstain | N/A |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Third-Party Comments |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | None | N/A |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | None | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | Pjoy Chua | | Abstain | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Abstain | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Affirmative | N/A |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Affirmative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | None | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | None | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | None | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | None | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Affirmative | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Negative | Third-Party Comments |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Third-Party Comments |
| 1 | Portland General Electric Co. | Brooke Jockin | | Affirmative | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Negative | Comments Submitted |
| 1 | Santee Cooper | Chris Wagner | | Negative | Comments Submitted |
| 1 | SaskPower | Wayne Guttormson | | None | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | None | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | None | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | None | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | None | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | Affirmative | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | None | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | None | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Third-Party Comments |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Third-Party Comments |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Abstain | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|-------------------|-------------|----------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Cowlitz County PUD | Russell Noble | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Affirmative | N/A |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Negative | Comments Submitted |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Sam Christensen | | Affirmative | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Abstain | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | None | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Benjamin Widder | | None | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Abstain | N/A |
| 3 | National Grid USA | Brian Shanahan | | Affirmative | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Negative | Third-Party Comments |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | None | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|----------------------|
| 3 | Platte River Power Authority | Richard Kiess | | Negative | Third-Party Comments |
| 3 | Portland General Electric Co. | Adam Menendez | | Affirmative | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Negative | Comments Submitted |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Affirmative | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | Affirmative | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Negative | Comments Submitted |
| 3 | Santee Cooper | James Poston | | Negative | Comments Submitted |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | Negative | Comments Submitted |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Negative | Comments Submitted |
| 3 | Xcel Energy, Inc. | Nicholas Friebe | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Alice Wright | | Affirmative | N/A |
| 4 | Austin Energy | Tony Hua | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Negative | Third-Party Comments |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | None | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | None | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | None | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Affirmative | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | None | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | None | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | None | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Negative | Comments Submitted |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Third-Party Comments |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Affirmative | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec Production | Carl Pineault | | Abstain | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | None | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Negative | Comments Submitted |
| 5 | Lakeland Electric | Carmen Rodriguez | | None | N/A |
| 5 | Lincoln Electric System | Jason Fortik | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|----------------------|
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | None | N/A |
| 5 | National Grid USA | Robin Berry | | Affirmative | N/A |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Summer Esquerre | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Third-Party Comments |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Third-Party Comments |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Affirmative | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Negative | Third-Party Comments |
| 5 | Portland General Electric Co. | Ryan Olson | | Affirmative | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Negative | Comments Submitted |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Affirmative | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | None | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Negative | Comments Submitted |
| 5 | Santee Cooper | Don Cribb | | None | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------------|------------------|-------------|----------------------|
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | None | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Negative | Comments Submitted |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Justin Kuehne | | Affirmative | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | None | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Jennifer Flandermeyer | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | None | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Negative | Comments Submitted |
| 6 | Lakeland Electric | Paul Shipps | | None | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Affirmative | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Abstain | N/A |
| 6 | Manitoba Hydro | Simon Tanapat-Andre | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | None | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Third-Party Comments |
| 6 | Platte River Power Authority | Sabrina Martz | | Negative | Third-Party Comments |
| 6 | Portland General Electric Co. | Daniel Mason | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------|------------------|-------------|--------------------|
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Negative | Comments Submitted |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | None | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | None | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | None | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Negative | Comments Submitted |
| 6 | Xcel Energy, Inc. | Carrie Dixon | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | None | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Affirmative | N/A |

Showing 1 to 289 of 289 entries

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/261)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 3 NB**Voting Start Date:** 11/7/2022 12:01:00 AM**Voting End Date:** 11/29/2022 8:00:00 PM**Ballot Type:** NB**Ballot Activity:** AB**Ballot Series:** 3**Total # Votes:** 218**Total Ballot Pool:** 281**Quorum:** 77.58**Quorum Established Date:** 11/28/2022 11:07:25 AM**Weighted Segment Value:** 62.07

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 78 | 1 | 27 | 0.587 | 19 | 0.413 | 12 | 20 |
| Segment: 2 | 7 | 0.4 | 1 | 0.1 | 3 | 0.3 | 1 | 2 |
| Segment: 3 | 65 | 1 | 31 | 0.674 | 15 | 0.326 | 10 | 9 |
| Segment: 4 | 15 | 1 | 7 | 0.7 | 3 | 0.3 | 0 | 5 |
| Segment: 5 | 66 | 1 | 25 | 0.61 | 16 | 0.39 | 9 | 16 |
| Segment: 6 | 42 | 1 | 15 | 0.6 | 10 | 0.4 | 7 | 10 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.2 | 2 | 0.2 | 0 | 0 | 4 | 1 |
| Totals: | 281 | 5.6 | 108 | 3.471 | 66 | 2.129 | 44 | 63 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|--------------------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | Abstain | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | Abstain | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Negative | Comments Submitted |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | None | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Austar - Austar Corporation | Mike Magruder | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|--------------------|
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Negative | Comments Submitted |
| 1 | BC Hydro and Power Authority | Adrian Andreou | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Negative | Comments Submitted |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Negative | Comments Submitted |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | None | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Negative | Comments Submitted |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | None | N/A |
| 1 | Colorado Springs Utilities | Mike Braunstein | | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Comments Submitted |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | None | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Steve Ritscher | | Negative | Comments Submitted |
| 1 | Dominion - Dominion Virginia Power | Candace Marshall | | Affirmative | N/A |
| 1 | Duke Energy | Laura Lee | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Affirmative | N/A |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Julie Severino | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | None | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Abstain | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Sheraz Majid | | Abstain | N/A |
| 1 | Hydro-Quebec TransEnergie | Nicolas Turcotte | | Negative | Comments Submitted |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | None | N/A |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------------|-------------------|-------------|--------------------|
| 1 | Lakeland Electric | Larry Watt | | None | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | Pjoy Chua | | Abstain | N/A |
| 1 | Lower Colorado River Authority | James Baldwin | | Negative | Comments Submitted |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Abstain | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Comments Submitted |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Salvatore Spagnolo | | Negative | Comments Submitted |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Abstain | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | None | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | None | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | None | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Affirmative | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Abstain | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Negative | Comments Submitted |
| 1 | Portland General Electric Co. | Brooke Jockin | | Abstain | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Negative | Comments Submitted |
| 1 | Santee Cooper | Chris Wagner | | Negative | Comments Submitted |
| 1 | SaskPower | Wayne Guttormson | | None | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | None | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Negative | Comments Submitted |
| 1 | Southwestern Power Administration | Angela Wheat | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|--------------------|
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Negative | Comments Submitted |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | Gabe Kurtz | | Abstain | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | None | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | None | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | None | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | None | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Negative | Comments Submitted |
| 2 | New York Independent System Operator | Gregory Campoli | | Negative | Comments Submitted |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Charles Yeung | | Abstain | N/A |
| 3 | AEP | Kent Feliks | | Abstain | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Abstain | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Michael Dieringer | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | None | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ken Lanehome | | Negative | Comments Submitted |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | None | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | Affirmative | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Abstain | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Comments Submitted |
| 3 | Cowlitz County PUD | Russell Noble | | Affirmative | N/A |
| 3 | Dominion - Dominion Resources, Inc. | Connie Schroeder | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|-------------------|-------------|--------------------|
| 3 | DTE Energy - Detroit Edison Company | Karie Barczak | | Negative | Comments Submitted |
| 3 | Duke Energy | Lee Schuster | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | Glen Allegranza | Denise Sanchez | Negative | Comments Submitted |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | None | N/A |
| 3 | Lincoln Electric System | Sam Christensen | | Abstain | N/A |
| 3 | Los Angeles Department of Water and Power | Tony Skourtas | | Abstain | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Abstain | N/A |
| 3 | National Grid USA | Brian Shanahan | | Negative | Comments Submitted |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Comments Submitted |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Negative | Comments Submitted |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Negative | Comments Submitted |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | None | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Affirmative | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Abstain | N/A |
| 3 | Portland General Electric Co. | Adam Menendez | | Abstain | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Maria Pardo | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|--------------------|
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Negative | Comments Submitted |
| 3 | Santee Cooper | James Poston | | Negative | Comments Submitted |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | Negative | Comments Submitted |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrold Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Negative | Comments Submitted |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Negative | Comments Submitted |
| 3 | Tri-State G and T Association, Inc. | Janelle Marriott Gill | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Negative | Comments Submitted |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Alice Wright | | Affirmative | N/A |
| 4 | Austin Energy | Tony Hua | | None | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Negative | Comments Submitted |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | Affirmative | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | None | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Negative | Comments Submitted |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | None | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | None | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Abstain | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | Abstain | N/A |
| 5 | APS - Arizona Public Service Co. | Michelle Amarantos | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|--------------------|
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | None | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Negative | Comments Submitted |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | None | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Abstain | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Comments Submitted |
| 5 | Constellation | Alison MacKellar | | None | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Negative | Comments Submitted |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Negative | Comments Submitted |
| 5 | Dominion - Dominion Resources, Inc. | Rachel Snead | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Adrian Raducea | | Negative | Comments Submitted |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Robert Loy | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Qu?bec Production | Carl Pineault | | Abstain | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | None | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Negative | Comments Submitted |
| 5 | Lakeland Electric | Carmen Rodriguez | | None | N/A |
| 5 | Lincoln Electric System | Jason Fortik | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | None | N/A |
| 5 | National Grid USA | Robin Berry | | Negative | Comments Submitted |
| 5 | NB Power Corporation | David Melanson | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|--------------------|
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Comments Submitted |
| 5 | NextEra Energy | Summer Esquerre | | Affirmative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Negative | Comments Submitted |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | None | N/A |
| 5 | Omaha Public Power District | Mahmood Safi | | Negative | Comments Submitted |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Affirmative | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Abstain | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | Abstain | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG - PSEG Fossil LLC | Tim Kucey | | Abstain | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | None | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Meaghan Connell | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Negative | Comments Submitted |
| 5 | Santee Cooper | Don Cribb | | None | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Jim Howell, Jr. | | Negative | Comments Submitted |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | None | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Negative | Comments Submitted |
| 6 | AEP | Justin Kuehne | | Abstain | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Abstain | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | Affirmative | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------------|------------------|-------------|--------------------|
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | None | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | None | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Comments Submitted |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Jennifer Flandermeyer | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | None | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Negative | Comments Submitted |
| 6 | Lakeland Electric | Paul Shipps | | None | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | Abstain | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Abstain | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | None | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | Comments Submitted |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Negative | Comments Submitted |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Negative | Comments Submitted |
| 6 | Platte River Power Authority | Sabrina Martz | | Abstain | N/A |
| 6 | Portland General Electric Co. | Daniel Mason | | Abstain | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Comments Submitted |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Joseph Neglia | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Glen Pruitt | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | None | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | None | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------|------------------|-------------|--------------------|
| 6 | Southern Indiana Gas and Electric Co. | Erin Spence | | Negative | Comments Submitted |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Negative | Comments Submitted |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | Abstain | N/A |
| 10 | Midwest Reliability Organization | William Steiner | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | None | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Abstain | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Abstain | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

Showing 1 to 281 of 281 entries

Previous 1 Next

Unofficial Nomination Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting nominations. Use the [electronic form](#) to submit nominations by **8 p.m. Eastern, February 2, 2023**. This unofficial version is provided to assist nominees in compiling the information necessary to submit the electronic form.

Additional information about this project is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Alison Oswald](#) (via email), or at 404-275-9410.

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

Previous drafting or review team experience is beneficial, but not required. A brief description of the desired qualifications, expected commitment, and other pertinent information is included below.

Project 2020-04 Modification to CIP-012

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communications links and data communicated between the bulk electric system Control Centers. This project has had three ballots and is seeking additional subject matter expertise to assist in completing a fourth successful ballot.

Standard(s) affected: CIP-012 – Communications between Control Centers

The Reliability Standard(s) developed or revised will include modifications to CIP-012-1. In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability.

The time commitment for this project is expected to be up to two conference calls scheduled weekly or as needed to meet the agreed-upon timeline the review or drafting team sets forth. The team will discuss a face-to-face meeting if needed. Outside the scheduled meetings, individuals or subgroups will have additional preparation and support work such as researching and developing proposed concepts, reviewing proposals, compiling comments and drafting responses, etc. Lastly, an important component of the review and drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

We are seeking a cross section of the industry to participate on the team, but in particular seeking individuals with both O&P and CIP standards expertise specifically around data communications and communication links.

Individuals who have facilitation skills and experience and/or legal or technical writing backgrounds are also strongly desired. Please include this in the description of qualifications as applicable.

| | | |
|--|---|--|
| Name: | | |
| Organization: | | |
| Address: | | |
| Telephone: | | |
| Email: | | |
| Please briefly describe your experience and qualifications to serve on the requested Standard Drafting Team (Bio): | | |
| <p>If you are currently a member of any NERC drafting team, please list each team here:</p> <p><input type="checkbox"/> Not currently on any active SAR or standard drafting team.</p> <p><input type="checkbox"/> Currently a member of the following SAR or standard drafting team(s):</p> | | |
| <p>If you previously worked on any NERC drafting team please identify the team(s):</p> <p><input type="checkbox"/> No prior NERC SAR or standard drafting team.</p> <p><input type="checkbox"/> Prior experience on the following team(s):</p> | | |
| <p>Acknowledgement that the nominee has read and understands both the <i>NERC Participant Conduct Policy</i> and the <i>Standard Drafting Team Scope</i> documents, available on NERC Standards Resources.</p> <p><input type="checkbox"/> Yes, the nominee has read and understands these documents.</p> | | |
| <p>Select each NERC Region in which you have experience relevant to the Project for which you are volunteering:</p> | | |
| <input type="checkbox"/> MRO <input type="checkbox"/> NPCC <input type="checkbox"/> RF | <input type="checkbox"/> SERC <input type="checkbox"/> Texas RE <input type="checkbox"/> WECC | <input type="checkbox"/> NA – Not Applicable |

Select each Industry Segment that you represent:

| | |
|--------------------------|--|
| <input type="checkbox"/> | 1 — Transmission Owners |
| <input type="checkbox"/> | 2 — RTOs, ISOs |
| <input type="checkbox"/> | 3 — Load-serving Entities |
| <input type="checkbox"/> | 4 — Transmission-dependent Utilities |
| <input type="checkbox"/> | 5 — Electric Generators |
| <input type="checkbox"/> | 6 — Electricity Brokers, Aggregators, and Marketers |
| <input type="checkbox"/> | 7 — Large Electricity End Users |
| <input type="checkbox"/> | 8 — Small Electricity End Users |
| <input type="checkbox"/> | 9 — Federal, State, and Provincial Regulatory or other Government Entities |
| <input type="checkbox"/> | 10 — Regional Reliability Organizations and Regional Entities |
| <input type="checkbox"/> | NA — Not Applicable |

Select each Function¹ in which you have current or prior expertise:

| | |
|---|--|
| <input type="checkbox"/> Balancing Authority | <input type="checkbox"/> Transmission Operator |
| <input type="checkbox"/> Compliance Enforcement Authority | <input type="checkbox"/> Transmission Owner |
| <input type="checkbox"/> Distribution Provider | <input type="checkbox"/> Transmission Planner |
| <input type="checkbox"/> Generator Operator | <input type="checkbox"/> Transmission Service Provider |
| <input type="checkbox"/> Generator Owner | <input type="checkbox"/> Purchasing-selling Entity |
| <input type="checkbox"/> Interchange Authority | <input type="checkbox"/> Reliability Coordinator |
| <input type="checkbox"/> Load-serving Entity | <input type="checkbox"/> Reliability Assurer |
| <input type="checkbox"/> Market Operator | <input type="checkbox"/> Resource Planner |
| <input type="checkbox"/> Planning Coordinator | |

¹ These functions are defined in the NERC [Functional Model](#), which is available on the NERC website.

Provide the names and contact information for two references who could attest to your technical qualifications and your ability to work well in a group:

| | | | |
|---------------|--|------------|--|
| Name: | | Telephone: | |
| Organization: | | Email: | |
| Name: | | Telephone: | |
| Organization: | | Email: | |

Provide the name and contact information of your immediate supervisor or a member of your management who can confirm your organization’s willingness to support your active participation.

| | | | |
|--------|--|------------|--|
| Name: | | Telephone: | |
| Title: | | Email: | |

Standards Announcement

Project 2020-04 Modifications to CIP-012

Supplemental Nomination Period Open through February 2, 2023

Now Available

Additional nominations are being sought for **Project 2020-04 Modifications to CIP-012** standard drafting team members through **8 p.m. Eastern, Thursday, February 2, 2023**.

Use the [electronic form](#) to submit a nomination. Contact [Linda Jenkins](#) regarding issues using the electronic form. An unofficial Word version of the nomination form is posted on the [Standard Drafting Team Vacancies](#) page and the [project page](#).

By submitting a nomination form, you are indicating your willingness and agreement to actively participate in face-to-face meetings and conference calls.

The time commitment for this project is expected to be up to two conference calls scheduled weekly or as needed to meet the agreed-upon timeline the review or drafting team sets forth. The team will discuss a face-to-face meeting if needed. Outside the scheduled meetings, individuals or subgroups will have additional preparation and support work such as researching and developing proposed concepts, reviewing proposals, compiling comments and drafting responses, etc. Lastly, an important component of the review and drafting team effort is outreach. Members of the team will be expected to conduct industry outreach during the development process to support a successful project outcome.

Previous drafting or review team experience is beneficial, but not required. See the project page and nomination form for additional information.

Next Steps

The Standards Committee is expected to appoint members to the standard drafting team in February 2023. Nominees will be notified shortly after they have been appointed.

For more information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Alison Oswald](#) (via email) or at 404-446-9668. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify ""Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |
| 55-day formal comment period with ballot | November 2021 |

| Anticipated Actions | Date |
|--|----------------|
| 45-day formal comment period with ballot | September 2023 |
| 10-day final ballot | December 2023 |
| Board adoption | December 2023 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1. Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2. Identification of method(s) used to mitigate the risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.
- M1.** Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each Part:
- Part 1.1
- Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers
 - Physical access restrictions to unencrypted portions of the network
- Part 1.2
- Identification of alternative communication paths or methods between Control Centers
 - Procedures explaining the use of alternative systems or methods for providing for the availability of the data
 - Service level agreements with carriers containing high availability provisions
 - Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data
- Part 1.3
- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery
 - Methods for the recovery of links such as standard operating procedures,

applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans

- Documentation of the process to restore assets and systems that provide communications
- Process or procedure to contact a communications link vendor to initiate and or verify restoration of service

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Third party Agreements detailing where the methods are implemented if such methods are implemented by the third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement, or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.
- 1.3. Compliance Monitoring and Enforcement Program:** As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|--|--|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|---|-------------------------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1Docket No. RM18-20-000 | |
| 2 | TBD | Adopted by NERC Board of Trustees | Revised under Project 2020-04 |

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
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| Anticipated Actions | Date |
|--|---|
| 45-day formal comment period with ballot | October <u>September</u> 202 32 |
| 10-day final ballot | December 202 32 |
| Board adoption | February <u>December</u> 2023 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

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1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
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4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used ~~for~~ in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. - The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1. Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used ~~for in~~ Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
- 1.2. Identification of method(s) used to mitigate the risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers; ~~used for Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers~~;
- 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
- 1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
- 1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, ~~and 1.2~~, and 1.3.

M1. ~~Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Identification in the plan, one or more of the following:~~

Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each Part:

Part 1.1

- ~~identification of points where the~~ Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification encryption/decryption of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers occurs at either a transport, network, or application layer
- ~~P~~physical access restrictions to unencrypted portions of the network

Part 1.2

- ~~network diagram showing documentation within the plan~~ Identification of redundancy of alternative of paths communication paths or methods between Control Centers
- ~~P~~rocedures explaining the use of alternative systems or methods for providing for the availability of the data
- ~~S~~ervice level agreements with carriers containing high availability provisions
- ~~A~~availability or uptime reports for equipment supporting the transmission of

Real-time Assessment and Real-time monitoring data

Part 1.3

- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery
- Methods for the recovery of links such as standard operating procedures, [applicable sections of](#) CIP-009 recovery plan(s), or similar technical recovery plans
- [Documentation of the process to restore assets and systems that provide communications](#)
- [Process or procedure to contact a communications link vendor to initiate and or verify restoration of service](#)

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- [Third party Agreements Document\(s\) detailing where the methods are implemented if such methods are implemented provided by the a third party Agreements outlining the implemented methods if provided by a third party](#)

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.
- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|--|--|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|---|--|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1- Docket No. RM18-20-000; | |
| 2 | TBD | Adopted by NERC Board of Trustees | <u>Revised under Project 2020-04</u> |

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|-------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |
| 55-day formal comment period with ballot | November 2021 |

| Anticipated Actions | Date |
|--|-----------------------|
| 45-day formal comment period with ballot | <u>September 2023</u> |
| 10-day final ballot | <u>December 2023</u> |
| Board adoption | <u>December 2023</u> |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:**——— Cyber Security – Communications between Control Centers-
2. **Number:** CIP-012-~~12~~
3. **Purpose:** To protect the confidentiality, integrity, and availability ~~and integrity~~ of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:-**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.-
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator-**
 - 4.1.3. **Generator Owner-**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner-**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-~~12~~:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-~~12~~.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure- and, unauthorized modification ~~of~~, and loss of availability, of data used in Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]

- 1.1. Identification of ~~security protection~~method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring ~~data~~ while such data is being transmitted between Control Centers;
- 1.2. Identification of ~~where~~method(s) used to mitigate the ~~Responsible Entity applied security protection~~risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring ~~for transmitting Real-time Assessment and Real-time monitoring~~ data between Control Centers;
- 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
- ~~1.2.1.4.~~ Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1, 1.2, and 1.3; and
- ~~1.3.1.5.~~ If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for ~~applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers.~~implementing method(s) as required in Parts 1.1 and 1.2.

Evidence

M1. Examples of evidence may include, but ~~is~~are not limited to, documented plan(s) that meet the security mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each part:

Part 1.1

- Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers
- Physical access restrictions to unencrypted portions of the network

Part 1.2

- Identification of alternative communication paths or methods between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
- Service level agreements with carriers containing high availability provisions
- Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data

Part 1.3

- Contract, memorandum of understanding, meeting minutes, agreement or other

information outlining the methods used for recovery

- Methods for the recovery of links such as standard operating procedures, applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans
- Documentation of the process to restore assets and systems that provide communications
- Process or procedure to contact a communications link vendor to initiate and or verify restoration of service

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Third party Agreements detailing where the methods are implemented if such methods are implemented by the third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.-
- If a Responsible Entity is found non-compliant, it shall keep information

related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.-

- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.

1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

–Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|---|---|---|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s) but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s) but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement any Part three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-~~1~~2.
~~Implementation Guidance.~~

Version History-

| Version | Date | Action | Change Tracking |
|----------|------------------|--|--------------------------------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1. Docket No. RM18-20-000; | |
| 1 | February 17,2020 | Effective Date | 7/1/2022 |
| <u>2</u> | <u>TBD</u> | <u>Adopted by NERC Board of Trustees</u> | <u>Revised under Project 2020-04</u> |

Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communications links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

Unofficial Comment Form

Project 2020-04 Modifications to CIP-012

Do not use this form for submitting comments. Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments on **Project 2020-04 Modifications to CIP-012** by **8 p.m. Eastern, November 2, 2023**.

Additional information is available on the [project page](#). If you have questions, contact Senior Standards Developer, [Ben Wu](#) (via email), or at 470-542-6882.

Background Information

In Order No. 866, FERC stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity's compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed, and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability. The proposed scope of this project would entail modifications to CIP-012 – Communications between Control Centers.

The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.

Questions

1. The standard drafting team (SDT) revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not, please provide comments and suggested requirement language.

Yes

No

Comments:

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not, please provide comments and suggested requirement language.

Yes

No

Comments:

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not, please provide comments and suggested requirement language.

Yes

No

Comments:

4. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost-effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost-effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Yes

No

Comments:

5. The SDT reviewed the implementation plan and did not see any reasons to make any changes. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate

implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

Yes

No

Comments:

6. Provide any additional comments for the SDT to consider, including the provided technical rationale and implementation guidance document, if desired.

Comments:

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

September 2023

RELIABILITY | RESILIENCE | SECURITY



**3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com**

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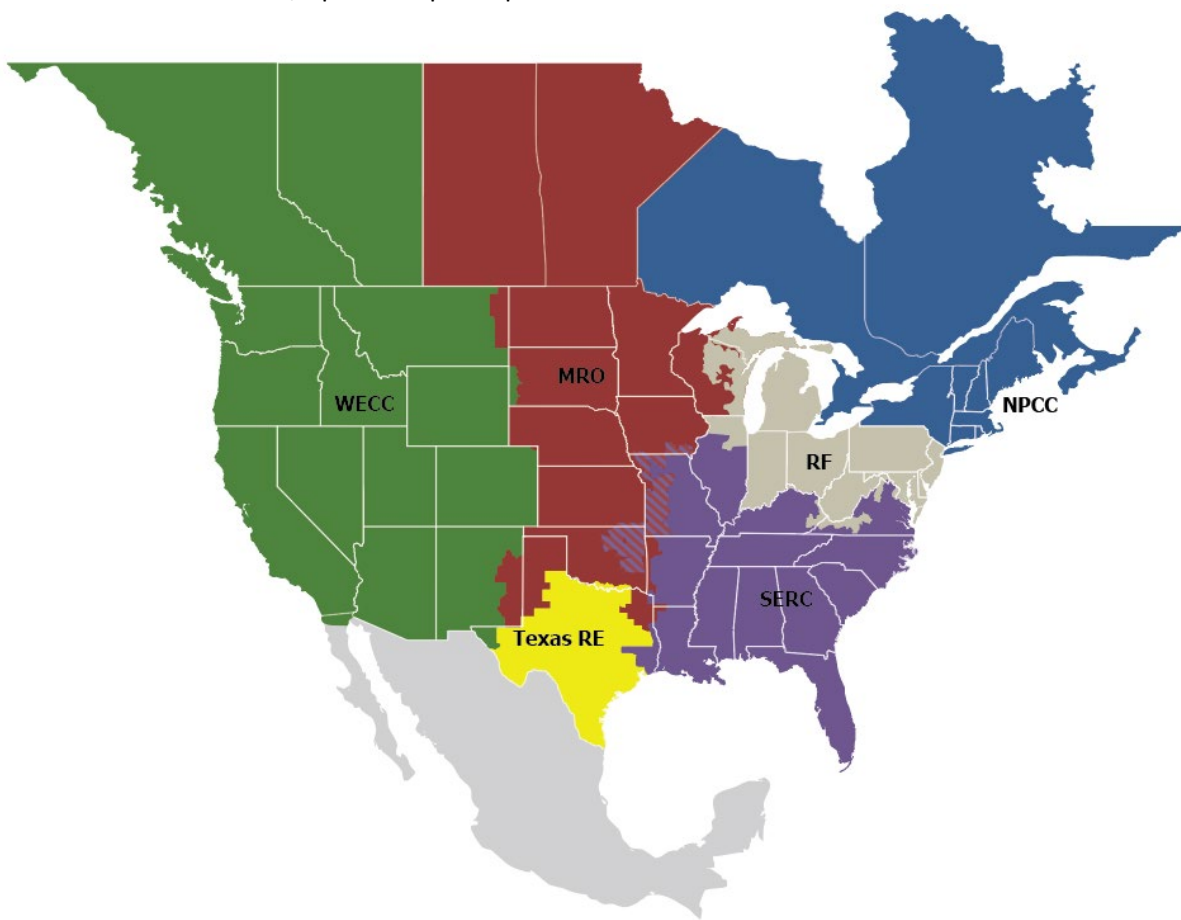
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | Reliability First |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the Standard Drafting Team’s (SDT) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communication links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT refined the subparts of R1, to include additional requirements for entities to: (a) requiring entities to identify methods used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have addressed these contingencies in their

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

existing recovery and/or incident response plan(s). Relevant evidence arising out of these plans may be referenced to meet CIP-012 requirements, avoiding duplication of administrative efforts.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their Balancing Authority (BA) or Transmission Operator (TOP) Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this scenario which is described in further detail below.

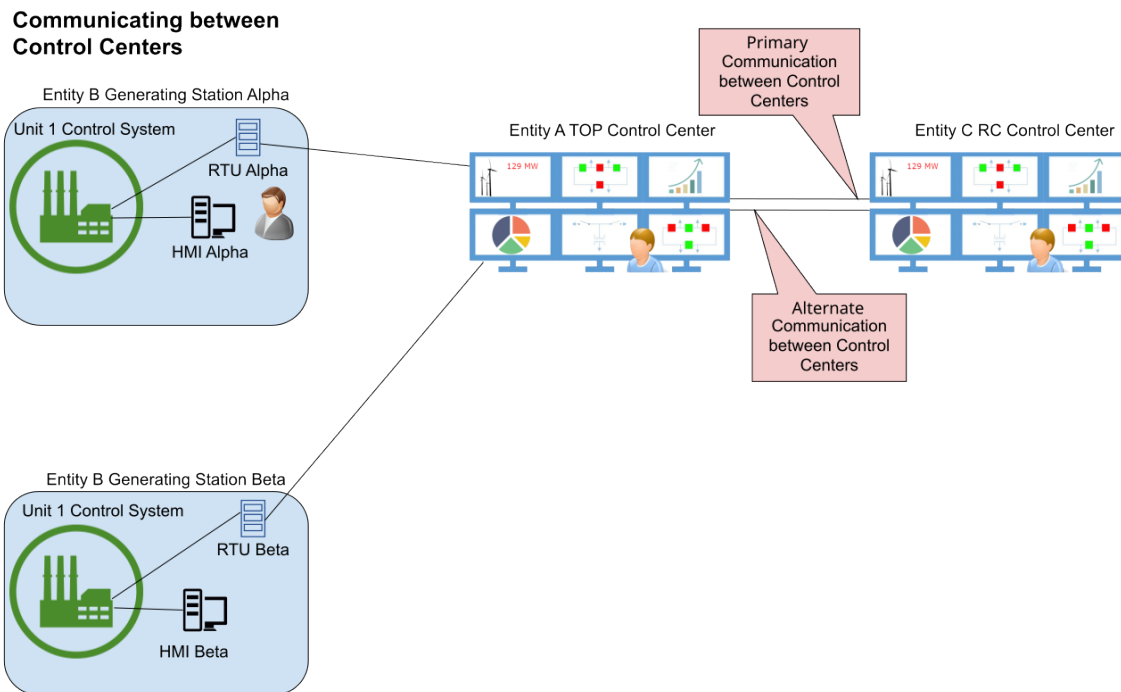


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

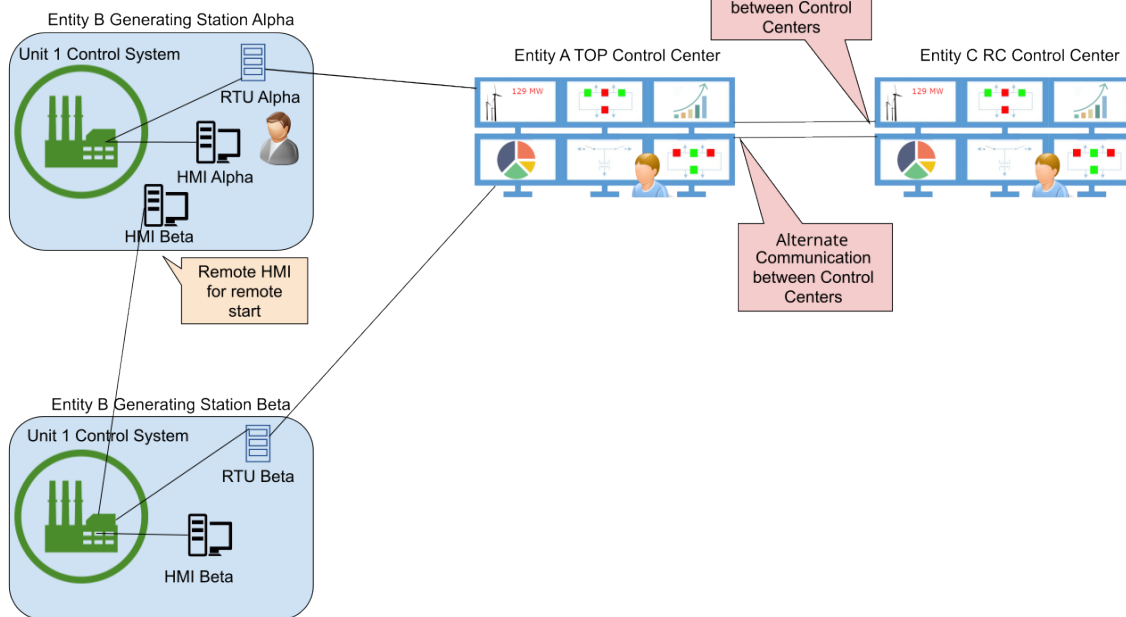


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

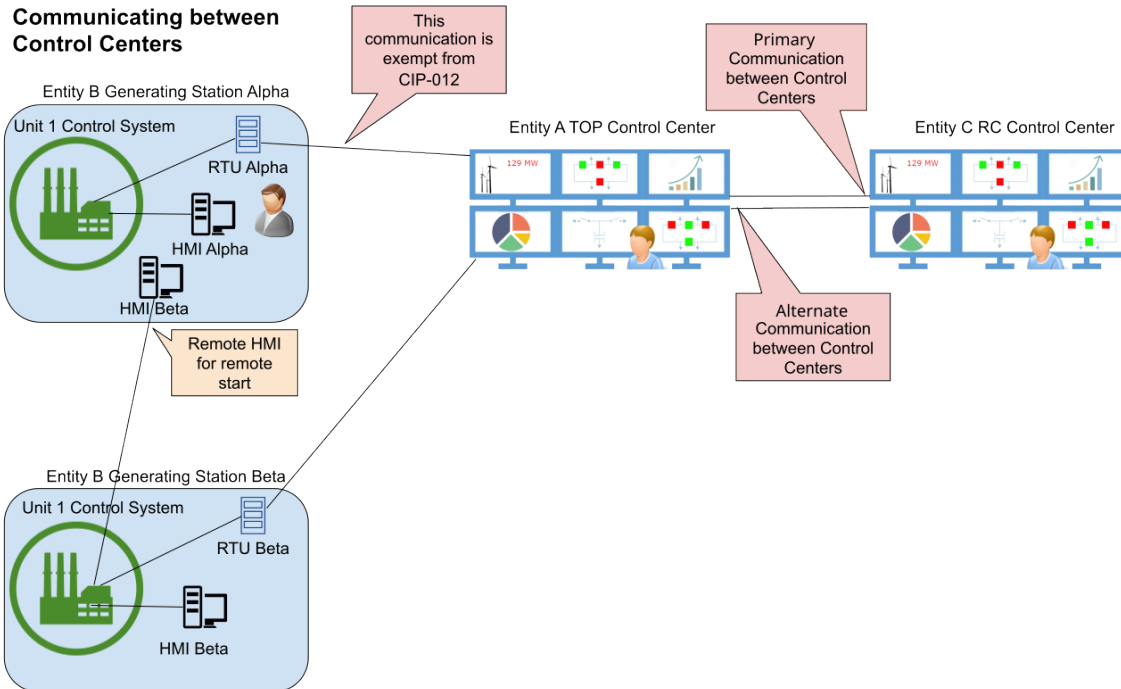


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for Transmission Owners (TOs) and Generation Operators (GOPs), the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers.

The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

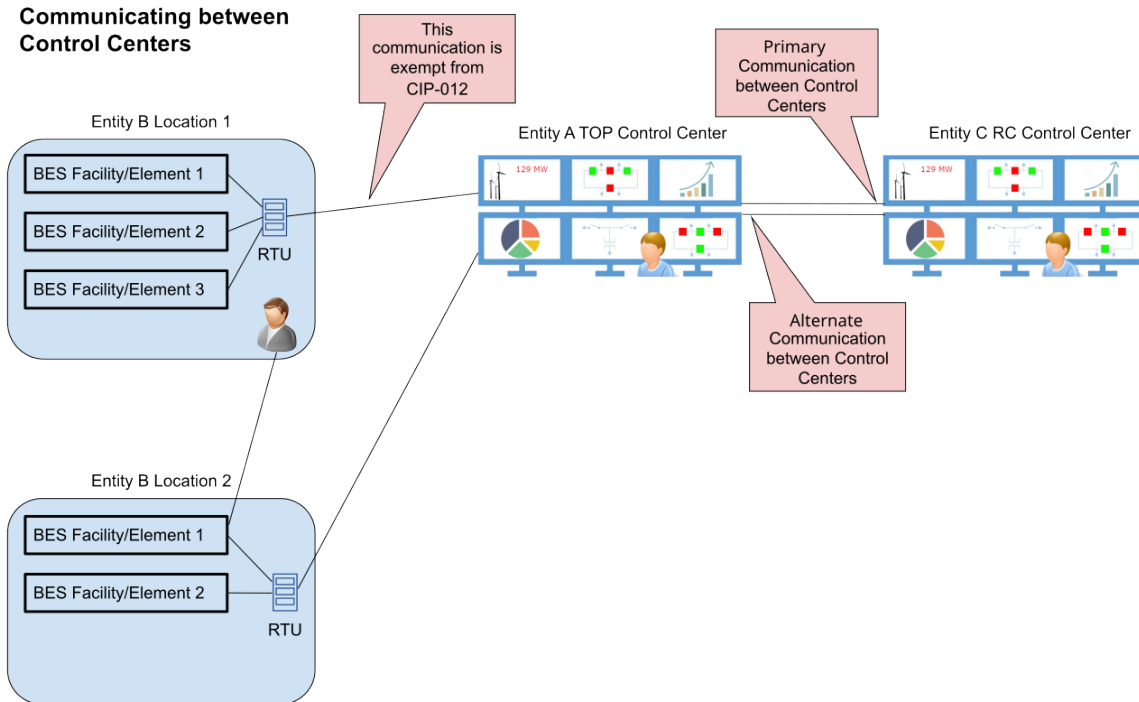


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1,1.2, and 1.3.

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of the ability to communicate Real-time Assessment and Real-time monitoring data. A loss of data transmission capability between Control Centers can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining the ability to communicate Real-time Assessment and Real-time monitoring data.

Part 1.3 addresses the need to identify measures to initiate the recovery of communication links. An important element of data communications is the availability of the communication links themselves. Communication links are the medium by which the data is transmitted between Control Centers (e.g., fiber, copper lines, satellite, etc.). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.4 requires the identification of where methods to mitigate are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan. For further information, please see 'Identification of Where Protections are Applied by the Responsible Entity' section below.

Part 1.5 addresses requirements for each side of the data transfer when Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates timely restoration when there is a problem with the transmission of the data.

Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity), and transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴
- Based on the NIST definition⁵, availability is defined by the SDT as, “providing timely and reliable access to information.”

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operations and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the suite of NERC Reliability Standards.

When real-time assessment or real-time monitoring data is lost, an entity does not have the data needed for secure operation of Bulk Electric System. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may be achieved in several ways which are identified within the Measures section of the Standard.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA, or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under “Availability” from 44 U.S.C., Sec. 3542 (b)(1)(C)

latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place. If the point where security protections (e.g., encryption/decryption) is applied on a communication link that is located outside of the Responsible Entities' Control Center PSP (e.g., physically secured area, telecom room), then security protections are still required for the data until it crosses into the Control Center PSP.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.4 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.5.

Control Center Ownership

The CIP-012 Standard Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. It also covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

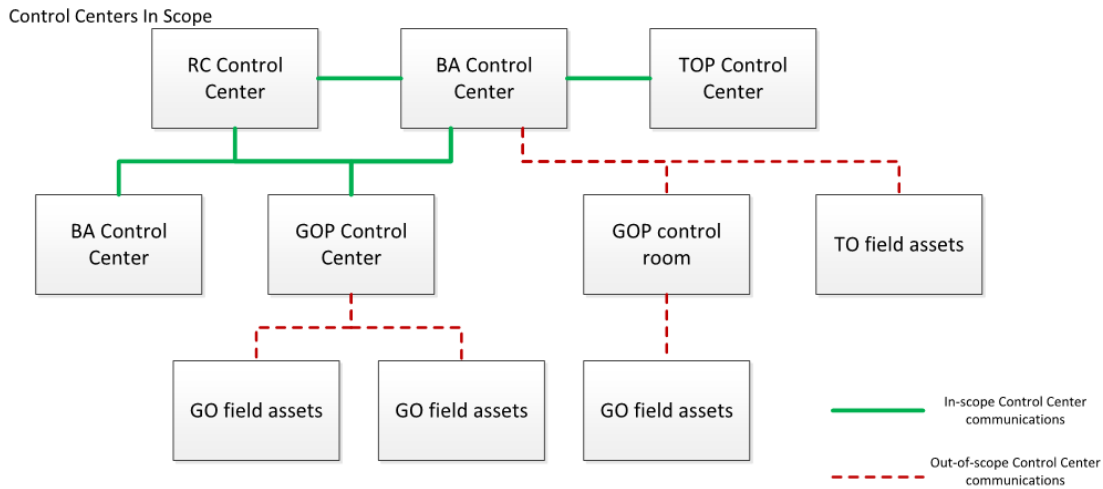


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.5 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

~~April~~ September 20223

RELIABILITY | ACCOUNTABILITY



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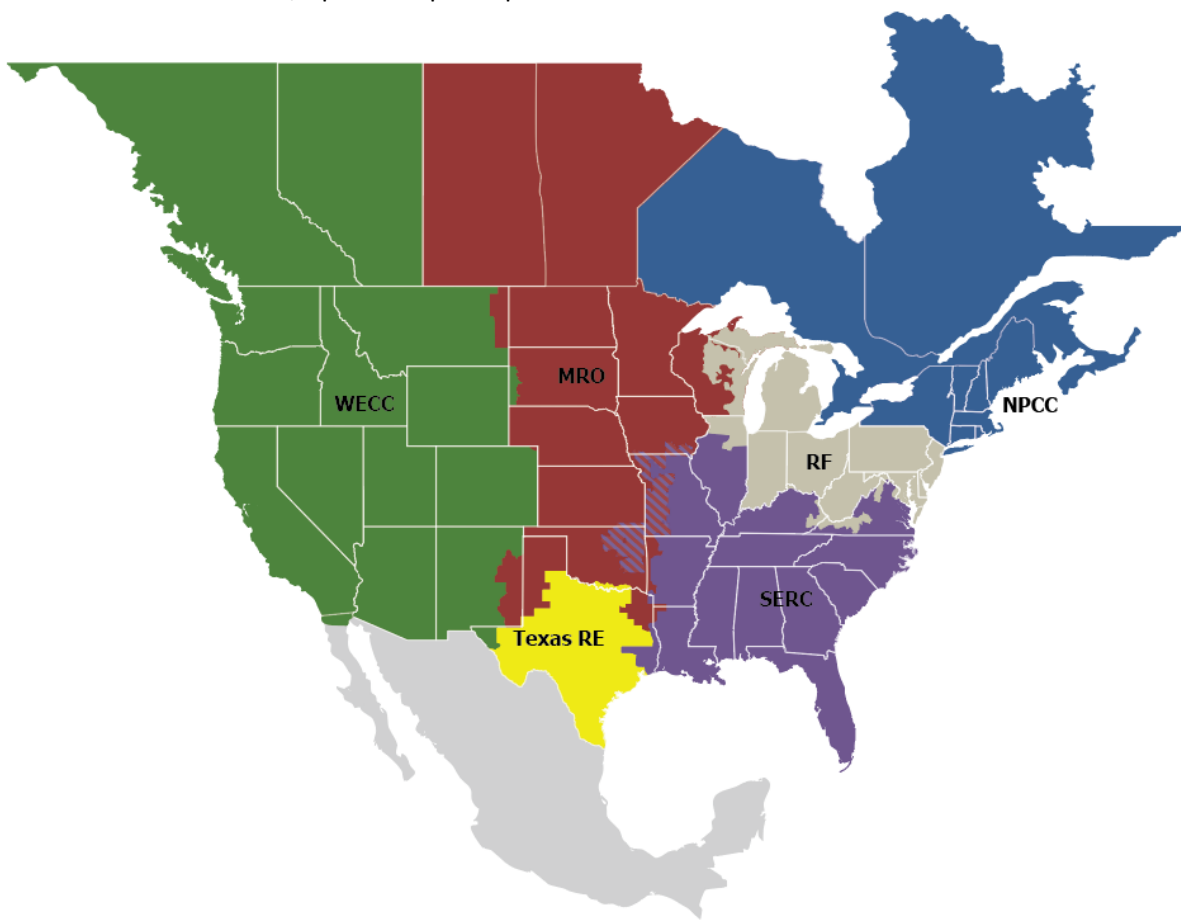
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | Reliability First |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the [Standard Drafting Team's \(SDT\)'s](#) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 ~~standard drafting team (SDT)~~[SDT](#) drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and ~~communications links~~[communication links](#) between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication ~~s~~[s](#)-links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 ~~standard drafting team (SDT)~~[SDT](#) [refined the subparts of R1, to include additional requirements for entities to: \(a\) requiring entities to identify methods used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers](#)[CIP-012-2 Requirement R2](#).

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

capability². The SDT recognized that Responsible Entities may already have ~~plans to address~~ these contingencies in their ~~existing CIP-008 and CIP-009 recovery and/or incident response plan(s)~~. ~~and Relevant evidence arising out of these could plans may be referenced as part of their to meet CIP-012 plan to meet the requirements, and avoiding duplication of administrative efforts.~~

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their Balancing Authority (BA) or Transmission Operator (TOP) Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this ~~particular~~ scenario which is described in further detail below.

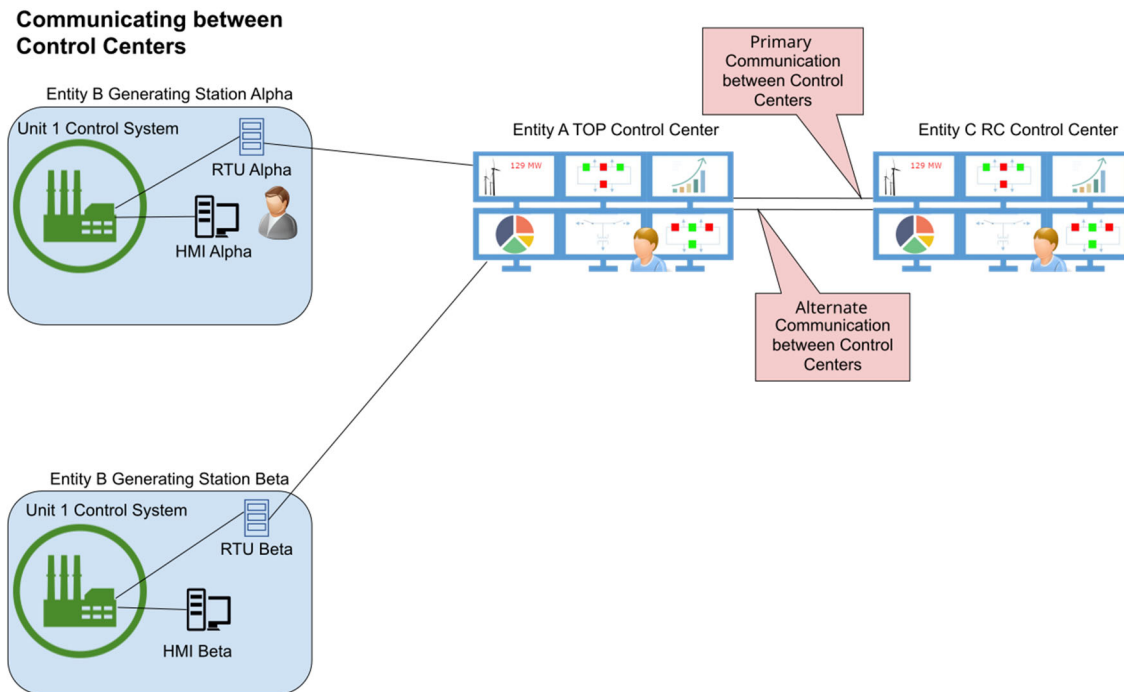


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

² See Order No. 866 at PP 35-36.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

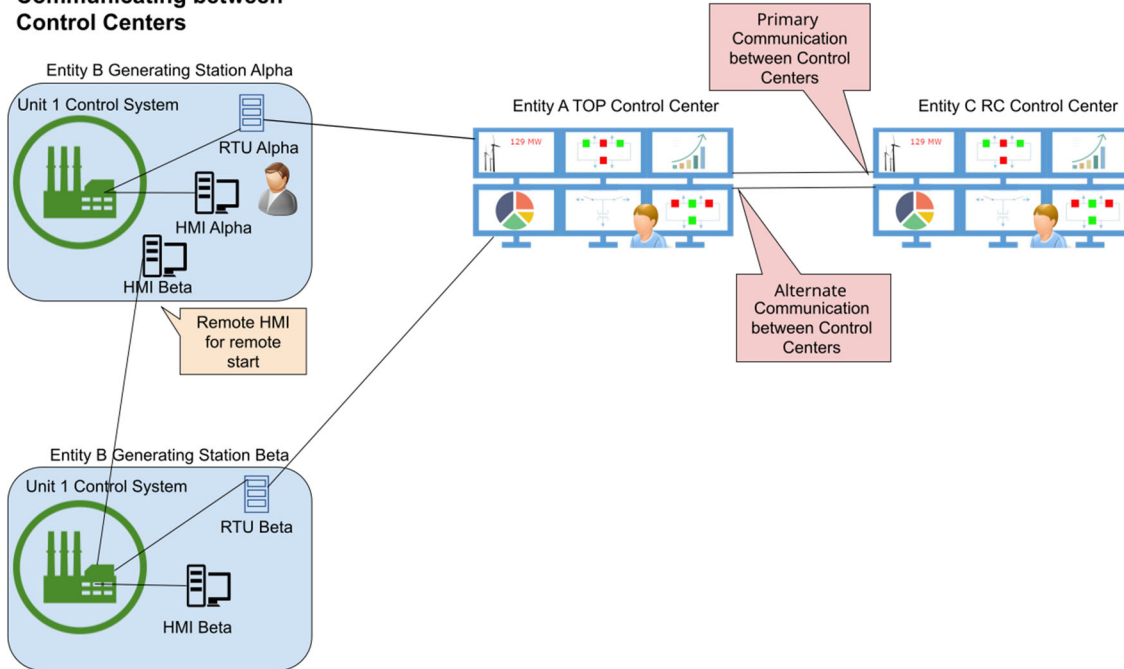


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta's control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now "one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations" because stations Alpha and Beta are two different plant locations. Station Alpha can now be ~~dual-classified~~ dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

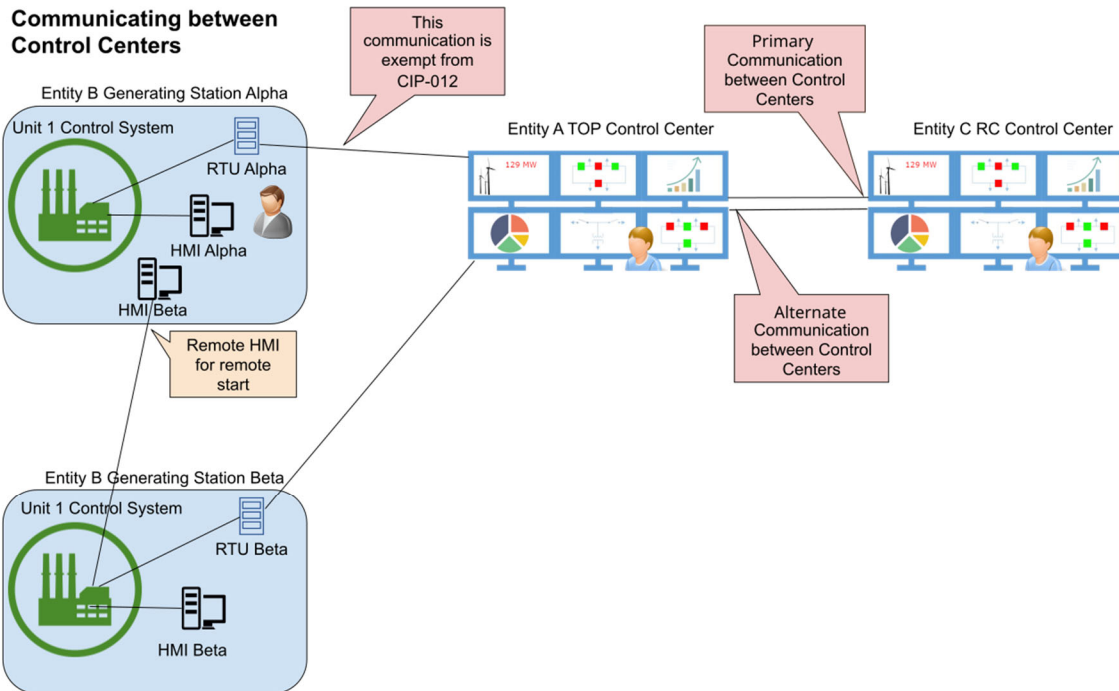


Figure 3

-Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP sStandard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for Transmission Owners (TOs) and Generation Operators (GOPs), the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers. The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

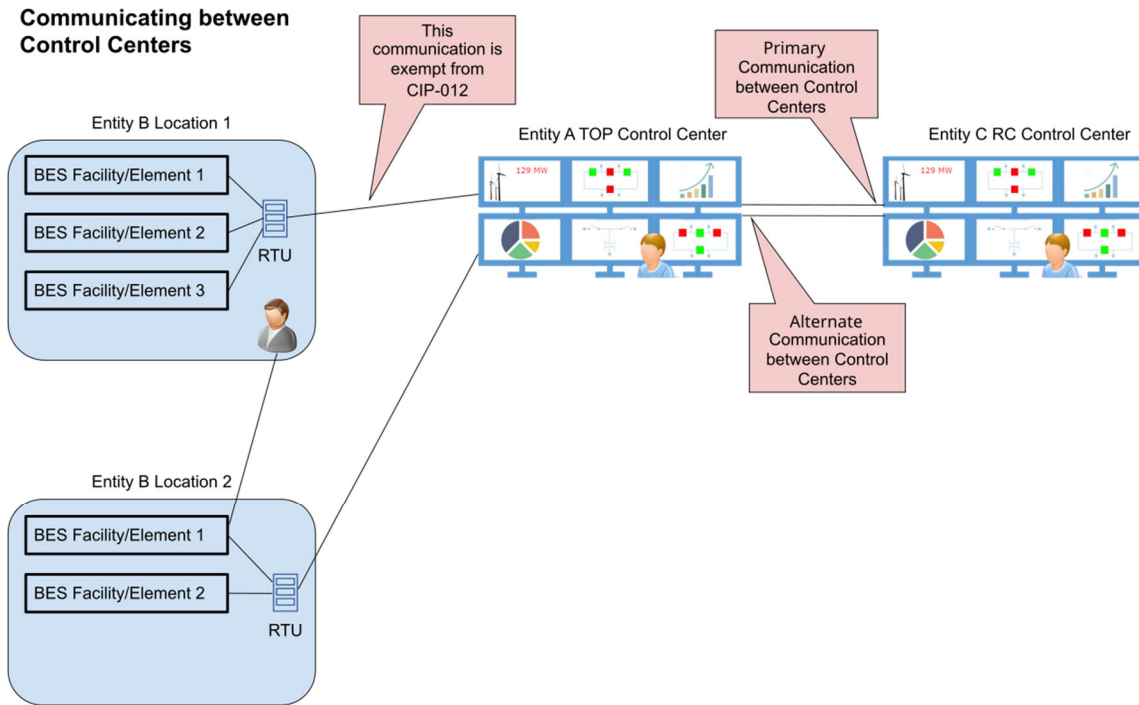


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time ~~m~~Monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1,1.2, and 1.3.

Requirement R1

- ~~1.6. Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used for in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;~~
- ~~1.7. Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring Real-time Assessment and Real-time monitoring data between Control Centers; while such data is being transmitted between Control Centers;~~
- ~~1.8. Identification of method(s) used to initiate to be used for the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;~~
- ~~1.9. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and~~
- ~~1.10. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, and 1.2 and 1.3.~~

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to (The chose to remove the language identification of security and availability protections and replaced with identification of methods to help entities quantify what the plan should require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.ain.)

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security ~~and availability~~ protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of the ability to communicate Real-time Assessment and Real-time monitoring data. data transmission capability. A loss of data transmission capability between Control Centers can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining the ability to communicate Real-time Assessment and Real-time monitoring data. availability of data circuits.

Part 1.3 addresses the need to identify measures to initiate the recovery of communications links communication links. An important element of data communications is the availability of the communication links themselves. Communications links Communication links are the medium by which the data is transmitted between Control Centers (e.g. fiber, copper lines, satellite, etc). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 ~~plan plan,~~ or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.43 requires the identification of where methods to mitigate protections are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a

document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan. For further information, please see 'Identification of Where Protections are Applied by the Responsible Entity' section below.

Part 1.54 addresses requirements for each side of the data transfer when ~~the~~ Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates timely restoration when there is a problem with the transmission of the data.

Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity) and transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, "Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information."³
- Integrity is defined as, "Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity."⁴
- Based on the NIST definition⁵, aAvailability is defined by the SDT and based on the NIST definition as, "Ensuring Providing timely and reliable access to and use of information."⁶

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operating Operations and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the suite of NERC Reliability Standards.

When real time assessment or real time monitoring data is lost, an entity does not have the data needed for secure operation of Bulk Electric System. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may be achieved in a number of several ways which are identified within the Measures section of the Standard. These include, among other potential options, the use of redundant circuits traversing discrete paths, or acquiring the same data points from multiple Control Centers, etc. among other ones.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references

³ NIST Special Publication 800-53A, Revision 4, page B-3

⁴ NIST Special Publication 800-53A, Revision 4, page B-6

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to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. –CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows latitude allows latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity’s facility that affect the Responsible Entity’s data flows to ensure appropriate protections are in place. If the point where security protections (e.g., encryption/decryption) is applied on a communication link that is located outside of the Responsible Entities’ Control Center PSP (e.g., physically secured area, telecom room), then that entity security protections are still would need required to continue to provide protections for of the data until it crosses into the entity’s Control Center PSP.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity’s data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.43 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.54.

Control Center Ownership

The CIP-012 Standard Requirements address protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. They also cover the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity’s Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirements do not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, “if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system.”

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

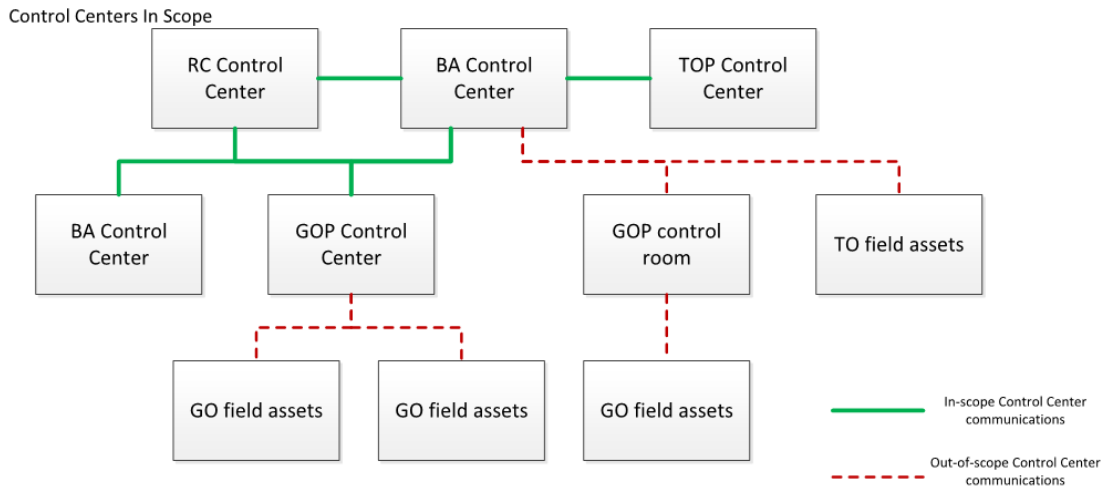


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.54 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.41.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1, 1.2 and 1.3 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.41.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not substantially change from the previously FERC approved CIP-012-1 Reliability Standard. The severe VSL was modified to reflect the proposed Requirement R1 which now has four subparts.

| VSLs for CIP-012-2, Requirement R1 | | | |
|------------------------------------|--|---|--|
| Lower | Moderate | High | Severe |
| N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R2. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R2 | The Responsible Entity failed to document plan(s) for Requirement R2; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R2, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirements R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R1.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language.</p> <p>The moderate VSL addresses where the Responsible Entity documented its plan(s), but failed to include one of the applicable parts of the plan as specified in Requirement R1.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s), but failed to include two of the applicable parts of the plan as specified in Requirement R1.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|--|---|
| <p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|--|---|

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

September 2023

RELIABILITY | RESILIENCE | SECURITY



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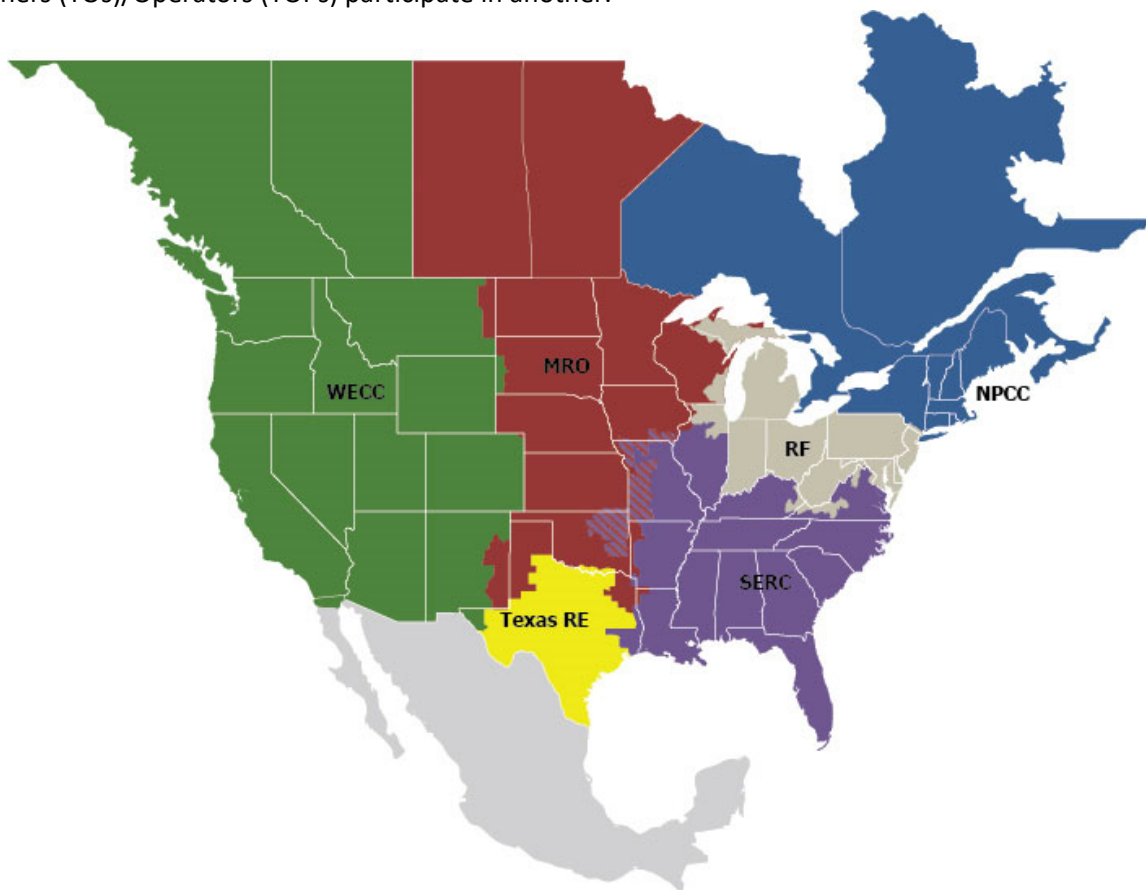
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged. There should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#).

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability, both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the cyber security risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of methods used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order No. 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “Providing timely and reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. If a Responsible Entity's CIP or Operations and Planning (O&P) plans address all of the required elements for CIP-012-2, any relevant evidence arising out of these plans may be referenced as part of their CIP-012 plan to meet the requirements and avoiding duplication of administrative efforts.

For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN.
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data.
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of Ability to Communicate Data (R1.2)

Mitigating the risks posed by loss of ability to communicate Real-time Assessment and Real-time monitoring data consists of taking measures to help protect the continued flow of data. This can be accomplished in a variety of ways including redundant links, diverse systems or services designed to protect against loss of ability to communicate such data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of ability to communicate such data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used to initiate Recovery (R1.3)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to initiate the recovery of data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes, or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should clarify the limitations where any components of the availability solution fall outside of the scope of the referenced plan. Any components not included in the referenced plan may be brought into the referenced plan itself or included directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide

availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section regarding communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an Inter-Control Center Communications Protocol (ICCP) link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

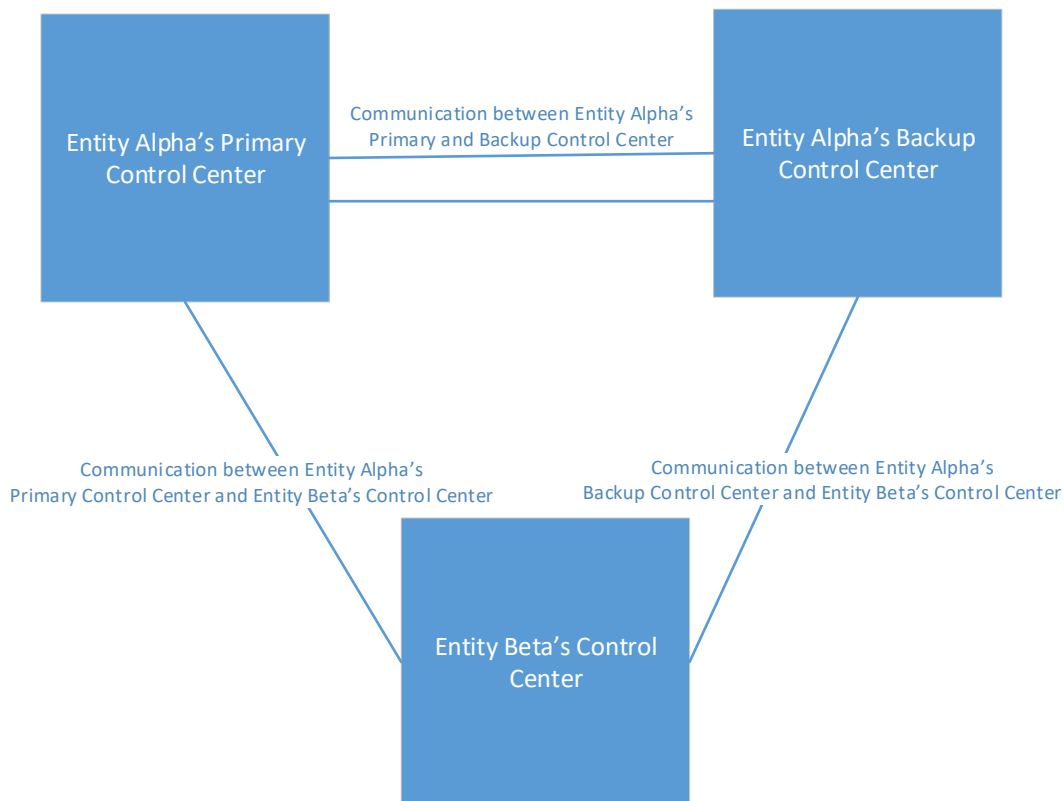


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with Requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in Requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using ICCP.

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center PSP. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center PSP (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is protected. Entity Beta ensures Entity Alpha's communication link endpoint equipment is protected by including the communication endpoint within a Control Center PSP or where other physical protection is applied. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of Ability to Communicate Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used to Initiate Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center PSP and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a PSP or where other physical protection is applied. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.

- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include, but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model

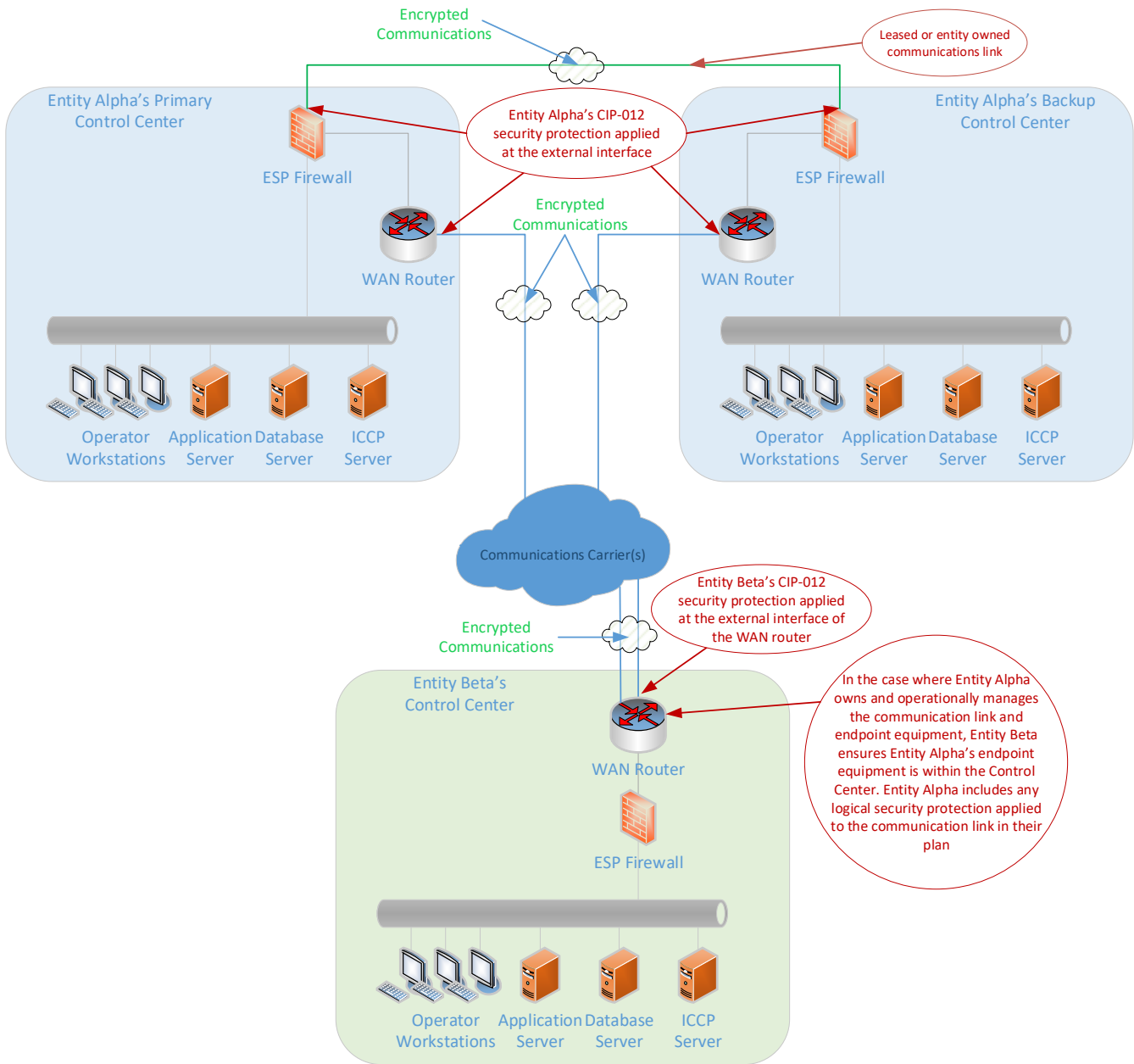


Figure 2: Network diagram and identification of where logical protection is applied

Reference Model

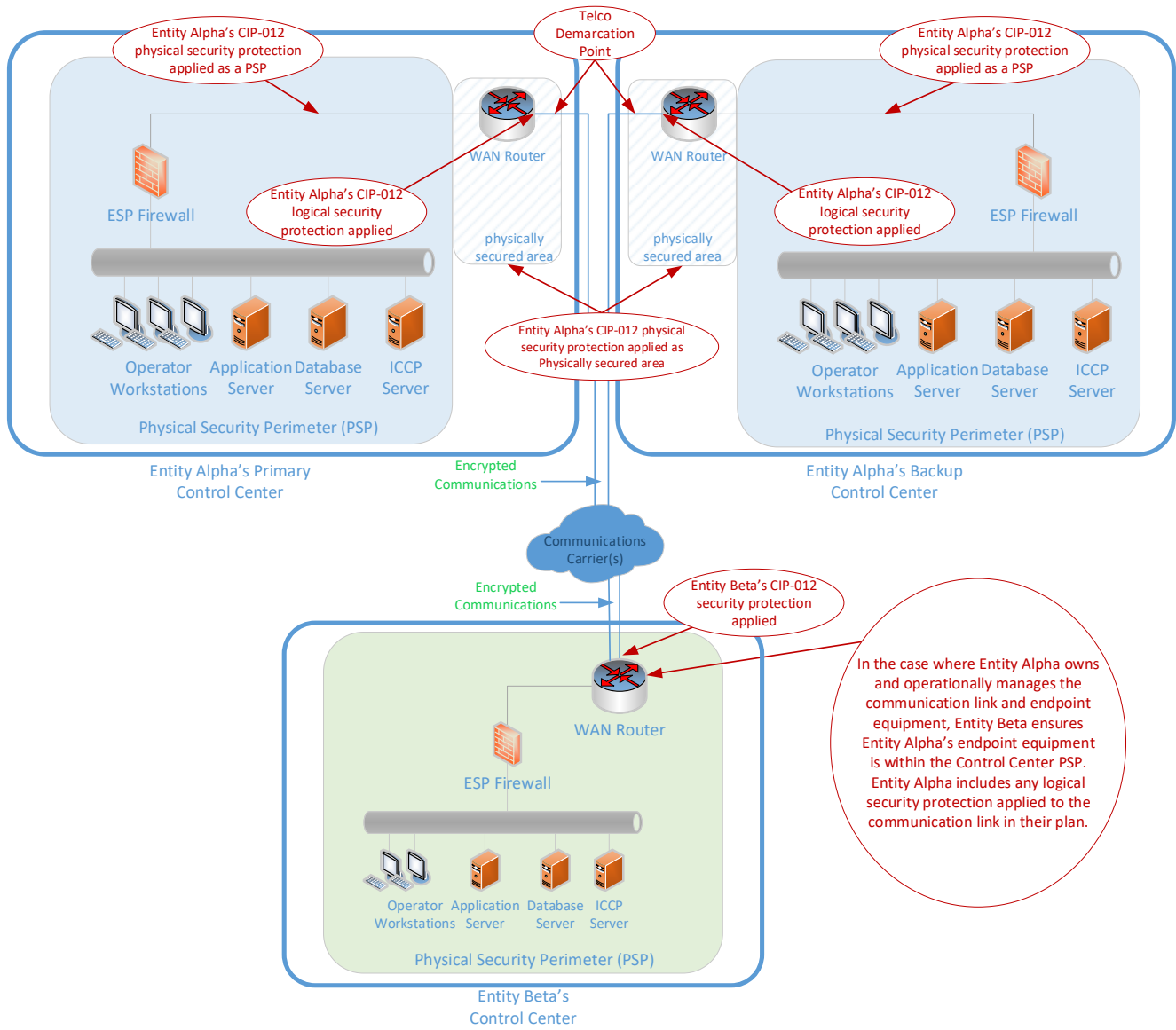


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

~~October~~ September 2023~~2~~

RELIABILITY | RESILIENCE | SECURITY



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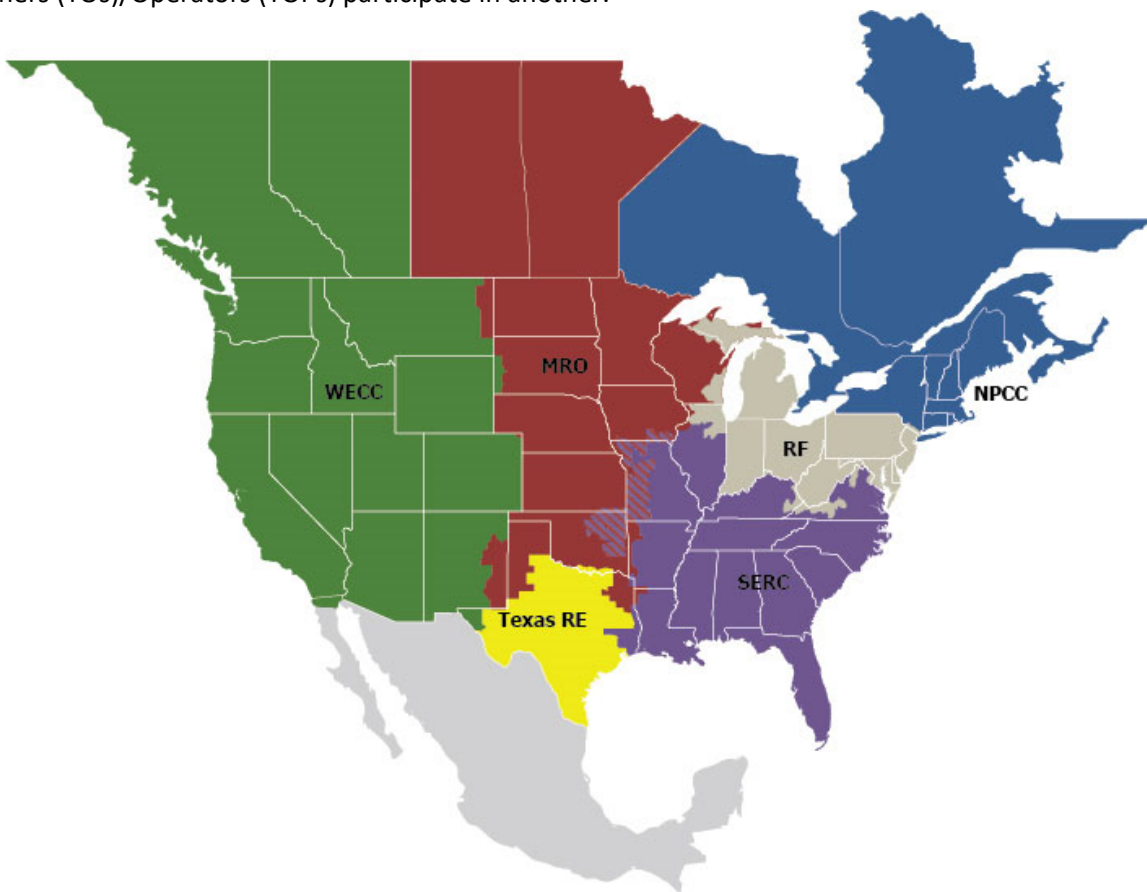
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 ~~standard drafting team (SDT)~~ drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 ~~standard drafting team (SDT)~~ developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged. ~~There~~ there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#).

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the [cyber security](#) risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used ~~for~~[in](#) Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used ~~for~~[in](#) Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by [the](#) loss of [the ability to communicate](#) Real-time Assessment and Real-time monitoring data ~~while such data is being transmitted~~ between Control Centers;
 - 1.3.** Identification of methods ~~to be~~ used [to initiate](#) ~~for~~ the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, ~~and~~ 1.2, [and 1.3](#).

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the [BES Bulk Electric System](#) while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order [No. 866](#), FERC also directed NERC to address protections regarding the availability of communications links and data communicated between ~~bulk electric system~~ [BES](#) Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit ~~motion~~.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “[Providing timely and Ensuring timely and](#) reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. [If a Responsible Entities' CIP or Operations and Planning \(O&P\) plans address all of the required elements for CIP-012-2, any relevant evidence arising out of these plans may be referenced as part of their CIP-012 plan to meet the requirements and avoiding duplication of administrative efforts.](#)

~~A Responsible Entity may also reference other CIP or Operations and Planning (O&P) plans within their CIP-012 plan that include required elements of the CIP-012 plan.~~

For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their [Reliability Coordinator \(RC\)\(s\)](#), [Balancing Authority \(BA\)\(s\)](#) and [Transmission Operator \(TOP\)\(s\)](#). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ [NIST SP 800-59](#) under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN.
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data.
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass-through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of [Ability to Communicate Data \(R1.2\)](#)

Mitigating the risks posed by loss of [ability to communicate Real-time Assessment and Real-time monitoring](#) data consists of taking measures to help protect the continued flow of data. This can be accomplished a variety of ways including redundant links, diverse systems or services designed to protect against loss of [ability to communicate such](#) data. Real-time [Assessment](#) and [Real-time](#) monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of [ability to communicate such](#) data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used ~~for~~ [to initiate Recovery \(R1.3\)](#)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to [initiate the recovery of](#) data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should [clarify the limitations where address within its CIP-012 plan](#) any components of the availability solution ~~that~~ fall outside of the scope of the referenced plan. [Any components not included in the referenced plan may be brought into](#)~~This may be achieved by inclusion within the referenced~~[other plan, or itself or included](#) directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a

list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section [when regarding](#) communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an [Inter-Control Center Communications Protocol \(ICCP\)](#) link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in [Figure 1](#). This Implementation Guidance is developed from the perspective of Entity Alpha.

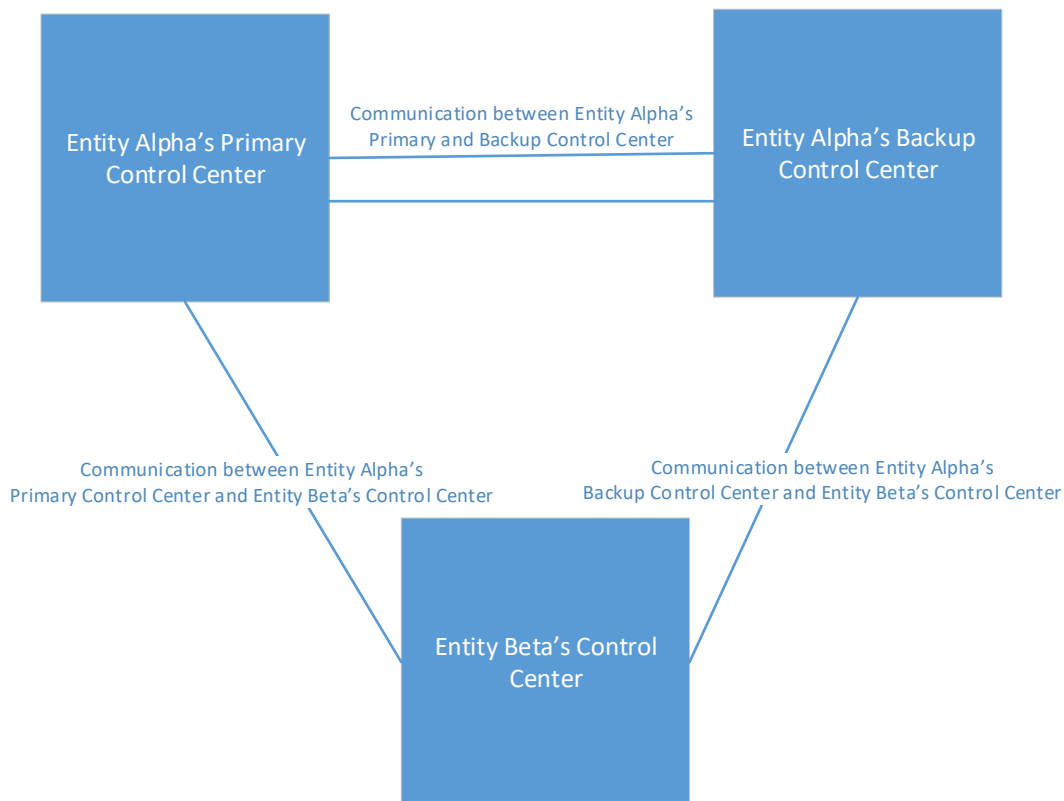


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. -To comply with [R](#)requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. -There are multiple ways to identify an entity's scope in [R](#)requirement R1.- For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: -Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center.- Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. -That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. -Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. -These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using ~~the Inter-Control-Center Communications Protocol (ICCP)~~.

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its ~~required~~ communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in ~~Figure 2~~ ~~Figure 2~~, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center ~~PSP~~. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center ~~PSP~~ (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is ~~protected within a Control Center~~. Entity Beta ensures Entity Alpha's communication link endpoint equipment is ~~protected within a Control Center~~ by including the communication endpoint within a Control Center PSP ~~or where other physical protection is applied.~~ The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of [Ability to Communicate Data](#)

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used [to Initiate](#) ~~for~~ Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- ~~Figure 2~~ [Figure 2](#) shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center [PSP](#) and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its [PSP and continuing for its](#) WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity, ~~but are not part of the plan.~~
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a [Control Center PSP or where other physical protection is applied](#). The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.

- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model

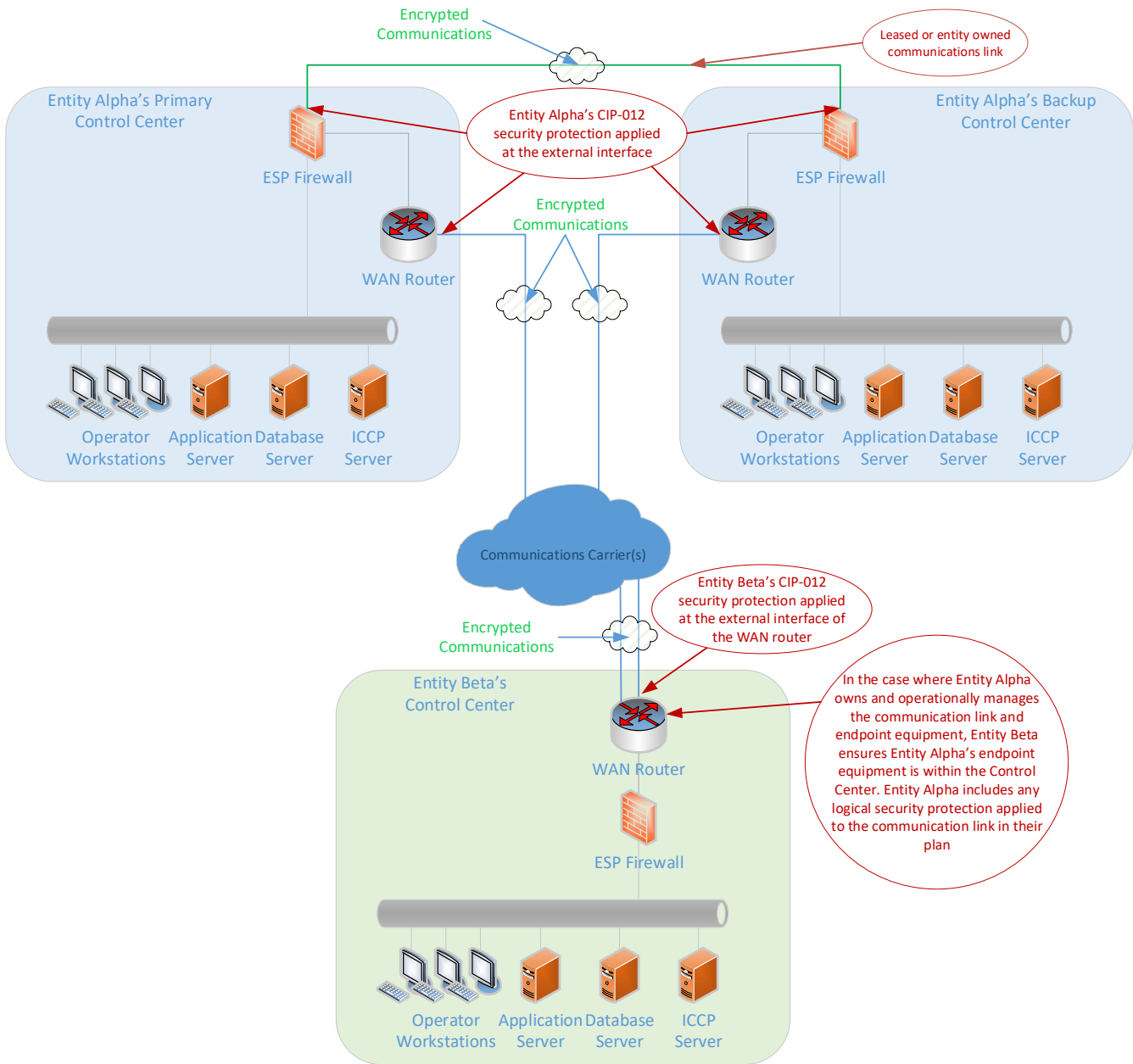


Figure 2: Network diagram and identification of where logical protection is applied

Reference Model

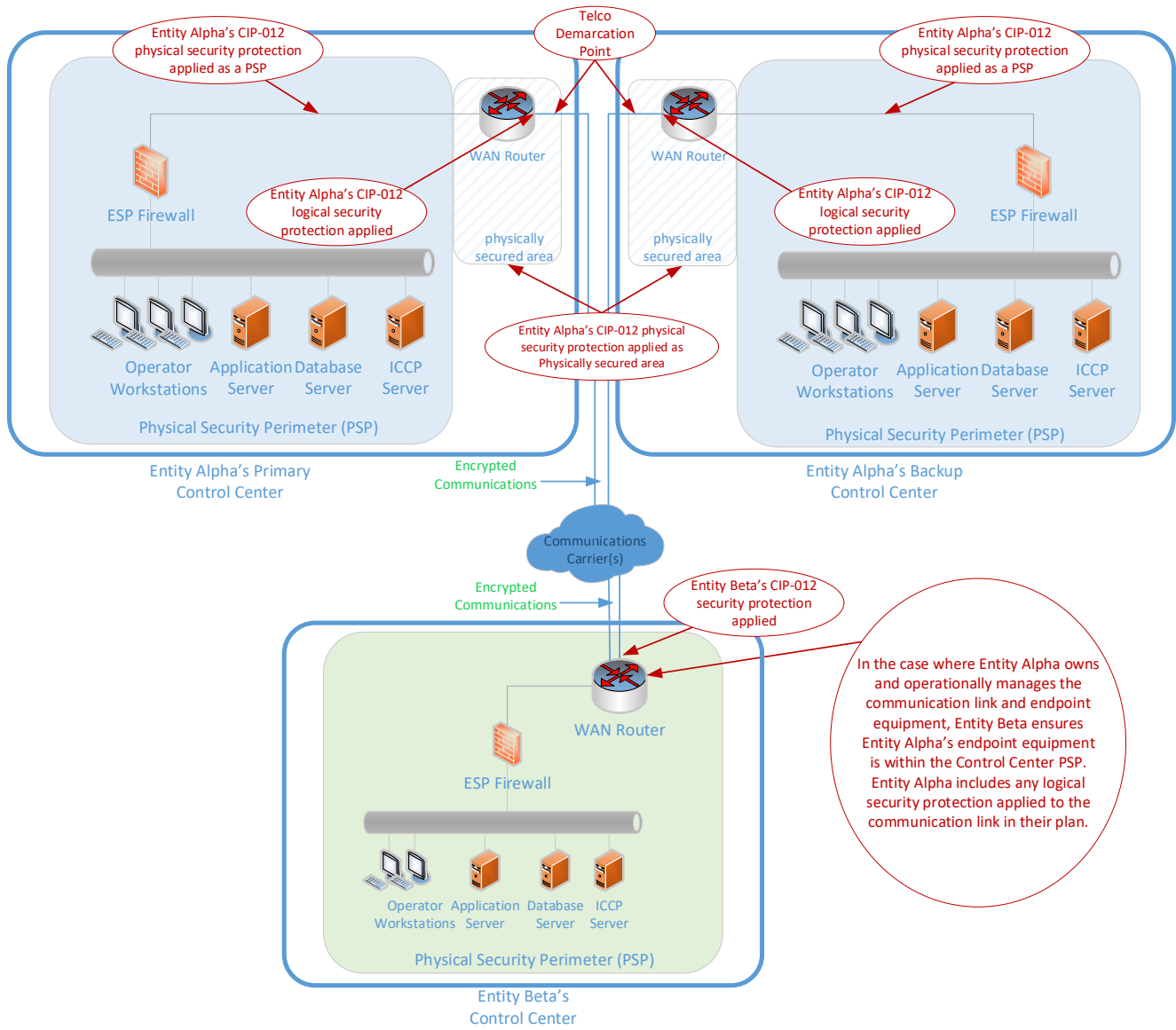


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through November 2, 2023

[Now Available](#)

A 45-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Thursday, November 2, 2023** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the previous comment period are reflected in this draft of the standard.

Reminder Regarding Corporate RBB Memberships

Under the NERC Rules of Procedure, each entity and its affiliates is collectively permitted one voting membership per Registered Ballot Body Segment. Each entity that undergoes a change in corporate structure (such as a merger or acquisition) that results in the entity or affiliated entities having more than the one permitted representative in a particular Segment must withdraw the duplicate membership(s) prior to joining new ballot pools or voting on anything as part of an existing ballot pool. Contact ballotadmin@nerc.net to assist with the removal of any duplicate registrations.

Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Additional ballots for the standard and implementation plan, as well as non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **October 24 – November 2, 2023**.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Ben Wu](#) (via email) or at 470-542-6882. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Comment Report

Project Name: 2020-04 Modifications to CIP-012 | Draft 4
Comment Period Start Date: 9/19/2023
Comment Period End Date: 11/2/2023
Associated Ballots: 2020-04 Modifications to CIP-012 CIP-012-2 AB 4 ST
2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 4 NB
2020-04 Modifications to CIP-012 Implementation Plan AB 4 OT

There were 63 sets of responses, including comments from approximately 147 different people from approximately 102 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. The standard drafting team (SDT) revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not, please provide comments and suggested requirement language.**
- 2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not, please provide comments and suggested requirement language.**
- 3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not, please provide comments and suggested requirement language.**
- 4. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost-effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost-effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.**
- 5. The SDT reviewed the implementation plan and did not see any reasons to make any changes. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.**
- 6. Provide any additional comments for the SDT to consider, including the provided technical rationale and implementation guidance document, if desired.**

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|----------------------------------|-------------|--------|------------|------------------------|--|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| MRO | Anna Martinson | 1,2,3,4,5,6 | MRO | MRO Group | Shonda McCain | Omaha Public Power District (OPPD) | 1,3,5,6 | MRO |
| | | | | | Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| | | | | | Jamison Cawley | Nebraska Public Power District | 1,3,5 | MRO |
| | | | | | Jay Sethi | Manitoba Hydro (MH) | 1,3,5,6 | MRO |
| | | | | | Jaimin Patal | Saskatchewan Power Corporation (SPC) | 1 | MRO |
| | | | | | Kimberly Bentley | Western Area Power Administration | 1,6 | MRO |
| | | | | | Marc Gomez | Southwestern Power Administration (SWPA) | 1 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 3 | MRO |
| | | | | | George Brown | Pattern Operators LP | 5 | MRO |
| | | | | | Larry Heckert | Alliant Energy (ALTE) | 4 | MRO |
| Terry Harbour | MidAmerican Energy Company (MEC) | 1,3 | MRO | | | | | |

| | | | | | | | | |
|----------------------------|---------------|---------|------|--------------|-------------------|--------------------------------------|-----------|------|
| | | | | | Bryan Sherrow | Board Of Public Utilities (BPU) | 1 | MRO |
| | | | | | Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Michael Ayotte | ITC Holdings | 1 | MRO |
| Tennessee Valley Authority | Brian Millard | 1,3,5,6 | SERC | TVA RBB | Ian Grant | Tennessee Valley Authority | 3 | SERC |
| | | | | | David Plumb | Tennessee Valley Authority | 1 | SERC |
| | | | | | Armando Rodriguez | Tennessee Valley Authority | 6 | SERC |
| | | | | | Nehtisha Rollis | Tennessee Valley Authority | 5 | SERC |
| Chris Carnesi | Chris Carnesi | | WECC | NCPA | Marty Hostler | Northern California Power Agency | 4 | WECC |
| | | | | | Dennis Sismaet | Northern California Power Agency | 6 | WECC |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | John Nierenberg | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |
| | | | | | Ozan Ferrin | Tacoma Public Utilities (Tacoma, WA) | 5 | WECC |

| | | | | | | | | |
|--|---------------|-----------|---------------------------|--|------------------|--|-----------|----------|
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,RF,SERC,Texas RE,WECC | ACES Collaborators | Bob Soloman | Hoosier Energy Electric Cooperative | 1 | RF |
| | | | | | Jennifer Bray | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 1,3,4,5,6 | RF |
| | | | | | Stacey Sheehan | FirstEnergy - FirstEnergy Corporation | 6 | RF |
| California ISO | Monika Montez | 2 | WECC | ISO/RTO Council Standards Review Committee (SRC) | Monika Montez | CAISO | 2 | WECC |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | RF |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |
| | | | | | Elizabeth Davis | PJM | 2 | RF |
| | | | | | Charles Yeung | Southwest Power Pool, Inc. (RTO) | 2 | MRO |
| | | | | | Kennedy Meier | Electric Reliability Council of Texas, Inc. | 2 | Texas RE |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |

| | | | | | | | | |
|--------------------------------------|-----------|----------------------|------|----------|-----------------------------------|--|----|------|
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | Ron Carlsen | Southern Company - Southern Company Generation | 6 | SERC |
| | | | | | Leslie Burke | Southern Company - Southern Company Generation | 5 | SERC |
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC RSC | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Alain Mukama | Hydro One Networks, Inc. | 1 | NPCC |
| | | | | | Deidre Altobell | Con Edison | 1 | NPCC |
| | | | | | Jeffrey Streifling | NB Power Corporation | 1 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Stephanie Ullah-Mazzuca | Orange and Rockland | 1 | NPCC |
| | | | | | Michael Ridolfino | Central Hudson Gas & Electric Corp. | 1 | NPCC |
| | | | | | Randy Buswell | Vermont Electric Power Company | 1 | NPCC |
| | | | | | James Grant | NYISO | 2 | NPCC |
| | | | | | John Pearson | ISO New England, Inc. | 2 | NPCC |
| | | | | | Harishkumar Subramani Vijay Kumar | Independent Electricity System Operator | 2 | NPCC |
| | | | | | Randy MacDonald | New Brunswick Power Corporation | 2 | NPCC |

| | | | |
|--------------------|--|----|------|
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| David Burke | Orange and Rockland | 3 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| David Kwan | Ontario Power Generation | 4 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 1 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |
| Sean Cavote | PSEG | 4 | NPCC |
| Jason Chandler | Con Edison | 5 | NPCC |
| Tracy MacNicoll | Utility Services | 5 | NPCC |
| Shivaz Chopra | New York Power Authority | 6 | NPCC |
| Vijay Puran | New York State Department of Public Service | 6 | NPCC |
| ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| David Kiguel | Independent | 7 | NPCC |
| Joel Charlebois | AESI | 7 | NPCC |
| Joshua London | Eversource Energy | 1 | NPCC |
| Steve Rueckert | WECC | 10 | WECC |

| | | | | | | | | |
|---|--------------------|----------------|------|------------------|---|---|------|------|
| Western Electricity Coordinating Council | Steven Rueckert | | | | Morgan King | WECC | 10 | WECC |
| | | | | | Deb McEndaffer | WECC | 10 | WECC |
| | | | | | Tom Williams | WECC | 10 | WECC |
| Tim Kelley | Tim Kelley | | WECC | SMUD and BANC | Nicole Looney | Sacramento Municipal Utility District | 3 | WECC |
| | | Charles Norton | | | Sacramento Municipal Utility District | 6 | WECC | |
| | | Wei Shao | | | Sacramento Municipal Utility District | 1 | WECC | |
| | | Foung Mua | | | Sacramento Municipal Utility District | 4 | WECC | |
| | | Nicole Goi | | | Sacramento Municipal Utility District | 5 | WECC | |
| | | Kevin Smith | | | Balancing Authority of Northern California | 1 | WECC | |

1. The standard drafting team (SDT) revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not, please provide comments and suggested requirement language.

James Keele - Entergy - 1,3,6

Answer No

Document Name

Comment

Entergy proposes that the measure for requirement R1.1 concerning physical access control be changed to 'Physical Access restrictions to in-scope, unencrypted portions of the network.'

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

BC Hydro appreciates the drafting team's efforts to address BC Hydro's previous comments on Draft 3. After reviewing the revised Standard draft and Technical Rationale revisions in conjunction with this Draft 4, BC Hydro offers the following comments.

BC Hydro's previous concerns raised on CIP-012-2 Draft 1, Draft 2 and Draft 3 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

NST believes there are three problems with the proposed wording of R1:

First, it fails to account for the fact "availability" is a distinctly different attribute of network and computing infrastructures and/or the data they create, store, and transmit than "confidentiality" and "integrity," and it is typically supported in distinctly different ways. Confidentiality and integrity protections for data "in transit," such as are required for data in transit between Control Centers by CIP-012-1, may be and often are manifested as technical cryptographic controls. In contrast, "Availability" protections for inter- Control Center communications could be, as noted in FERC's Order, a written service level agreement with a Responsible Entity's wide-area communications provider.

Second, adding a new component to an existing CIP Requirement would force Responsible Entities to rewrite existing plans for compliance with CIP-012-1 R1. NST believes most Entities would find it less burdensome to add new sections to existing CIP-012 documents than to create entirely new CIP-012 documents that address new availability requirements.

Third, it NST's opinion that as written, R1 does not adequately address Order 866 by virtue of the fact it says nothing about communication links between Control Centers, which should be the primary focus. NST understands that communication link availability does not, by itself, ensure data availability,** but the scope of the Order is limited to "communication links and data communicated between bulk electric system Control Centers."

** NST notes that the existing requirement to protect data confidentiality for data transmitted between Control Centers is intended to PREVENT data from being available (to, for example, eavesdroppers) while it's in transit.

Likes 1 Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Richard Vendetti - NextEra Energy - 5

Answer No

Document Name

Comment

NEE understands FERC order but is concerned with R1 P1.3 specific language and impacts with third-party service providers like telecommunications.

Redundancy and recovery plans may be outsourced and provided through service level agreements as the Entity does not own the services nor should be held accountable for availability when the vendor fails to meet defined service level. Recommending improvements to language and additional use case examples in the Technical Rational.

NEE is requesting the SDT clearly define “availability” and “loss of data” specifically for CIP-012-2 application. There are layer 2 and 3 network devices, some network devices not in scope for NERC CIP. Managing the availability of the RTA and RTM data traversing devices not in scope for NERC CIP and third-party communications services must be addressed in the standard clearly.

NEE supports NPCC comments:

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., “loss of availability of data used,” pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undo administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

NPCC’s Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign “availability” of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

Plan components:

R2.1 Processes and/or methods to identify loss of the communication links,

R2.2 Processes and/or methods to initiate the recovery of the communication links,

R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

Likes 0

Dislikes 0

Response

Ben Hammer - Western Area Power Administration - 1

Answer

No

Document Name

Comment

The standard mixes the requirements of CIP-009, CIP-012, TOP-003 and IRO-010. This effectively creates duplicate requirements stringed across multiple standards and separate orders. Requirement 1.3 should be removed from CIP-012 and placed into CIP-009 R1. There appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.

Likes 1

Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

No

Document Name

Comment

SPP recommends language changes to Part 1.1 to clarify that the methods address the risks (i.e., preventive), not the effects of the risks (i.e., corrective). Specifically, this comment form's own question uses the phrase "mitigation of", but the language as drafted uses the phrase "mitigate the risk(s) posed by". This phrase "risk(s) posed by" may lead to confusion and distract entities from satisfying the directives outlined in FERC Order No. 866. For example, a method used mitigate risk(s) posed by the unauthorized disclosure of data could include far reaching methods such as an entity's hiring, discipline, and retention policies since the disclosure of data could result in employee termination. To avoid this confusion and focus efforts on the directives SPP recommends the changes below. The use of the phrase "risk(s) of [...] to data" focuses the method and mitigations specifically to the directives outlined in the FERC order.

Recommended language:

Identification of method(s) used to mitigate the risk(s) of unauthorized disclosure or unauthorized modification to data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

SPP estimates that the confusion caused by the as-drafted language could result in hundreds of staff hours annually, which will distract from meeting the intended directive.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

No

Document Name

Comment

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., "loss of availability of data used," pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undo administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign “availability” of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

Plan components:

R2.1 Processes and/or methods to identify loss of the communication links,

R2.2 Processes and/or methods to initiate the recovery of the communication links,

R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

Likes 0

Dislikes 0

Response

Nicolas Turcotte - Hydro-Quebec (HQ) - 1

Answer

No

Document Name

Comment

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., "loss of availability of data used," pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undo administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign "availability" of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

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R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

Likes 0

Dislikes 0

Response

Tracy MacNicoll - Utility Services, Inc. - 4

Answer

No

Document Name

Comment

USV Supports the comments of NPCC RSC

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer No

Document Name

Comment

Some clarification for part 1.3. There are Active/Active links and Active/Standby links, and they recovery automatically or with minimum manual intervention. For issue with ISP (Internet Service Provider) network, can only rely on ISP to resolve the issue according to the SLA.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

FirstEnergy has no issues with R1 or R1.1, which is about the methods to prevent unauthorized data modification as this Requirement speaks to the intent of the Standard.

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

The addition of “loss of availability” completes the CIA Triad and requires entities to create an information security strategy through policies, processes, or procedures to minimize threats of RTA and RTM data communications loss while in transit between Control Centers.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

The FERC Order also indicates that data at rest is out of scope. We suggest including “data at rest” along with the “oral communications” in the into paragraph for clarity.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS agrees that the proposed language address the mitigation risks.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Southern Company agrees with EEI that the proposed language in R1 addresses the mitigation risk as identified in FERC Order 866.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Kent Feliks - AEP - 3

Answer Yes

Document Name

Comment

The addition and recognition of the "loss of availability" makes the intent clear.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

ITC supports the comments submitted by EEI

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer Yes

Document Name

Comment

The FERC Order also indicates that data at rest is out of scope. We suggest including “data at rest” along with the “oral communications” in the into paragraph for clarity.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Cleco agrees with EEI comments.

Likes 0

Dislikes 0

Response

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC)

Answer Yes

Document Name

Comment

The ISO/RTO Council Standards Review Committee (SRC) supports broadening the term “security protection” to “method(s)” to provide entities with flexibility in meeting the standard. That said, the SRC requests the SDT validate that the proposed modifications to CIP-012 retain backwards compatibility with CIP-012-1.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

EEI agrees that the proposed language in R1 addresses the mitigation risk as identified in FERC Order 866.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses.

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Duke Energy agrees that the proposed language in R1 is responsive to FERC Order No. 866.

Likes 0

Dislikes 0

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| ERCOT joins the comments submitted by the ISO/RTO Council (IRC) Standards Review Committee (SRC) and adopts them as its own. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Wendy Kalidass - U.S. Bureau of Reclamation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Helen Lainis - Independent Electricity System Operator - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

| | |
|----------------------|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

2, Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not, please provide comments and suggested requirement language.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Tracy MacNicoll - Utility Services, Inc. - 4

Answer No

Document Name

Comment

USV Supports the comments of NPCC RSC

Likes 0

Dislikes 0

Response

Nicolas Turcotte - Hydro-Quebec (HQ) - 1

Answer No

Document Name

Comment

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language "adequately reflect the need to mitigate the loss."
How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?

Request that availability require the same level of detail as version 1's confidentiality and integrity.

Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.”

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?

Request that availability require the same level of detail as version 1’s confidentiality and integrity.

Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).

Likes 0

Dislikes 0

Response

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer No

Document Name

Comment

SPP recommends language changes to Part 1.2 to clarify that the methods address the risks (i.e., preventive), not the effects of the risks (i.e., corrective). Specifically, this comment form’s own question uses the phrase “mitigation of”, but the language as drafted uses the phrase “mitigate the risk(s) posed by”. This phrase “risk(s) posed by” may lead to confusion and distract entities from satisfying the directives outlined in FERC Order No. 866. For example, a method used mitigate risk(s) posed by the loss of the ability to communicate data could include far-reaching methods, such as an entity’s Real-time assessment, communication plans, or load shed procedures since each of those processes deal with data and would experience

effects in some situations. To avoid this confusion and focus efforts on the directives SPP recommends the changes below. The use of the phrase “to the ability” focuses the method and mitigations specifically to the directives outlined in the FERC order. To provide clarity, SPP recommends the following language change to Part 1.2:

Identification of method(s) used to mitigate the risk(s) to the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;

SPP estimates that the confusion caused by the as-drafted language could result in hundreds of staff hours annually, which will distract from meeting the intended directive.

Likes 0

Dislikes 0

Response

Richard Vendetti - NextEra Energy - 5

Answer

No

Document Name

Comment

NEE supports NPCC comments:

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.”

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?

Request that availability require the same level of detail as version 1’s confidentiality and integrity.

Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

| | |
|--------|----|
| Answer | No |
|--------|----|

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| Document Name | |
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| Comment |
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The 1.2 proposed language should use the word "transmit" instead of "communicate" to be consistent with the rest of the standard.

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| Likes 0 | |
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| Dislikes 0 | |
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| Response |
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Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

| | |
|--------|----|
| Answer | No |
|--------|----|

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| Document Name | |
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| Comment |
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NST believes that as written, R1.2:

- Conflicts with the language of R1 (loss of data availability and loss of the ability to communicate are two different situations);
- uses language not found in Order 866, and;
- could be interpreted as applying not only to communications links between Control Centers, but also to sending and receiving Cyber Assets within Control Centers. An ICCP server's failure or misoperation could cause a loss of ability to communicate.

| | |
|---------|---|
| Likes 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
|---------|---|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

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| Response |
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Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

| | |
|--------|----|
| Answer | No |
|--------|----|

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| Document Name | |
|---------------|--|

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| Comment |
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FirstEnergy believes R1.2 is about the methods to mitigate the risk of losing communications – this is redundant with TOP-001 R20, which requires us to demonstrate that we have diverse and redundant communications

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.</p> <p>BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.</p> <p>Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The Standards Drafting Team should ensure the words “transmit” and “communicate” are being used consistently in the requirement and the requirement parts. Requirement R1 refers to mitigating the risk of the loss of availability of data used in Real-time Assessment and Real-time monitoring while such data is being “transmitted between applicable Control Centers.” Part 1.1 also refers to mitigating the unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data that is being “transmitted between Control Centers.” Part 1.2 refers to mitigating the risk posed by the loss of the ability to “communicate” Real-time Assessment and Real-time monitoring data between control centers. The wording in Part 1.3 also uses the term “communication” links.</p> | |

SMUD and BANC recommend using the word “transmit” instead of “communicate” in Part 1.2 to provide clarity and consistency with the Purpose of the Standard and the Technical Rationale. The wording should also be changed in the Technical Rationale (pdf-page 9) where the Requirement R1, Part 1.2 language is listed.

Likes 1

Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer

Yes

Document Name

Comment

Duke Energy agrees that the language in R1.2 reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data.

Likes 0

Dislikes 0

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer

Yes

Document Name

Comment

EEI agrees that the language in Requirement R1 part 1.2 adequately reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data.

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer

Yes

Document Name

Comment

Cleco agrees with EEI comments.

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer

Yes

Document Name

Comment

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

Yes

Document Name

Comment

ITC supports the comments submitted by EEI

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.2.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer

Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Yes

Document Name

Comment

Southern Company agrees with EEI that the language in Requirement R1 part 1.2 adequately reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data.

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

AZPS agrees the language in R1.2 adequately reflects the need to mitigate the loss of the ability to transmit RTA/RTM data.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer

Yes

Document Name

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

No comments from RF

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer

Yes

Document Name

Comment

LCRA would like to verify that the bulleted items in the Measures section represent an “or”, and it will not be required to calculate availability to demonstrate compliance.

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Yes

Document Name

Comment

Tacoma Power supports the change to R1.2, but recommends using the word “transmit” instead of “communicate”. This is a non-substantive change, but will align R1.2 with R1.3 and M1, which use the word “transmit”.

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

| | |
|--|-----|
| Response | |
| | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

Helen Lainis - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kent Feliks - AEP - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**LaTroy Brumfield - American Transmission Company, LLC - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Keele - Entergy - 1,3,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Wendy Kalidass - U.S. Bureau of Reclamation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE understands the intent of Requirement Part 1.2 to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data and interprets the language as such. However, the current language could also be read to apply solely to mitigating the risk posed by the loss of data communications. Texas RE recommends the drafting team clarify that CIP-012 applies to mitigating the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. Texas Re recommends the following language:

Identification of method(s) used to mitigate the risk of the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers, including the transmission and receipt of data used for Real-time Assessment and Real-time monitoring.

Likes 0

Dislikes 0

Response

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not, please provide comments and suggested requirement language.

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer No

Document Name

Comment

Reclamation recommends modifying the language.

From: **1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and

To: **1.4.** Identification of where, physically and/or logically, the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| FirstEnergy believes R1.2 is about the methods to recover lost communications – this is already addressed in CIP-009, which defines our Recovery Plans for critical infrastructure. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Richard Vendetti - NextEra Energy - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| NEE supports NPCC's comments: | |
| Request clarification of "availability" vs "loss of data." | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | No |
| Document Name | |
| Comment | |
| Request clarification of "availability" vs "loss of data." | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

| | |
|---|----|
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The SRC requests that the language be revised to clarify that an entity can use different methods at different locations to comply with each of the Parts of Requirement R1, and that identification of a particular method used at a particular location does not automatically require the entity to implement that particular method at all other locations.</p> <p>Additionally, the SRC notes that in the clean and the redline to last posted versions of CIP-012-2, Part 1.4 only references Parts 1.1 and 1.2, while Part 1.5 references Parts 1.1, 1.2, and 1.3; however, in the redline to last approved version of CIP-012-2, Part 1.4 references Parts 1.1, 1.2, and 1.3, while Part 1.5 only references Parts 1.1 and 1.2. The SRC requests that the drafting team clarify which parts are intended to be referenced in Part 1.4 and Part 1.5.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Nicolas Turcotte - Hydro-Quebec (HQ) - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| Request clarification of "availability" vs "loss of data." | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tracy MacNicoll - Utility Services, Inc. - 4 | |
| Answer | No |
| Document Name | |
| Comment | |
| USV Supports the comments of NPCC RSC | |
| Likes | 0 |
| Dislikes | 0 |

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer No

Document Name

Comment

ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer No

Document Name

Comment

Identifying where the method is applied for part 1.3 need some clarification. We can identify for Internal devices/links. For issues within ISP, we can only identify our demarcation point with ISP, and initiate the problem call/ticket with ISP.

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer Yes

Document Name

Comment

Tacoma Power supports the R1.4 language. However, the redline to last approved file does not match the clean version verbiage. For example, the redline to last approved for R1.4 states “required in Parts 1.1, 1.2, and 1.3”, when it should show “required in Parts **1.1 and 1.2**”.

Likes 0

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

ATC appreciates the SDT’s efforts. While we understand the language as written we believe it would be clearer to use the word “applied” instead of “implemented”. As a result, ATC offers this idea for the team’s consideration as a clarifying change, “Identification of where the methods are applied by the Responsible Entity as required in Parts 1.1, 1.2, and 1.3.”

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

The expanded prose listed for Part 1.4 under Measures clarifies the need for entities to clearly identify where they have applied measures from R1.1 and R1.2.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS agrees the language in R1.4 provides clarity on the need to identify physically or logically where methods required in R1.1. and R1.2 have been applied.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer Yes

Document Name

Comment

WECC suggests a revision to M1, bullet 2, as follows:

"Physical access restrictions" (add) and monitoring of (remove) to "unencrypted portions of the network."

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Southern Company agrees with EEI that the language in R1.4 provides sufficient clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.4.

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer Yes

Document Name

Comment

ITC supports the comments submitted by EEI

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer Yes

Document Name

Comment

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirchak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Cleco agrees with EEI comments.

Likes 0

Dislikes 0

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| The language in R1.4 provides sufficient clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Hillary Creurer - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response**Donna Wood - Tri-State G and T Association, Inc. - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Gladys DeLaO - CPS Energy - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Keele - Entergy - 1,3,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kent Feliks - AEP - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Helen Lainis - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|---|-----|
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF | |
| Answer | |
| Document Name | |
| Comment | |
| Duke Energy agrees that the language in R1.4 provides clarity on the need to identify where methods in R1.1 and R1.2 have been applied. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

4. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost-effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost-effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

Document Name

Comment

GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do and the scope of its requirements, NST cannot comment on the cost-effectiveness of its latest proposed modifications.

Likes 1 Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

Please see our response to Questions 2 and 3 - with uncertainty of responsibility, FirstEnergy cannot effectively answer this question.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Please refer to comments on Question #1. BC Hydro seeks clarifications on the queries raised in the response of Question #1, and BC Hydro is not in a position to identify the cost effectiveness of the Project 2020-04 CIP-012-2 changes at this stage.

Likes 0

Dislikes 0

Response

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer No

Document Name

Comment

Prior to proposing additional modifications, Reclamation also recommends each SDT take additional time to completely identify the scope to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Reclamation recommends the SDT take particular care to coordinate CIP-012 changes with existing drafting teams for existing related standards to ensure consistency and avoid duplication, specifically, Project 2016-02 and Project 2019-03. This will help to minimize churn among standard versions, reduce the risk that standards will conflict with one another, and better align the standards.

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer Yes

Document Name

Comment

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Yes

Document Name

Comment

AZPS agrees.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer

Yes

Document Name

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

No comments from RF.

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer Yes

Document Name

| | |
|---|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirchak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

Helen Lainis - Independent Electricity System Operator - 2

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer Yes

Document Name

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Keele - Entergy - 1,3,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Patricia Lynch - NRG - NRG Energy, Inc. - 5****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Martin Sidor - NRG - NRG Energy, Inc. - 6****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response**Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Donna Wood - Tri-State G and T Association, Inc. - 1****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response**Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3****Answer**

Yes

Document Name**Comment**

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott

Answer

Document Name

Comment

ITC supports the comments submitted by EEI

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer

Document Name

Comment

Black Hills Corporation will not comment on cost effectiveness.

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

| | |
|---|--|
| Answer | |
| Document Name | |
| Comment | |
| Black Hills Corporation will not comment on cost effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Schuldts - Rachel Schuldts On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldts | |
| Answer | |
| Document Name | |
| Comment | |
| Black Hills Corporation will not comment on cost effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| Black Hills Corporation will not comment on cost effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

5. The SDT reviewed the implementation plan and did not see any reasons to make any changes. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

James Keele - Entergy - 1,3,6

Answer No

Document Name

Comment

Entergy believes that clarified requirement language should be agreed upon before the standard is approved. The physical access restriction measure should be clarified before an implementation window is opened.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

At this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012.

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do and the scope of its requirements, NST cannot comment on an implementation timetable.

Likes 1

Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Richard Vendetti - NextEra Energy - 5

Answer

No

Document Name

Comment

Until the language changes clarify R1 and R2 with measures the implementation plan cannot be considered.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Yes

Document Name

Comment

FirstEnergy has no objection to the implementation plan.

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

No comments from RF.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS still agrees the proposed timeframe is appropriate.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Southern Company agrees with that the proposed Implementation Plan is sufficient as proposed.

Likes 0

Dislikes 0

Response

Kinte Whitehead - Exelon - 3**Answer** Yes**Document Name****Comment**

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response**Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF****Answer** Yes**Document Name****Comment**

The NAGF supports the proposed 24-month implementation plan.

Likes 0

Dislikes 0

Response**Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott****Answer** Yes**Document Name****Comment**

ITC supports the comments submitted by EEI

Likes 0

Dislikes 0

Response**Alison MacKellar - Constellation - 5****Answer** Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Constellation does not have any additional comments. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6 | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Cleco agrees with EEI comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The implementation plan timeline would be impacted by the scoping or determination of its availability from an infrastructure standpoint/network capability or a data loss/data protection ruling. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |

Document Name

Comment

EI agrees that the proposed Implementation Plan is sufficient as proposed.

Likes 0

Dislikes 0

Response

Nicolas Turcotte - Hydro-Quebec (HQ) - 1

Answer

Yes

Document Name

Comment

The implementation plan timeline would be impacted by the scoping or determination of its availability from an infrastructure standpoint/network capability or a data loss/data protection ruling.

Likes 0

Dislikes 0

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer

Yes

Document Name

Comment

Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer

Yes

Document Name

Comment

Duke Energy agrees that the timeframe is appropriate.

Likes 0

Dislikes 0

Response

Tracy MacNicoll - Utility Services, Inc. - 4

Answer

Yes

Document Name

Comment

USV Supports the comments of NPCC RSC

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Yes

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Gladys DeLaO - CPS Energy - 1

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

Likes 0

Dislikes 0

Response

Martin Sidor - NRG - NRG Energy, Inc. - 6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Patricia Lynch - NRG - NRG Energy, Inc. - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kent Feliks - AEP - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer

Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

Dislikes 0

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

6. Provide any additional comments for the SDT to consider, including the provided technical rationale and implementation guidance document, if desired.

Alain Mukama - Hydro One Networks, Inc. - 1

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Tracy MacNicoll - Utility Services, Inc. - 4

Answer

Document Name

Comment

USV Supports the comments of NPCC RSC

Likes 0

Dislikes 0

Response

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer

Document Name

Comment

Duke Energy thanks the 2020-04 Standard Drafting Team for all the work to address FERC Order No. 866.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Hillary Creurer - Allele - Minnesota Power, Inc. - 1

Answer

| | |
|--|--|
| Document Name | |
| Comment | |
| Minnesota Power agrees with the NSRF's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Nicolas Turcotte - Hydro-Quebec (HQ) - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity and availability. Recommend CIP-012 provide greater specifications of this plan. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | |
| Document Name | |
| Comment | |
| ACES would like to thank the SDT's hard work to better clarify this draft. ACES still has the concern because this has the potential to conflict with other NERC reliability standards. Further, the Cyber Assets this impacts directly could and for most entities be Cyber Assets completely outside of any ESP and PSP. Thus the reason we have continued to suggest this belongs as a part of an O&P standard. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | |

| | |
|--|--|
| Document Name | |
| Comment | |
| MGE thanks the SDT for their efforts, and supports the comments of the MRO NSRF. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Backwards Compatibility – As noted in our response to Question 1, the SRC supports broadening the term “security protection” to “method(s)” to provide entities with flexibility in meeting the standard. That said, the SRC requests the SDT validate that the proposed modifications to CIP-012 retain backwards compatibility with CIP-012-1.</p> <p>Not subject to EOP-008 or IRO-002 drills/tests - As FERC in its Order 866 and the SDT have clarified on repeated occasions in response to industry comments that CIP-012 does not overlap with or duplicate provisions under any other NERC standard, including EOP-008 or IRO-002, the SRC requests the SDT clarify that CIP-012-2, R1 method(s) are not subject to:</p> <ul style="list-style-type: none"> • EOP-008, R7 tests or drills, as the test required under R7 is limited to a test of the ability to failover to backup functionality in the event that primary Control Center functionality is lost (pursuant to EOP-008, R1, Part 1.2.2). • IRO-002-7, R3, as the test required under R3 is limited to testing the redundant and diversely routed data exchange infrastructure <i>within</i> the Reliability Coordinator's primary Control Center for redundant functionality (pursuant to IRO-002-7, R2). <p>The SRC requests the SDT update the Technical Rationale for CIP-012 to reflect the above understanding.</p> | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC | |
| Answer | |
| Document Name | |
| Comment | |
| The Technical Rationale for Part 1.5 includes the statement, “Having a clear understanding of where each side of a link each entity’s responsibilities begin and end facilitates <i>timely</i> restoration when there is a problem with the transmission of the data.” | |

Please provide clarity around the language "timely" in this statement.

Likes 0

Dislikes 0

Response

Ben Hammer - Western Area Power Administration - 1

Answer

Document Name

Comment

The standard mixes the requirements of CIP-009, CIP-012, TOP-003 and IRO-010. This effectively creates duplicate requirements stringed across multiple standards and separate orders. Requirement 1.3 should be removed from CIP-012 and placed into CIP-009 R1. There appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

Document Name

Comment

CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentially, integrity and availability. Recommend CIP-012 provide greater specifications of this plan.

Likes 0

Dislikes 0

Response

Richard Vendetti - NextEra Energy - 5

Answer

Document Name

Comment

Redundancy and service level agreements are primary methods available to many of the communications methods for Real-time communications. The loss of data is expected in the technology methods currently available. Redundancy elements within a site and in multiple locations are often part of the implementation required under other NERC standards. The language matters and must clearly define the risks, objects and measures for evaluation. Currently CIP-012-2 language appears to put Entities at risk of non-compliance.

More use cases and options should be provided to enable entities and auditors to clearly understand how the requirements may be applied and met based upon available and industry implemented technologies.

Likes 0

Dislikes 0

Response

Alison MacKellar - Constellation - 5

Answer

Document Name

Comment

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer

Document Name

Comment

The NAGF has no additional comments.

Likes 0

Dislikes 0

Response

Teresa Krabe - Lower Colorado River Authority - 1,5

Answer

Document Name

Comment

LCRA appreciates the SDT's effort and thoughtfulness in responding to industry comment and concerns. Project 2021-03 changes the definition of Control Center to include TOs with the capability to electronically control 2 or more locations. LCRA believes that this has the potential to drastically expand the scope of CIP-012 and does not address the original intent of the SAR.

TOPs are already receiving data from their TOs field devices. They may choose to send this data to their TO as a courtesy. By implementing additional compliance obligations around this data the new definition may have inadvertent consequences resulting in less sharing of data.

LCRA recommends that CIP-012-2 carve out an exclusion to not include TO Control Centers as defined in the proposed CIP-002 project. Alternatively, scoping Real-time Assessment and Real-time monitoring data to only be applicable if that data is used for making Real-time decisions may alleviate concerns.

Likes 0

Dislikes 0

Response

Kent Feliks - AEP - 3

Answer

Document Name

Comment

These comments represent AEP as a whole, participating in Segments 1,3,5,6.

Likes 0

Dislikes 0

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Document Name

Comment

No additional comments.

Likes 0

Dislikes 0

Response

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer

Document Name

Comment

It appears that the language in R1 of the standard does not match the R1 language in the Implementation Guidance. The standard states "mitigate the risks", while the Implementation Guidance states "mitigate the cyber security risks."

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Document Name

Comment

Alliant Energy supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer

Document Name

Comment

AZPS has no additional comments.

Likes 0

Dislikes 0

Response

Kimberly Turco - Constellation - 6

Answer

Document Name

Comment

Constellation has no additional comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer

Document Name

Comment

While the SDT has achieved their goals with the protection of Control Center to Control Center communications in CIP-012-1 and with the upcoming changes in CIP-012-2, there should be additional discussion around R1.5 to remove or modify the Measure regarding “*meeting minutes*.” At a minimum, the SDT should bolster the Measure for R1.5 to highlight or emphasize a need for clear and well-defined responsibilities of each party be included, and identified, within the meeting minutes. Lack of clarity or substance in meeting minutes regarding identification of demarcations, or use of old meeting minutes that are not updated to reflect changes in either parties’ environment may not meet the compliance obligations of R1.5.

Further, there is direct reference to “*communication links*” in R1.3 but no reference to this within R1. For consistency R1 should reflect this reference and RF recommends, “*The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, loss of availability, and loss of communication links, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers.*”

Likes 0

Dislikes 0

Response

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

NST notes that although Requirement R1 Part 1.3 requires, "Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers," top-level Requirement R1 does not establish a requirement to have one or more plans to recover communications links. This oversight should be corrected.

NST offers the following observations about proposed CIP-012 Measures:

R1 Part 1.2:

Regarding, "Procedures explaining the use of alternative systems or methods for providing for the availability of the data," the SDT should clarify what is meant by "alternative systems." The extent of systems supporting CIP-012 needs to be defined and clearly articulated to understand the potential impacts of supporting availability.

Regarding, "Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data," NST notes that such reports are backward-looking and would therefore be, in our opinion, weak evidence that a Responsible Entity has controls designed to mitigate the loss of a communications link between two Control Centers. It is our opinion that real-time link monitoring and alerting would be a better approach than historical records. NST also believes the types of equipment supporting data transmission should be addressed, especially the demarcation points between the equipment of a Responsible Entity and its carriers.

R1 Part 1.3:

Regarding, "Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery," it is NST's opinion that meeting minutes would hardly qualify as strong evidence a Responsible Entity has adequately addressed the referenced Requirement Part.

Regarding, "Methods for the recovery of links such as standard operating procedures, applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans," NST believes it is inappropriate to suggest that CIP-009 recovery plans might address any requirement to recover inter-Control Center communications links. CIP-009 is not applicable to communications links outside of Control Centers.

Regarding, "Documentation of the process to restore assets and systems that provide communications," NST believes the SDT should clarify what "assets and systems" might be in scope here.

R1 Part 1.4:

Regarding, "Identification of points within the infrastructure where the implemented methods reside," NST recommends "...within the inter- Control Center communications infrastructure..." to keep the scope of the Standard to the links specified by FERC.

R1 Part 1.5:

Regarding, "Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity," it is NST's opinion that, as with R1 Part 1.3, meeting minutes would hardly qualify as strong evidence a Responsible Entity has adequately addressed the referenced Requirement Part.

NST offers the following observations about proposed updates to CIP-012 Implementation Guidance:

NST believes the proposed changes to CIP-012 implementation guidance reduce rather than add clarity about what a Responsible Entity must or might do to address new availability requirements. We find suggestions to the effect that an Entity might rely on its CIP-008 and CIP-009 plans to address parts of CIP-012 to be of particular concern, for reasons including the fact such guidance creates at least the potential for "double jeopardy" situations in compliance audits. FERC wrote Order 866 precisely because the Commission believes none of the current CIP Standards address protection and recovery of communication links between Control Centers. It is NST's opinion the SDT should refrain from suggesting that perhaps they do, and should therefore be considered for inclusion in an Entity's CIP-012 compliance narratives.

NST also believes the SDT should refrain from making suggestions such as, on page 4, "Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution." To repeat, it is NST's opinion that FERC did not intend for CIP-012 revisions to add data availability requirements that include sending and receiving Cyber Assets that are within, as opposed to between, Control Centers. The guidance should reaffirm that the focus is on the communications links between Control Centers.

Likes 1

Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Document Name

Comment

Manitoba Hydro appreciates the SDT efforts to add increased clarification to this most recent draft of CIP-012-2. Manitoba Hydro has identified similarities among the Standards addressing various facets of Real Time monitoring and Real Time Assessment data (ex. IRO-010, TOP-003, TOP-001, CIP-012). There appears to be an opportunity for NERC to create efficiencies in requirements for Control Center communications.

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer

Document Name

Comment

LCRA appreciates the SDT's effort and thoughtfulness in responding to industry comment and concerns. Project 2021-03 changes the definition of Control Center to include TOs with the capability to electronically control 2 or more locations. LCRA believes that this has the potential to drastically expand the scope of CIP-012 and does not address the original intent of the SAR.

TOPs are already receiving data from their TOs field devices. They may choose to send this data to their TO as a courtesy. By implementing additional compliance obligations around this data the new definition may have inadvertent consequences resulting in less sharing of data.

LCRA recommends that CIP-012-2 carve out an exclusion to not include TO Control Centers as defined in the proposed CIP-002 project. Alternatively, scoping Real-time Assessment and Real-time monitoring data to only be applicable if that data is used for making Real-time decisions may alleviate concerns.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

Please see our response to Question 2 and 3.

Likes 0

Dislikes 0

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer

Document Name

Comment

BC Hydro suggests adding more clarity to the term 'availability' by providing a more detailed definition.

Although the SDT has altered the NIST definition of "Providing timely and reliable access to information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at entities to which this standard applies, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.

Likes 0

Dislikes 0

Response

Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

CIP-009 specifically addresses the backup and recovery for systems. It does not mention communication paths nor methods of data transport. CIP-009 should be modified to include this requirement; as it stands, there is a mismatch between standards, putting additional burden on implementation and maintenance of CIP-012.

BPA asks that the Standards Drafting Team clarify how mitigations/methods of protections (i.e., data masking and VPN/protocol encryption and the physical access restrictions) are different than CIP-005 and CIP-006 standards that are currently implemented.

BPA believes that there is too much bleed over into other standards such as CIP-005, -006 and -009 that has the potential to cause implementation errors and added burden/cost to maintaining multiple standards that cover like scenarios.

Likes 0

Dislikes 0

Response

John Daho - MEAG Power - 1,3 - SERC

Answer

Document Name

Comment

The terms "transmit" and "communicate" should be used consistently in requirements, requirement parts, measures, technical rationale, etc. For example, Parts 1.1, 1.2 and 1.3 use both "transmit" and "communicate" terms, but it is recommended that the term "transmit" be used rather than "communicate".

Likes 0

Dislikes 0

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

AEPC has signed on to ACES comments below:

ACES would like to thank the SDT's hard work to better clarify this draft. ACES still has the concern because this has the potential to conflict with other NERC reliability standards. Further, the Cyber Assets this impacts directly could and for most entities be Cyber Assets completely outside of any ESP and PSP. Thus the reason we have continued to suggest this belongs as a part of an O&P standard.

Likes 0

Dislikes 0

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group

Answer

Document Name

Comment

The MRO NSRF appreciates the SDT efforts to add increased clarification to this most recent draft of CIP-012-2. The MRO NSRF has identified similarities among the Standards addressing various facets of Real Time monitoring and Real Time Assessment data (ex. IRO-010, TOP-003, TOP-001, CIP-012). While the MRO NSRF understands the differences in the scopes of the different Standards, there appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Document Name

Comment

NA

Likes 0

Dislikes 0

Response

Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3

Answer

Document Name

Comment

Regarding R1.5:

R1.1 and R1.2 do not require "Implementing methods", but rather Identification of methods.

R1.5 Should read:

If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as **identified** in Parts 1.1 and 1.2.

Likes 0

Dislikes 0

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Document Name

Comment

Tacoma Power supports the R1.5 language. However, the redline to last approved file does not match the CIP-012-2 clean version verbiage. For example, the redline to last approved for R1.5 states “required in Parts 1.1 and 1.2”, when it should show “required in Parts 1.1, **1.2, and 1.3.**”

For the last bullet in the measures for R1.3, Tacoma Power recommends changing “vendor” to “provider”. It doesn’t necessarily need to be a vendor who maintains the communication link, so provider is a better choice for the measure. This is a non-substantive change. Recommended change: “Process or procedure to contact a communications link **provider** to initiate and or verify restoration of service.”

Likes 0

Dislikes 0

Response

Consideration of Comments

| | |
|-----------------------------------|---|
| Project Name: | 2020-04 Modifications to CIP-012 Draft 4 |
| Comment Period Start Date: | 9/19/2023 |
| Comment Period End Date: | 11/2/2023 |
| Associated Ballot(s): | 2020-04 Modifications to CIP-012 CIP-012-2 AB 4 ST 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 4 NB 2020-04 Modifications to CIP-012 Implementation Plan AB 4 OT |

There were 63 sets of responses, including comments from approximately 147 different people from approximately 102 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the [project page](#).

If you feel that your comment has been overlooked, let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, contact Vice President of Engineering and Standards, [Soo Jin Kim](#) (via email) or at (404) 446-9742.

Questions

1. The standard drafting team (SDT) revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not, please provide comments and suggested requirement language.
2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not, please provide comments and suggested requirement language.
3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not, please provide comments and suggested requirement language.
4. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost-effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost-effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.
5. The SDT reviewed the implementation plan and did not see any reasons to make any changes. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.
6. Provide any additional comments for the SDT to consider, including the provided technical rationale and implementation guidance document, if desired.

The Industry Segments are:

- 1 — Transmission Owners
- 2 — RTOs, ISOs
- 3 — Load-serving Entities
- 4 — Transmission-dependent Utilities
- 5 — Electric Generators
- 6 — Electricity Brokers, Aggregators, and Marketers
- 7 — Large Electricity End Users
- 8 — Small Electricity End Users
- 9 — Federal, State, Provincial Regulatory or other Government Entities
- 10 — Regional Reliability Organizations, Regional Entities

| Organization Name | Name | Segment(s) | Region | Group Name | Group Member Name | Group Member Organization | Group Member Segment(s) | Group Member Region |
|------------------------------|-----------------|-------------|--------|------------|------------------------|--------------------------------------|-------------------------|---------------------|
| BC Hydro and Power Authority | Adrian Andreoiu | 1 | WECC | BC Hydro | Hootan Jarollahi | BC Hydro and Power Authority | 3 | WECC |
| | | | | | Helen Hamilton Harding | BC Hydro and Power Authority | 5 | WECC |
| | | | | | Adrian Andreoiu | BC Hydro and Power Authority | 1 | WECC |
| MRO | Anna Martinson | 1,2,3,4,5,6 | MRO | MRO Group | Shonda McCain | Omaha Public Power District (OPPD) | 1,3,5,6 | MRO |
| | | | | | Michael Brytowski | Great River Energy | 1,3,5,6 | MRO |
| | | | | | Jamison Cawley | Nebraska Public Power District | 1,3,5 | MRO |
| | | | | | Jay Sethi | Manitoba Hydro (MH) | 1,3,5,6 | MRO |
| | | | | | Jaimin Patal | Saskatchewan Power Corporation (SPC) | 1 | MRO |
| | | | | | Kimberly Bentley | Western Area Power Administration | 1,6 | MRO |

| | | | | | | | | |
|----------------------------|---------------|---------|------|---------|-------------------|--|---------|------|
| | | | | | Marc Gomez | Southwestern Power Administration (SWPA) | 1 | MRO |
| | | | | | Fred Meyer | Algonquin Power Co. | 3 | MRO |
| | | | | | George Brown | Pattern Operators LP | 5 | MRO |
| | | | | | Larry Heckert | Alliant Energy (ALTE) | 4 | MRO |
| | | | | | Terry Harbour | MidAmerican Energy Company (MEC) | 1,3 | MRO |
| | | | | | Bryan Sherrow | Board Of Public Utilities (BPU) | 1 | MRO |
| | | | | | Seth Shoemaker | Muscatine Power & Water | 1,3,5,6 | MRO |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | MRO |
| | | | | | Michael Ayotte | ITC Holdings | 1 | MRO |
| Tennessee Valley Authority | Brian Millard | 1,3,5,6 | SERC | TVA RBB | Ian Grant | Tennessee Valley Authority | 3 | SERC |
| | | | | | David Plumb | Tennessee Valley Authority | 1 | SERC |
| | | | | | Armando Rodriguez | Tennessee Valley Authority | 6 | SERC |

| | | | | | | | | |
|----------------------|---------------|-----------|---------------------------|--------------------|-----------------|--------------------------------------|-----------|------|
| | | | | | Nehtisha Rollis | Tennessee Valley Authority | 5 | SERC |
| Chris Carnesi | Chris Carnesi | | WECC | NCPA | Marty Hostler | Northern California Power Agency | 4 | WECC |
| | | | | | Dennis Sismaet | Northern California Power Agency | 6 | WECC |
| Jennie Wike | Jennie Wike | | WECC | Tacoma Power | Jennie Wike | Tacoma Public Utilities | 1,3,4,5,6 | WECC |
| | | | | | John Merrell | Tacoma Public Utilities (Tacoma, WA) | 1 | WECC |
| | | | | | John Nierenberg | Tacoma Public Utilities (Tacoma, WA) | 3 | WECC |
| | | | | | Hien Ho | Tacoma Public Utilities (Tacoma, WA) | 4 | WECC |
| | | | | | Terry Gifford | Tacoma Public Utilities (Tacoma, WA) | 6 | WECC |
| | | | | | Ozan Ferrin | Tacoma Public Utilities (Tacoma, WA) | 5 | WECC |
| ACES Power Marketing | Jodirah Green | 1,3,4,5,6 | MRO,RF,SERC,Texas RE,WECC | ACES Collaborators | Bob Soloman | Hoosier Energy Electric Cooperative | 1 | RF |

| | | | | | | | | |
|--|---------------|---|------|--|------------------|--|-----------|------|
| | | | | | Jennifer Bray | Arizona Electric Power Cooperative, Inc. | 1 | WECC |
| FirstEnergy - FirstEnergy Corporation | Mark Garza | 4 | | FE Voter | Julie Severino | FirstEnergy - FirstEnergy Corporation | 1 | RF |
| | | | | | Aaron Ghodooshim | FirstEnergy - FirstEnergy Corporation | 3 | RF |
| | | | | | Robert Loy | FirstEnergy - FirstEnergy Solutions | 5 | RF |
| | | | | | Mark Garza | FirstEnergy-FirstEnergy | 1,3,4,5,6 | RF |
| | | | | | Stacey Sheehan | FirstEnergy - FirstEnergy Corporation | 6 | RF |
| California ISO | Monika Montez | 2 | WECC | ISO/RTO Council Standards Review Committee (SRC) | Monika Montez | CAISO | 2 | WECC |
| | | | | | Bobbi Welch | Midcontinent ISO, Inc. | 2 | RF |
| | | | | | Kathleen Goodman | ISO-NE | 2 | NPCC |
| | | | | | Gregory Campoli | New York Independent System Operator | 2 | NPCC |
| | | | | | Helen Lainis | IESO | 2 | NPCC |

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|--|---------------|---------|------|------------------|-----------------|--|---|----------|
| | | | | | Elizabeth Davis | PJM | 2 | RF |
| | | | | | Charles Yeung | Southwest Power Pool, Inc. (RTO) | 2 | MRO |
| | | | | | Kennedy Meier | Electric Reliability Council of Texas, Inc. | 2 | Texas RE |
| Southern Company - Southern Company Services, Inc. | Pamela Hunter | 1,3,5,6 | SERC | Southern Company | Matt Carden | Southern Company - Southern Company Services, Inc. | 1 | SERC |
| | | | | | Joel Dembowski | Southern Company - Alabama Power Company | 3 | SERC |
| | | | | | Ron Carlsen | Southern Company - Southern Company Generation | 6 | SERC |
| | | | | | Leslie Burke | Southern Company - Southern Company Generation | 5 | SERC |

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|---|---|----------------------|------|----------|-------------------------|--------------------------------------|----|------|
| Northeast Power Coordinating Council | Ruida Shu | 1,2,3,4,5,6,7,8,9,10 | NPCC | NPCC RSC | Gerry Dunbar | Northeast Power Coordinating Council | 10 | NPCC |
| | | | | | Alain Mukama | Hydro One Networks, Inc. | 1 | NPCC |
| | | | | | Deidre Altobell | Con Edison | 1 | NPCC |
| | | | | | Jeffrey Streifling | NB Power Corporation | 1 | NPCC |
| | | | | | Michele Tondalo | United Illuminating Co. | 1 | NPCC |
| | | | | | Stephanie Ullah-Mazzuca | Orange and Rockland | 1 | NPCC |
| | | | | | Michael Ridolfino | Central Hudson Gas & Electric Corp. | 1 | NPCC |
| | | | | | Randy Buswell | Vermont Electric Power Company | 1 | NPCC |
| | | | | | James Grant | NYISO | 2 | NPCC |
| | | | | | John Pearson | ISO New England, Inc. | 2 | NPCC |
| Harishkumar Subramani Vijay Kumar | Independent Electricity System Operator | 2 | NPCC | | | | | |

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|--------------------|--|---|------|
| Randy MacDonald | New Brunswick Power Corporation | 2 | NPCC |
| Dermot Smyth | Con Ed - Consolidated Edison Co. of New York | 1 | NPCC |
| David Burke | Orange and Rockland | 3 | NPCC |
| Peter Yost | Con Ed - Consolidated Edison Co. of New York | 3 | NPCC |
| Salvatore Spagnolo | New York Power Authority | 1 | NPCC |
| Sean Bodkin | Dominion - Dominion Resources, Inc. | 6 | NPCC |
| David Kwan | Ontario Power Generation | 4 | NPCC |
| Silvia Mitchell | NextEra Energy - Florida Power and Light Co. | 1 | NPCC |
| Glen Smith | Entergy Services | 4 | NPCC |
| Sean Cavote | PSEG | 4 | NPCC |
| Jason Chandler | Con Edison | 5 | NPCC |

| | | | | | | | | |
|--|-----------------|----|------|---------------|-----------------|---|----|------|
| | | | | | Tracy MacNicoll | Utility Services | 5 | NPCC |
| | | | | | Shivaz Chopra | New York Power Authority | 6 | NPCC |
| | | | | | Vijay Puran | New York State Department of Public Service | 6 | NPCC |
| | | | | | ALAN ADAMSON | New York State Reliability Council | 10 | NPCC |
| | | | | | David Kiguel | Independent | 7 | NPCC |
| | | | | | Joel Charlebois | AESI | 7 | NPCC |
| | | | | | Joshua London | Eversource Energy | 1 | NPCC |
| Western Electricity Coordinating Council | Steven Rueckert | 10 | | WECC CIP | Steve Rueckert | WECC | 10 | WECC |
| | | | | | Morgan King | WECC | 10 | WECC |
| | | | | | Deb McEndaffer | WECC | 10 | WECC |
| | | | | | Tom Williams | WECC | 10 | WECC |
| Tim Kelley | Tim Kelley | | WECC | SMUD and BANC | Nicole Looney | Sacramento Municipal Utility District | 3 | WECC |
| | | | | | Charles Norton | Sacramento Municipal Utility District | 6 | WECC |

| | | | | | | | | |
|--|--|--|--|--|-------------|---|---|------|
| | | | | | Wei Shao | Sacramento Municipal Utility District | 1 | WECC |
| | | | | | Foung Mua | Sacramento Municipal Utility District | 4 | WECC |
| | | | | | Nicole Goi | Sacramento Municipal Utility District | 5 | WECC |
| | | | | | Kevin Smith | Balancing Authority of Northern California | 1 | WECC |

1. The standard drafting team (SDT) revised CIP-012-1 R1 to address the comments received during previous ballots and to meet the directives outlined in FERC Order No. 866 seeking to provide for the availability of Real-time Assessment and Real-time monitoring data while in transit between Control Centers. Do you agree that the proposed language in R1 addresses the mitigation of risk as identified in FERC Order No. 866? If not, please provide comments and suggested requirement language.

James Keele - Entergy - 1,3,6

Answer No

Document Name

Comment

Entergy proposes that the measure for requirement R1.1 concerning physical access control be changed to ‘Physical Access restrictions to in-scope, unencrypted portions of the network.’

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes that the measure on physical access is scoped correctly. Additionally, the measures are examples of how an entity could address compliance and are not required by the Standard.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

BC Hydro appreciates the drafting team’s efforts to address BC Hydro's previous comments on Draft 3. After reviewing the revised Standard draft and Technical Rationale revisions in conjunction with this Draft 4, BC Hydro offers the following comments.

BC Hydro's previous concerns raised on CIP-012-2 Draft 1, Draft 2 and Draft 3 appear to have not been materially addressed, and BC Hydro continues to believe still hold valid grounds.

The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance. The SDT also contends that concerns on redundancy and appropriateness of addressing the risk in CIP Standards has been addressed in the Technical Rationale, Implementation Guidance, and in responses to comments in previous draft versions. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |

NST believes there are three problems with the proposed wording of R1:

First, it fails to account for the fact "availability" is a distinctly different attribute of network and computing infrastructures and/or the data they create, store, and transmit than "confidentiality" and "integrity," and it is typically supported in distinctly different ways. Confidentiality and integrity protections for data "in transit," such as are required for data in transit between Control Centers by CIP-012-1, may be and often are manifested as technical cryptographic controls. In contrast, "Availability" protections for inter- Control Center communications could be, as noted in FERC's Order, a written service level agreement with a Responsible Entity's wide-area communications provider.

Second, adding a new component to an existing CIP Requirement would force Responsible Entities to rewrite existing plans for compliance with CIP-012-1 R1. NST believes most Entities would find it less burdensome to add new sections to existing CIP-012 documents than to create entirely new CIP-012 documents that address new availability requirements.

Third, it NST's opinion that as written, R1 does not adequately address Order 866 by virtue of the fact it says nothing about communication links between Control Centers, which should be the primary focus. NST understands that communication link availability does not, by itself, ensure data availability,** but the scope of the Order is limited to "communication links and data communicated between bulk electric system Control Centers."

** NST notes that the existing requirement to protect data confidentiality for data transmitted between Control Centers is intended to PREVENT data from being available (to, for example, eavesdroppers) while it's in transit.

| | | |
|----------|---|---|
| Likes | 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
| Dislikes | 0 | |

Response

Thank you for your comment. The SDT asserts it has addressed the concept of availability in FERC Order 866 as a cyber-related risk to the Bulk Electric System. Examples of methods addressing cyber related risks are well documented in the Measures section of the Standard and in the Implementation Guidance.

As stated above, FERC issued Order 866 to address the cyber risk of communication links being unavailable when needed. This Order required the SDT to address the new component. How an entity chooses to address compliance in their plans is out of scope of the SDT's

work. Additionally, the SDT has identified options in addressing flexibility of documentation. The SDT recognized that Responsible Entities may already have addressed these contingencies in their existing recovery and/or incident response plan(s). Relevant evidence arising out of these plans may be referenced to meet CIP-012 requirements, avoiding duplication of administrative efforts.

The SDT recognizes that specific language identified in the FERC Order wasn't included in Standard language verbatim. However, the SDT interpreted the Order, with guidance from FERC and NERC staff, that the intent of the Order could be met by mitigating the risk created by loss of the ability to communicate. Additionally, the SDT has referenced communication link concept through the Standard (e.g., R1.3), as well as the IG and TR.

Richard Vendetti - NextEra Energy - 5

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

NEE understands FERC order but is concerned with R1 P1.3 specific language and impacts with third-party service providers like telecommunications.

Redundancy and recovery plans may be outsourced and provided through service level agreements as the Entity does not own the services nor should be held accountable for availability when the vendor fails to meet defined service level. Recommending improvements to language and additional use case examples in the Technical Rational.

NEE is requesting the SDT clearly define “availability” and “loss of data” specifically for CIP-012-2 application. There are layer 2 and 3 network devices, some network devices not in scope for NERC CIP. Managing the availability of the RTA and RTM data traversing devices not in scope for NERC CIP and third-party communications services must be addressed in the standard clearly.

NEE supports NPCC comments:

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., "loss of availability of data used," pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undue administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

NPCC's Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign "availability" of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

Plan components:

R2.1 Processes and/or methods to identify loss of the communication links,

R2.2 Processes and/or methods to initiate the recovery of the communication links,

R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

| | |
|-----------------|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance.

Please see response to NPCC comments and recommendations.

Ben Hammer - Western Area Power Administration - 1

| | |
|---|---|
| Answer | No |
| Document Name | |
| Comment | |
| <p>The standard mixes the requirements of CIP-009, CIP-012, TOP-003 and IRO-010. This effectively creates duplicate requirements stringed across multiple standards and separate orders. Requirement 1.3 should be removed from CIP-012 and placed into CIP-009 R1. There appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.</p> | |
| Likes 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
| Dislikes 0 | |

Response

Thank you for your comment. The SDT has previously responded to the concerns identified in this comment. The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address.

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

| | |
|----------------------|----|
| Answer | No |
| Document Name | |

Comment

SPP recommends language changes to Part 1.1 to clarify that the methods address the risks (i.e., preventive), not the effects of the risks (i.e., corrective). Specifically, this comment form’s own question uses the phrase “mitigation of”, but the language as drafted uses the phrase “mitigate the risk(s) posed by”. This phrase “risk(s) posed by” may lead to confusion and distract entities from satisfying the directives outlined in FERC Order No. 866. For example, a method used mitigate risk(s) posed by the unauthorized disclosure of data could include far reaching methods such as an entity’s hiring, discipline, and retention policies since the disclosure of data could result in employee termination. To avoid this confusion and focus efforts on the directives SPP recommends the changes below. The use of the phrase “risk(s) of [...] to data” focuses the method and mitigations specifically to the directives outlined in the FERC order.

Recommended language:

Identification of method(s) used to mitigate the risk(s) of unauthorized disclosure or unauthorized modification to data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;

SPP estimates that the confusion caused by the as-drafted language could result in hundreds of staff hours annually, which will distract from meeting the intended directive.

Likes 0

Dislikes 0

Response

Thank you for your comment. While the SDT made some conforming changes to Part R1.1, the SAR has limited the purpose of changes to include the aspect of availability. With regards to the concerns about methods to address risk, the SDT provided guidance on how an entity could address risk on page three of the Implementation Guidance.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer No

Document Name

Comment

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., "loss of availability of data used," pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undo administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign "availability" of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

Plan components:

R2.1 Processes and/or methods to identify loss of the communication links,

R2.2 Processes and/or methods to initiate the recovery of the communication links,

R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

Likes 0

Dislikes 0

Response

Thank you for your comment. In the first posted draft of CIP-0012-2 the SDT had created a second requirement (R2) to address availability separate from confidentiality and integrity. The responses the SDT received from that first draft very clearly articulated that the industry did not support having a second requirement (R2) for availability and requested that it be included as part of Requirement R1.

The SDT asserts the Requirement Part R1.2 clearly identifies the risk to be mitigated is in the ability to send and receive data and that the population of data required for the data specification identified in TOP-003 and IRO-010.

Nicolas Turcotte - Hydro-Quebec (HQ) - 1

| | |
|----------------------|----|
| Answer | No |
| Document Name | |
| Comment | |

As drafted, it is still unclear if Entities are required to implement mitigations to reduce the risk of losing communication links, losing the data itself during transit, and/or losing the ability to communicate the data that is in transit.

In addition, the introduction of "availability" language into the current R1 requirement seems misplaced. R1 currently addresses mitigating risks associated with unauthorized disclosure and unauthorized modification, which focuses on the cyber security priorities of protecting confidentiality and integrity. The introduction of the new language, i.e., "loss of availability of data used," pertains to a completely different cyber security priority (availability). This commingling of cyber security priorities can make it difficult to understand and meet the security and compliance obligations.

Furthermore, embedding the new requirement in the currently effective requirement will require Entities to fully re-write their current plans and re-train their staff causing undo administrative burden. This also makes it more difficult to modify future iterations of the standard language if multiple requirements are wrapped up in one paragraph and not clearly identified in sub-requirements.

Recommendations:

First, NPCC RSC recommends that the SDT create a new R2 requirement to specifically address the SAR.

Second, NPCC RSC recommends the SDT assign "availability" of data to the availability of the communication links used to transmit the data and the ability to communicate the data when the communication links are unavailable and not the availability of the data itself.

R2. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by the loss of ability to communicate the RTA/RTM data due to the unavailability of the communication links used to transmit the Real-time Assessment and Real-time monitoring data between any applicable Control Centers as identified in R1.

Third, NPCC RSC recommends that the SDT consider developing subrequirements that express the required components needed for the mitigation plan in the form of processes and/or methods:

Plan components:

R2.1 Processes and/or methods to identify loss of the communication links,

R2.2 Processes and/or methods to initiate the recovery of the communication links,

R2.3 Alternative processes and/or methods to communicate the data when the communication links are unavailable such as use of backup communication capability.

Pending the clarification of the data loss vs communication link loss would impact us recommended R2 language. The proposed language above does not address the need for agreements with third parties/other responsible entities with control centers for the implementation of alternate processes.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your comment. In the first posted draft of CIP-0012-2 the SDT had created a second requirement (R2) to address availability separate from confidentiality and integrity. The responses the SDT received from that first draft very clearly articulated that the industry did not support having a second requirement (R2) for availability and requested that it be included as part of Requirement R1.

The SDT asserts the Requirement Part R1.2 clearly identifies the risk to be mitigated is in the ability to send and receive data as identified in TOP-003 and IRO-010.

Tracy MacNicoll - Utility Services, Inc. - 4

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|--|----|
| Document Name | |
| Comment | |
| USV Supports the comments of NPCC RSC | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see SDT response to NPCC RSC comments. | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| OPG supports the NPCC RSC's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see SDT response to NPCC RSC comments. | |
| Alain Mukama - Hydro One Networks, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |

Some clarification for part 1.3. There are Active/Active links and Active/Standby links, and they recovery automatically or with minimum manual intervention. For issue with ISP (Internet Service Provider) network, can only rely on ISP to resolve the issue according to the SLA.

Likes 0

Dislikes 0

Response

Thank you for your comment. SLAs have been included in the Measures section in M1.2 and M1.3, as well as in the Implementation Guidance where they provide examples of how an issue with ISP can be addressed. The SDT recommends that entities review the Measures and supporting documents for additional clarity in potential compliance approaches for designating/documenting responsibilities.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer Yes

Document Name

Comment

FirstEnergy has no issues with R1 or R1.1, which is about the methods to prevent unauthorized data modification as this Requirement speaks to the intent of the Standard.

Likes 0

Dislikes 0

Response

Thank you for your support.

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

| | |
|--|-----|
| <p>The addition of “loss of availability” completes the CIA Triad and requires entities to create an information security strategy through policies, processes, or procedures to minimize threats of RTA and RTM data communications loss while in transit between Control Centers.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your support.</p> | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| <p>The FERC Order also indicates that data at rest is out of scope. We suggest including “data at rest” along with the “oral communications” in the into paragraph for clarity.</p> | |
| <p>Kimberly Turco on behalf of Constellation Segments 5 and 6</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT has included “while such data is being transmitted between control centers” in Part R1.1. This addresses the concern of data at rest. Additionally, paragraph eleven of the FERC Order indicates that data at rest should already be protected by implementation of existing CIP Standards.</p> | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| AZPS agrees that the proposed language address the mitigation risks. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Southern Company agrees with EEI that the proposed language in R1 addresses the mitigation risk as identified in FERC Order 866. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see SDT response to EEI comments. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Please see SDT response to EEI comments.

Kent Feliks - AEP - 3

Answer Yes

Document Name

Comment

The addition and recognition of the “loss of availability” makes the intent clear.

Likes 0

Dislikes 0

Response

Thanks for your support.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer Yes

Document Name

Comment

The NAGF supports the proposed language for Requirement 1.

Likes 0

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| ITC supports the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comments. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The FERC Order also indicates that data at rest is out of scope. We suggest including “data at rest” along with the “oral communications” in the into paragraph for clarity. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |

| Response | |
|---|-----|
| Thank you for your comment. The SDT has included “while such data is being transmitted between control centers” in Part R1.1. This addresses the concern of data at rest. Additionally, paragraph eleven of the FERC Order indicates that data at rest should already be protected by implementation of existing CIP Standards. | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Cleco agrees with EEI comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comments. | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The ISO/RTO Council Standards Review Committee (SRC) supports broadening the term “security protection” to “method(s)” to provide entities with flexibility in meeting the standard. That said, the SRC requests the SDT validate that the proposed modifications to CIP-012 retain backwards compatibility with CIP-012-1. | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support and comment. While the SDT cannot provide specific compliance positions, we believe that “methods used to mitigate the risk.” encompasses security protections. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that the proposed language in R1 addresses the mitigation risk as identified in FERC Order 866. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thanks for your support. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Please see SDT response to EEI comments.

Hillary Creurer - Allele - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses.

Likes 0

Dislikes 0

Response

Please see SDT response to EEI and MRO NSRF comments.

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Duke Energy agrees that the proposed language in R1 is responsive to FERC Order No. 866.

Likes 0

Dislikes 0

Response

Thanks for your support.

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| ERCOT joins the comments submitted by the ISO/RTO Council (IRC) Standards Review Committee (SRC) and adopts them as its own. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Please see SDT response to the ISO RTO Council Standards Review Committee | |
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Wendy Kalidass - U.S. Bureau of Reclamation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| Response | |
|---|-----|
| <p>Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Martin Sidor - NRG - NRG Energy, Inc. - 6</p> | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|--|-----|
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |

| | |
|--|-----|
| David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |

| | |
|---|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|-----------------|--|
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

2. Does the language in R1.2 adequately reflect the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data? If not, please provide comments and suggested requirement language.

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer No

Document Name

Comment

OPG supports the NPCC RSC's comments.

Likes 0

Dislikes 0

Response

Please see response to NPCC RSC's comments.

Tracy MacNicoll - Utility Services, Inc. - 4

Answer No

Document Name

Comment

USV Supports the comments of NPCC RSC

Likes 0

Dislikes 0

Response

Please see response to NPCC RSC's comments.

| | |
|--|----|
| Nicolas Turcotte - Hydro-Quebec (HQ) - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.</p> <p>Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.” How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?</p> <p>Request that availability require the same level of detail as version 1’s confidentiality and integrity.</p> <p>Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT asserts that, as identified in M1, the Measures listed are examples of methods that entities could include in their plans. The SDT updated the Measures verbiage to include additional examples in response to comments received from industry during the previous posting. Measures are not enforceable.</p> <p>The SDT has responded previously to the concerns identified in this comment. The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately.</p> | |

The TOP and IRO standards do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address.

The Purpose section was updated to reflect the current scope of the project and the level of detail for that section is adequate.

The SDT used the term availability within Requirement R1 to directly address the FERC Order. The Parts 1.2 and 1.3 cover the two descriptors of availability required within Requirement R1 of the standard.

Loss of availability applies to both communicating data *and* communication links, and the R1 language covers both Parts 1.2 and 1.3. FERC Order 866 refers to "require protections regarding the availability of communication links and data communicated between" BES Control Centers.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| |
|----------------|
| Comment |
|----------------|

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language "adequately reflect the need to mitigate the loss."

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?

Request that availability require the same level of detail as version 1's confidentiality and integrity.

Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT asserts that, as identified in M1, the Measures listed are examples of methods that entities could include in their plans. The SDT updated the Measures verbiage to include additional examples in response to comments received from industry during the previous posting. Measures are not enforceable.

The SDT has responded previously to the concerns identified in this comment. The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for “System Recovery,” they could use that procedure as evidence for their CIP-012 System recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence for. Entities are still free to have multiple system recovery documents to address each Standard and or system separately.

The TOP and IRO standards do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address.

The Purpose section was updated to reflect the current scope of the project and the level of detail for that section is adequate.

The SDT used the term availability within Requirement R1 to directly address the FERC Order. The Parts 1.2 and 1.3 cover the two descriptors of availability required within Requirement R1 of the standard.

Loss of availability applies to both communicating data *and* communication links, and the R1 language covers both Parts 1.2 and 1.3. FERC Order 866 refers to "require protections regarding the availability of communication links and data communicated between" BES Control Centers.

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

| | |
|---|----|
| Answer | No |
| Document Name | |
| Comment | |
| <p>SPP recommends language changes to Part 1.2 to clarify that the methods address the risks (i.e., preventive), not the effects of the risks (i.e., corrective). Specifically, this comment form’s own question uses the phrase “mitigation of”, but the language as drafted uses the phrase “mitigate the risk(s) posed by”. This phrase “risk(s) posed by” may lead to confusion and distract entities from satisfying the directives outlined in FERC Order No. 866. For example, a method used mitigate risk(s) posed by the loss of the ability to communicate data could include far-reaching methods, such as an entity’s Real-time assessment, communication plans, or load shed procedures since each of those processes deal with data and would experience effects in some situations. To avoid this confusion and focus efforts on the directives SPP recommends the changes below. The use of the phrase “to the ability” focuses the method and mitigations specifically to the directives outlined in the FERC order. To provide clarity, SPP recommends the following language change to Part 1.2:</p> <p><i>Identification of method(s) used to mitigate the risk(s) to the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;</i></p> <p>SPP estimates that the confusion caused by the as-drafted language could result in hundreds of staff hours annually, which will distract from meeting the intended directive.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. While the SDT made some conforming changes to Part R1.1, the SAR has limited the purpose of changes to include the aspect of availability. With regards to the concerns about methods to address risk, the SDT provided guidance on how an entity could address risk on page three of the Implementation Guidance.</p> | |
| Richard Vendetti - NextEra Energy - 5 | |
| Answer | No |
| Document Name | |

Comment

NEE supports NPCC comments:

Request alignment between the Requirement and Measures. R1 requires a plan which is a strategic deliverable while the Measures focus on tactical deliverables. Measures should not be pseudo-requirements.

Request clarification of this question since Part 1.2 does not include the language “adequately reflect the need to mitigate the loss.”

How are IRO and TOP Standards deficient in mandating availability? Does CIP-012 create double jeopardy with IRO, COM standards, and TOP Standards?

Request that availability require the same level of detail as version 1’s confidentiality and integrity.

Request clarification of “availability of data” vs “loss of ability to communicate.” (R1 vs R1.2).

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Please see the SDTs response to NPCC.

Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA

| | |
|--------|----|
| Answer | No |
|--------|----|

| | |
|--|---|
| Document Name | |
| Comment | |
| The 1.2 proposed language should use the word "transmit" instead of "communicate" to be consistent with the rest of the standard. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. The SDT believes that communication is the appropriate term as it gives the responsible entity the flexibility to meet the standards within their own programs. Through the various orders and IG, communication links have been discussed in depth and communication encompasses the act of transmitting information. | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | No |
| Document Name | |
| Comment | |
| NST believes that as written, R1.2: | |
| <ul style="list-style-type: none"> - Conflicts with the language of R1 (loss of data availability and loss of the ability to communicate are two different situations); - uses language not found in Order 866, and; - could be interpreted as applying not only to communications links between Control Centers, but also to sending and receiving Cyber Assets within Control Centers. An ICCP server's failure or misoperation could cause a loss of ability to communicate. | |
| Likes 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
| Dislikes 0 | |

Response

Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance.

The SDT asserts that the verbiage between R1 and R1.2 do not conflict. R1.2 is intended to cover the additional request in the SAR. In addition, FERC Order 866 (pg. 20) states: “The intent of the Commission’s directive is for NERC to address the risks associated with the availability of communication links **and** data communicated between all bulk electric system Control Centers...”

R1 and its subparts are applicable to Control Centers, loss of functionality associated with BES Cyber Systems (i.e., “Cyber Assets within Control Centers”) is covered via other Standards (e.g., CIP-009). The SDT has continued to advise that CIP-009 programs could become leveraged/cross-referenced when implementing controls for R1.2, but the programs have differing and distinct applicability.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

FirstEnergy believes R1.2 is about the methods to mitigate the risk of losing communications – this is redundant with TOP-001 R20, which requires us to demonstrate that we have diverse and redundant communications

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT asserts that language in TOP-001 R20 addresses communication components that reside within a Responsible Entities Primary Control Center (e.g., from server to firewall at demarcation point). CIP-012-2 addresses risks of not being able to communicate between Control Centers (e.g., from the firewall at a demarcation point at Control Center A to demarcation firewall at Control Center B).

| | |
|--|----|
| Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.</p> <p>BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.</p> <p>Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarity that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance. The SDT also contends that concerns on redundancy and appropriateness of addressing the risk in CIP Standards has been addressed in the Technical Rationale, Implementation Guidance, and in responses to comments in previous draft versions.</p> | |

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

The Standards Drafting Team should ensure the words “transmit” and “communicate” are being used consistently in the requirement and the requirement parts. Requirement R1 refers to mitigating the risk of the loss of availability of data used in Real-time Assessment and Real-time monitoring while such data is being “transmitted between applicable Control Centers.” Part 1.1 also refers to mitigating the unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data that is being “transmitted between Control Centers.” Part 1.2 refers to mitigating the risk posed by the loss of the ability to “communicate” Real-time Assessment and Real-time monitoring data between control centers. The wording in Part 1.3 also uses the term “communication” links.

SMUD and BANC recommend using the word “transmit” instead of “communicate” in Part 1.2 to provide clarity and consistency with the Purpose of the Standard and the Technical Rationale. The wording should also be changed in the Technical Rationale (pdf-page 9) where the Requirement R1, Part 1.2 language is listed.

| | |
|---------|---|
| Likes 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
|---------|---|

| | |
|------------|--|
| Dislikes 0 | |
|------------|--|

Response

Thank you for your comment. The SDT believes that communication is the appropriate term as it gives the responsible entity the flexibility to meet the standards within their own programs. Through the various orders and IG, communication links have been discussed in depth and communication encompasses the act of transmitting information.

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

| | |
|--|-----|
| Duke Energy agrees that the language in R1.2 reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Hillary Creurer - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI and MRO NSRF comments. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comments | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that the language in Requirement R1 part 1.2 adequately reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Cleco agrees with EEI comments. | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|-----|
| Response | |
| Please see SDT response to EEI comments | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation does not have any additional comments. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thanks for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| ITC supports the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comments | |

| | |
|---|-----|
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The NAGF supports the proposed language for Requirement 1.2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comments | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |

Comment

Southern Company agrees with EEI that the language in Requirement R1 part 1.2 adequately reflects the need to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data.

Likes 0

Dislikes 0

Response

Please see SDT response to EEI comments and thank you for your support

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer Yes

Document Name

Comment

AZPS agrees the language in R1.2 adequately reflects the need to mitigate the loss of the ability to transmit RTA/RTM data.

Likes 0

Dislikes 0

Response

Thank you for your support

Kimberly Turco - Constellation - 6

Answer Yes

Document Name

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

No comments from RF

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer Yes

Document Name

Comment

LCRA would like to verify that the bulleted items in the Measures section represent an “or”, and it will not be required to calculate availability to demonstrate compliance.

Likes 0

Dislikes 0

Response

Thank you for your comment. Measures are never enforceable and are meant to serve as examples.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer

Yes

Document Name

Comment

Tacoma Power supports the change to R1.2, but recommends using the word “transmit” instead of “communicate”. This is a non-substantive change, but will align R1.2 with R1.3 and M1, which use the word “transmit”.

Likes 0

Dislikes 0

Response

Thank you for your support and comment. The SDT believes that communication is the appropriate term as it gives the responsible entity the flexibility to meet the standards within their own programs. Through the various orders and IG, communication links have been discussed in depth and communication encompasses the act of transmitting information.

Alain Mukama - Hydro One Networks, Inc. - 1

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kent Feliks - AEP - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|---|-----|
| James Keele - Entergy - 1,3,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Micah Runner - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Claudine Bates - Black Hills Corporation - 1,3,5,6

Answer Yes

Document Name

Comment

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Wendy Kalidass - U.S. Bureau of Reclamation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | |
| Document Name | |
| Comment | |
| Texas RE understands the intent of Requirement Part 1.2 to mitigate the loss of the ability to transmit Real-time Assessment and Real-time monitoring data and interprets the language as such. However, the current language could also be read to apply solely to mitigating the risk | |

posed by the loss of data communications. Texas RE recommends the drafting team clarify that CIP-012 applies to mitigating the loss of the ability to transmit Real-time Assessment and Real-time monitoring data. Texas Re recommends the following language:

Identification of method(s) used to mitigate the risk of the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers, including the transmission and receipt of data used for Real-time Assessment and Real-time monitoring.

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT believes that communication is the appropriate term as it gives the responsible entity the flexibility to meet the standards within their own programs. Through the various orders and IG, communication links have been discussed in depth and communication encompasses the act of transmitting information.

3. Does the language in R1.4 provide Responsible Entities with clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2? If not, please provide comments and suggested requirement language.

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer No

Document Name

Comment

Reclamation recommends modifying the language.

From: **1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and

To: **1.4.** Identification of where, physically and/or logically, the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the Implementation Guidance document. Below shows a snapshot to address this comment.

“A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate

compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.”

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

| | |
|---------------|----|
| Answer | No |
|---------------|----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

The changes in Requirement R1 in Draft 4 of CIP-012-2 still imply a possible reliance on redundancy, which does not align with the approach taken in the other existing CIP standards, particularly CIP-002-5.1a. As availability is the purview of operations, BC Hydro believes that it would be better suited to other Mandatory Reliability Standards (MRS) or any other applicable MRS (e.g., IRO-010, TOP-003, TOP-001) within the Operations and Planning (O&P) domains.

BC Hydro recommends removing the 'availability' requirement from CIP-012-2 and revising other MRS standards to address this need as appropriate.

Alternatively, similar to our comments on Draft 3, BC Hydro suggests that the drafting team provide a clear definition of the term 'availability', and clarify that it does not imply the use of redundant setups. For most of the entities, 'availability' of communication networks depends on third party telecommunication providers and, in the event of a line or telecommunication equipment failure, the entity is reliant on the third party telecommunication providers to fix the problems. BC Hydro suggests that SDT add an exemption for the links and equipment used by third party telecommunication providers, as changing or enhancing the third party telecommunication infrastructure to support 'availability' may not be feasible for many entities.

| | |
|--|----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance. The SDT also contends that concerns on redundancy and appropriateness of addressing the risk in CIP Standards has been addressed in the Technical Rationale, Implementation Guidance, and in responses to comments in previous draft versions.</p> | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | No |
| Document Name | |
| Comment | |
| <p>FirstEnergy believes R1.2 is about the methods to recover lost communications – this is already addressed in CIP-009, which defines our Recovery Plans for critical infrastructure.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. The SDT asserts that recovery methods in CIP-009 address the recovery of BES Cyber Systems and their associated EACMS and PACS. While a communication link between applicable Control Centers would not specifically be covered by mitigating activities already identified in a CIP-009 Plan for restoration of a BES Cyber System, a Responsible Entity may choose to include additional restoration activities that address the loss of the ability to communicate between Control Centers in an updated CIP-009 Plan.</p> | |
| Richard Vendetti - NextEra Energy - 5 | |
| Answer | No |
| Document Name | |
| Comment | |

| | |
|---|----|
| NEE supports NPCC's comments: | |
| Request clarification of "availability" vs "loss of data." | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to NPCC's comments | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | No |
| Document Name | |
| Comment | |
| Request clarification of "availability" vs "loss of data." | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT was charged with addressing "availability" in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of "availability" on page two of the Implementation Guidance. | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | No |
| Document Name | |

Comment

The SRC requests that the language be revised to clarify that an entity can use different methods at different locations to comply with each of the Parts of Requirement R1, and that identification of a particular method used at a particular location does not automatically require the entity to implement that particular method at all other locations.

Additionally, the SRC notes that in the **clean** and the **redline to last posted** versions of CIP-012-2, Part 1.4 only references Parts 1.1 and 1.2, while Part 1.5 references Parts 1.1, 1.2, and 1.3; however, in the **redline to last approved** version of CIP-012-2, Part 1.4 references Parts 1.1, 1.2, and 1.3, while Part 1.5 only references Parts 1.1 and 1.2. The SRC requests that the drafting team clarify which parts are intended to be referenced in Part 1.4 and Part 1.5.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT has written the Requirements to be objective based, allowing for a Responsible Entity to choose methods that work best for their individual environments. The SDT recognizes that a Responsible Entity may have multiple Control Centers requiring an approach that is unique to a Control Center. There is nothing in the Requirement language that would prevent a Responsible Entity from implementing methods unique to each Control Center.

The SDT updated the redline to last approved CIP-012 standard to align with the other posted standards.

Nicolas Turcotte - Hydro-Quebec (HQ) - 1

Answer

No

Document Name

Comment

Request clarification of “availability” vs “loss of data.”

Likes 0

| | |
|---|----|
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance. | |
| Tracy MacNicoll - Utility Services, Inc. - 4 | |
| Answer | No |
| Document Name | |
| Comment | |
| USV Supports the comments of NPCC RSC | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to NPCC’s comments | |
| Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | No |
| Document Name | |
| Comment | |
| ERCOT joins the comments submitted by the IRC SRC and adopts them as its own. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|----|
| Please see response to IRC SRC comments | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | No |
| Document Name | |
| Comment | |
| OPG supports the NPCC RSC's comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to NPCC's comments | |
| Alain Mukama - Hydro One Networks, Inc. - 1 | |
| Answer | No |
| Document Name | |
| Comment | |
| Identifying where the method is applied for part 1.3 need some clarification. We can identify for Internal devices/links. For issues within ISP, we can only identify our demarcation point with ISP, and initiate the problem call/ticket with ISP. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT recommends referencing the updated Measures section for M1.3 and M1.4, as well as the Implementation Guidance, which provide examples of how an issue with ISP can be addressed. The SDT recommends that entities review the Measures and supporting documents for additional clarity in potential compliance approaches for designating/documenting responsibilities. | |

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer Yes

Document Name

Comment

Tacoma Power supports the R1.4 language. However, the redline to last approved file does not match the clean version verbiage. For example, the redline to last approved for R1.4 states “required in Parts 1.1, 1.2, and 1.3”, when it should show “required in Parts **1.1 and 1.2**”.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT updated the redline to last approved CIP-012 standard to align with the other posted standards.

LaTroy Brumfield - American Transmission Company, LLC - 1

Answer Yes

Document Name

Comment

ATC appreciates the SDT’s efforts. While we understand the language as written we believe it would be clearer to use the word “applied” instead of “implemented”. As a result, ATC offers this idea for the team’s consideration as a clarifying change, “Identification of where the methods are applied by the Responsible Entity as required in Parts 1.1, 1.2, and 1.3.”

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT updated the redline to last approved CIP-012 standard to align with the other posted standards.

Lindsey Mannion - ReliabilityFirst - 10

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

The expanded prose listed for Part 1.4 under Measures clarifies the need for entities to clearly identify where they have applied measures from R1.1 and R1.2.

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

Thank you for your support.

Kimberly Turco - Constellation - 6

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

Comment

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

| | |
|-------|---|
| Likes | 0 |
|-------|---|

| | |
|----------|---|
| Dislikes | 0 |
|----------|---|

Response

| | |
|--|-----|
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees the language in R1.4 provides clarity on the need to identify physically or logically where methods required in R1.1. and R1.2 have been applied. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| WECC suggests a revision to M1, bullet 2, as follows: "Physical access restrictions" (add) and monitoring of (remove) to "unencrypted portions of the network." | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your comment. The SDT believes that the measure on physical access is scoped correctly. Additionally, the measures are examples of how an entity could address compliance and are not required by the Standard.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer Yes

Document Name

Comment

Southern Company agrees with EEI that the language in R1.4 provides sufficient clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2.

Likes 0

Dislikes 0

Response

Please see response to EEI comments and thank you for your support.

Kinte Whitehead - Exelon - 3

Answer Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI.

Likes 0

Dislikes 0

Response

Please see response to EEI comments and thank you for your support.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| The NAGF supports the proposed language for Requirement 1.4. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| ITC supports the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to EEI comments and thank you for your support. | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker

Answer Yes

Document Name

Comment

Cleco agrees with EEI comments.

Likes 0

Dislikes 0

Response

Please see response to EEI comments and thank you for your support.

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer Yes

Document Name

Comment

| | |
|---|-----|
| The language in R1.4 provides sufficient clarity on the need to identify physically or logically where they have applied the methods required in R1.1 and R1.2. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Daniel Gacek - Exelon - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to EEI comments and thank you for your support. | |
| Hillary Creurer - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses. | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to EEI and MRO NSRF comments and thank you for your support. | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| <p>Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO</p> | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Martin Sidor - NRG - NRG Energy, Inc. - 6</p> | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| James Keele - Entergy - 1,3,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kent Feliks - AEP - 3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|---|-----|
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |

Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
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|---------|--|
| Likes 0 | |
|---------|--|

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| Dislikes 0 | |
|------------|--|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

| | |
|--|--|
| | |
|--|--|

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
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|---------|--|
| Likes 0 | |
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|------------|--|
| Dislikes 0 | |
|------------|--|

| | |
|-----------------|--|
| Response | |
|-----------------|--|

| | |
|--|--|
| | |
|--|--|

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

| | |
|---------------|-----|
| Answer | Yes |
|---------------|-----|

| | |
|----------------------|--|
| Document Name | |
|----------------------|--|

| | |
|----------------|--|
| Comment | |
|----------------|--|

| | |
|---|-----|
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Rachel Coyne - Texas Reliability Entity, Inc. - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF | |
| Answer | |
| Document Name | |
| Comment | |
| Duke Energy agrees that the language in R1.4 provides clarity on the need to identify where methods in R1.1 and R1.2 have been applied. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

Thank you for your support.

4. The SDT proposes that the modifications in CIP-012-2 meet the FERC directives in a cost-effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost-effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer No

Document Name

Comment

GO/GOPs will need more information to adequately assess the cost effectiveness of the proposed approach.

Likes 0

Dislikes 0

Response

Thank you for your comment. The standard drafting team recommends entities consider the cost of implementation to be balanced against the cost of the risk of loss of availability.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer No

Document Name

Comment

Absent clarity about what CIP-012-2 would require a Responsible Entity to do and the scope of its requirements, NST cannot comment on the cost-effectiveness of its latest proposed modifications.

Likes 1 Central Hudson Gas & Electric Corp., 1, Ridolfino Michael

Dislikes 0

Response

Thank you for your comment. The standard drafting team recommends entities consider the cost of implementation to be balanced against the cost of the risk of loss of availability.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer No

Document Name

Comment

Please see our response to Questions 2 and 3 - with uncertainty of responsibility, FirstEnergy cannot effectively answer this question.

Likes 0

Dislikes 0

Response

Please see responses to Q2 and Q3

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

Please refer to comments on Question #1. BC Hydro seeks clarifications on the queries raised in the response of Question #1, and BC Hydro is not in a position to identify the cost effectiveness of the Project 2020-04 CIP-012-2 changes at this stage.

Likes 0

Dislikes 0

Response

Please see response to BC Hydro comment for Q1

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer No

Document Name

Comment

Prior to proposing additional modifications, Reclamation also recommends each SDT take additional time to completely identify the scope to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Reclamation recommends the SDT take particular care to coordinate CIP-012 changes with existing drafting teams for existing related standards to ensure consistency and avoid duplication, specifically, Project 2016-02 and Project 2019-03. This will help to minimize churn among standard versions, reduce the risk that standards will conflict with one another, and better align the standards.

Likes 0

Dislikes 0

Response

Thank you for your comment. This SDT was formed to address FERC Order No. 866 and the request for this SDT to account for future potential compliance issues is outside the scope of this project. The SDT will pass along the proposed compliance environment suggestion to NERC management.

Based on where this project is in the standards development processes, the 2021-03 SDT will be able to verify that their proposed changes work with all CIP standards in development, currently approved, or future enforceable. An exclusion of TO Control Centers as defined by 2021-03 is outside the scope of Project 2020-04's SAR.

Alison MacKellar - Constellation - 5

Answer Yes

| | |
|--|-----|
| Document Name | |
| Comment | |
| Constellation does not have any additional comments. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS agrees. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |

Constellation has no comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

Response

Lindsey Mannion - ReliabilityFirst - 10

Answer Yes

Document Name

Comment

No comments from RF.

Likes 0

Dislikes 0

Response

Alain Mukama - Hydro One Networks, Inc. - 1

Answer Yes

Document Name

Comment

Likes 0

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Hillary Creurer - Allete - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| James Keele - Entergy - 1,3,6 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

| | |
|---|-----|
| Response | |
| | |
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |

| | |
|--|-----|
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |

| | |
|--|-----|
| Response | |
| | |
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB | |
| Answer | Yes |
| Document Name | |

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|--|-----|
| Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | |
| Document Name | |
| Comment | |
| ITC supports the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see response to EEI comment | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |

| | |
|--|--|
| Answer | |
| Document Name | |
| Comment | |
| Black Hills Corporation will not comment on cost effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | |
| Document Name | |
| Comment | |
| Black Hills Corporation will not comment on cost effectiveness. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt | |
| Answer | |
| Document Name | |
| Comment | |

Black Hills Corporation will not comment on cost effectiveness.

Likes 0

Dislikes 0

Response

Sheila Suurmeier - Black Hills Corporation - 5

Answer

Document Name

Comment

Black Hills Corporation will not comment on cost effectiveness.

Likes 0

Dislikes 0

Response

5. The SDT reviewed the implementation plan and did not see any reasons to make any changes. Do you still agree the proposed timeframe is appropriate in light of the proposed revisions to the standard language? If you think an alternate timeframe is needed, please propose an alternate implementation plan and time period, and provide a detailed explanation of actions planned to meet the implementation deadline.

James Keele - Entergy - 1,3,6

Answer No

Document Name

Comment

Entergy believes that clarified requirement language should be agreed upon before the standard is approved. The physical access restriction measure should be clarified before an implementation window is opened.

Likes 0

Dislikes 0

Response

Thank you for your comment. The standard has been drafted in accordance with the ROP and the process laid out for the development of Reliability Standards.

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer No

Document Name

Comment

At this time BC Hydro does not have sufficient information to affirm whether 24 months will be adequate to implement the solutions to comply with the changes proposed in Project 2020-04 for CIP-012.

Likes 0

| | | |
|--|----|---|
| Dislikes | 0 | |
| Response | | |
| Thank you for your comment. The vast majority of industry has been in support of the implementation plan. | | |
| Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh | | |
| Answer | No | |
| Document Name | | |
| Comment | | |
| Absent clarity about what CIP-012-2 would require a Responsible Entity to do and the scope of its requirements, NST cannot comment on an implementation timetable. | | |
| Likes | 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
| Dislikes | 0 | |
| Response | | |
| Thank you for your comment. | | |
| Richard Vendetti - NextEra Energy - 5 | | |
| Answer | No | |
| Document Name | | |
| Comment | | |
| Until the language changes clarify R1 and R2 with measures the implementation plan cannot be considered. | | |
| Likes | 0 | |
| Dislikes | 0 | |
| Response | | |

| | |
|--|-----|
| Thank you for your comment. | |
| Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter | |
| Answer | Yes |
| Document Name | |
| Comment | |
| FirstEnergy has no objection to the implementation plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Lindsey Mannion - ReliabilityFirst - 10 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| No comments from RF. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Kimberly Turco - Constellation - 6 | |
| Answer | Yes |

| | |
|---|-----|
| Document Name | |
| Comment | |
| Constellation has no comments. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| AZPS still agrees the proposed timeframe is appropriate. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Southern Company agrees with that the proposed Implementation Plan is sufficient as proposed. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kinte Whitehead - Exelon - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Exelon is in support of the comments submitted by EEI. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The NAGF supports the proposed 24-month implementation plan. | |
| Likes | 0 |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Gail Elliott - Gail Elliott On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Gail Elliott | |
| Answer | Yes |
| Document Name | |
| Comment | |
| ITC supports the comments submitted by EEI | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comment | |
| Alison MacKellar - Constellation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Constellation does not have any additional comments. | |
| Alison Mackellar on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|--|-----|
| Clay Walker - Clay Walker On Behalf of: John Lindsey, Cleco Corporation, 6, 5, 1, 3; Maurice Paulk, Cleco Corporation, 6, 5, 1, 3; Robert Hirschak, Cleco Corporation, 6, 5, 1, 3; Stephanie Huffman, Cleco Corporation, 6, 5, 1, 3; Wayne Messina, LaGen, 4; - Clay Walker | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Cleco agrees with EEI comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to EEI comment | |
| Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The implementation plan timeline would be impacted by the scoping or determination of its availability from an infrastructure standpoint/network capability or a data loss/data protection ruling. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. | |
| Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable | |

| | |
|--|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| EEI agrees that the proposed Implementation Plan is sufficient as proposed. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support | |
| Nicolas Turcotte - Hydro-Quebec (HQ) - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| The implementation plan timeline would be impacted by the scoping or determination of its availability from an infrastructure standpoint/network capability or a data loss/data protection ruling. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your comment. | |
| Hillary Creurer - Allele - Minnesota Power, Inc. - 1 | |
| Answer | Yes |
| Document Name | |

Comment

Minnesota Power aligns with the NERC Standards Review Forum (NSRF) and Edison Electric Institute (EEI) responses.

Likes 0

Dislikes 0

Response

Please see SDT response to EEI and MRO NSRF comments and thank you for your support

Daniel Gacek - Exelon - 1

Answer Yes

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Please see SDT response to EEI comment

Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF

Answer Yes

Document Name

Comment

Duke Energy agrees that the timeframe is appropriate.

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support | |
| Tracy MacNicoll - Utility Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| USV Supports the comments of NPCC RSC | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| See SDT response to NPCC RSC comment | |
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| OPG supports the NPCC RSC's comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

See SDT response to NPCC RSC comment

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Wendy Kalidass - U.S. Bureau of Reclamation - 5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Brian Millard - Tennessee Valley Authority - 1,3,5,6 - SERC, Group Name TVA RBB

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

| | |
|---|-----|
| Gladys DeLaO - CPS Energy - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|--|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Sheila Suurmeier - Black Hills Corporation - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

| | |
|--|-----|
| Claudine Bates - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Micah Runner - Black Hills Corporation - 1,3,5,6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Fong Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kevin Smith, Balancing Authority of Northern California, 1; Nicole Goi, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC | |
| Answer | Yes |
| Document Name | |
| Comment | |

| | |
|---|-----|
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Martin Sidor - NRG - NRG Energy, Inc. - 6 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |

| | |
|---|-----|
| Patricia Lynch - NRG - NRG Energy, Inc. - 5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| John Daho - MEAG Power - 1,3 - SERC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |

| | |
|--|-----|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Tristan Miller - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| LaTroy Brumfield - American Transmission Company, LLC - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Buchold - Southern Indiana Gas and Electric Co. - 6 - RF | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|---|-----|
| Dislikes | 0 |
| Response | |
| Chris Carnesi - Chris Carnesi On Behalf of: Dennis Sismaet, Northern California Power Agency, 4, 6, 3, 5; Jeremy Lawson, Northern California Power Agency, 4, 6, 3, 5; Marty Hostler, Northern California Power Agency, 4, 6, 3, 5; Michael Whitney, Northern California Power Agency, 4, 6, 3, 5; - Chris Carnesi, Group Name NCPA | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Larry Heckert - Alliant Energy Corporation Services, Inc. - 4 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP | |

| | |
|---|-----|
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Kent Feliks - AEP - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| | |
| Helen Lainis - Independent Electricity System Operator - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Casey Jones - Berkshire Hathaway - NV Energy - 5 - WECC | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Dwanique Spiller - Berkshire Hathaway - NV Energy - 5 | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| David Jendras Sr - Ameren - Ameren Services - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Israel Perez - Israel Perez On Behalf of: Jennifer Bennett, Salt River Project, 3, 1, 6, 5; Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; - Israel Perez | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |

| | |
|--|-----|
| Dislikes | 0 |
| Response | |
| | |
| Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC) | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | Yes |

| | |
|--|-----|
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Alain Mukama - Hydro One Networks, Inc. - 1 | |
| Answer | Yes |
| Document Name | |
| Comment | |
| Likes 0 | |
| Dislikes 0 | |

Response

6. Provide any additional comments for the SDT to consider, including the provided technical rationale and implementation guidance document, if desired.

Alain Mukama - Hydro One Networks, Inc. - 1

Answer

Document Name

Comment

None

Likes 0

Dislikes 0

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0

Dislikes 0

Response

See SDT response to IRC RSC comment

| | |
|---|--|
| Constantin Chitescu - Ontario Power Generation Inc. - 5 | |
| Answer | |
| Document Name | |
| Comment | |
| OPG supports the NPCC RSC's comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| See SDT response to NPCC RSC comment | |
| Tracy MacNicoll - Utility Services, Inc. - 4 | |
| Answer | |
| Document Name | |
| Comment | |
| USV Supports the comments of NPCC RSC | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| See SDT response to NPCC RSC comment | |
| Ellese Murphy - Duke Energy - 1,3,5,6 - Texas RE,SERC,RF | |
| Answer | |
| Document Name | |

Comment

Duke Energy thanks the 2020-04 Standard Drafting Team for all the work to address FERC Order No. 866.

Likes 0

Dislikes 0

Response

Thank you for your support

Daniel Gacek - Exelon - 1

Answer

Document Name

Comment

Exelon is in support of the comments submitted by EEI

Likes 0

Dislikes 0

Response

Please see SDT response to EEI comments

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer

Document Name

Comment

Minnesota Power agrees with the NSRF's comments.

| | |
|---|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see SDT response to MRO NSRF comments | |
| Nicolas Turcotte - Hydro-Quebec (HQ) - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity and availability. Recommend CIP-012 provide greater specifications of this plan. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. Please see the updated Measures section within the Standard, Implementation Guidance, and the Technical Rationale regarding examples of evidence that may be used to meet the mitigation objectives of CIP-012 and components of the required plan or plans. | |
| The SDT asserts that the Requirement language sets clear expectations to develop and implement a plan to mitigate the risks posed by unauthorized disclosure or modification of real-time assessment and monitoring data, and inability to communicate that data. This is additionally supported by the updated measures, Implementation Guidance, and Technical Rationale. | |
| Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators | |
| Answer | |
| Document Name | |
| Comment | |

ACES would like to thank the SDT’s hard work to better clarify this draft. ACES still has the concern because this has the potential to conflict with other NERC reliability standards. Further, the Cyber Assets this impacts directly could and for most entities be Cyber Assets completely outside of any ESP and PSP. Thus the reason we have continued to suggest this belongs as a part of an O&P standard.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT asserts it has addressed the concept of availability in FERC Order 866 as a cyber-related risk to the Bulk Electric System. Examples of methods addressing cyber related risks are well documented in the Measures section of the Standard and in the Implementation Guidance.

Ronald Bauer - MGE Energy - Madison Gas and Electric Co. - 3

Answer

Document Name

Comment

MGE thanks the SDT for their efforts, and supports the comments of the MRO NSRF.

Likes 0

Dislikes 0

Response

Thanks for your support. Please see the SDTs response to MRO NSRF.

Monika Montez - California ISO - 2 - WECC, Group Name ISO/RTO Council Standards Review Committee (SRC)

Answer

Document Name

Comment

Backwards Compatibility – As noted in our response to Question 1, the SRC supports broadening the term “security protection” to “method(s)” to provide entities with flexibility in meeting the standard. That said, the SRC requests the SDT validate that the proposed modifications to CIP-012 retain backwards compatibility with CIP-012-1.

Not subject to EOP-008 or IRO-002 drills/tests - As FERC in its Order 866 and the SDT have clarified on repeated occasions in response to industry comments that CIP-012 does not overlap with or duplicate provisions under any other NERC standard, including EOP-008 or IRO-002, the SRC requests the SDT clarify that CIP-012-2, R1 method(s) are not subject to:

- **EOP-008, R7** tests or drills, as the test required under R7 is limited to a test of the ability to failover to backup functionality in the event that primary Control Center functionality is lost (pursuant to EOP-008, R1, Part 1.2.2).
- **IRO-002-7, R3**, as the test required under R3 is limited to testing the redundant and diversely routed data exchange infrastructure *within* the Reliability Coordinator's primary Control Center for redundant functionality (pursuant to IRO-002-7, R2).

The SRC requests the SDT update the Technical Rationale for CIP-012 to reflect the above understanding.

Likes 0

Dislikes 0

Response

Thank you for your support and comment. While the SDT cannot provide specific compliance positions, we believe that “methods used to mitigate the risk.” encompasses security protections.

The SDT thanks you for acknowledging our attempts to clarify the distinction between CIP-012 and any other NERC Standard. Beyond that and as stated above, the SDT cannot provide specific compliance positions or guidance. Regarding the concern about “subject to,” each Standard has templated “Applicability” sections that should clarify the scoping (i.e., what your Entity is subject to).

Mia Wilson - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC

Answer

Document Name

Comment

The Technical Rationale for Part 1.5 includes the statement, “Having a clear understanding of where each side of a link each entity’s responsibilities begin and end facilitates *timely* restoration when there is a problem with the transmission of the data.”

Please provide clarity around the language “timely” in this statement.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT removed the word “timely” from the TR.

Ben Hammer - Western Area Power Administration - 1

Answer

Document Name

Comment

The standard mixes the requirements of CIP-009, CIP-012, TOP-003 and IRO-010. This effectively creates duplicate requirements stringed across multiple standards and separate orders. Requirement 1.3 should be removed from CIP-012 and placed into CIP-009 R1. There appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for system recovery, they could use that procedure as evidence for their CIP-012 system recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence. Entities as still free to

have multiple system recovery documents to address each Standard and or system separately. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers. The revisions to CIP-012 will address elements that TOP and IRO do not address. While the SDT believes there is no overlap in CIP-012-2 with other reliability standards, the identification of efficiencies in the Standards are always welcomed. The SDT would encourage commenters to submit a SAR identifying where they have identified opportunities for efficiencies where the SAR can scope the work to that effect.

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC RSC

Answer

Document Name

Comment

CIP-012 R1 includes all security such as information protection, location, asset inventory, confidentiality, integrity and availability. Recommend CIP-012 provide greater specifications of this plan.

Likes 0

Dislikes 0

Response

Thank you for your comment. Please see the updated Measures section within the Standard, Implementation Guidance, and the Technical Rationale regarding examples of evidence that may be used to meet the mitigation objectives of CIP-012 and components of the required plan or plans.

The SDT asserts that the Requirement language sets clear expectations to develop and implement a plan to mitigate the risks posed by unauthorized disclosure or modification of real-time assessment and monitoring data, and inability to communicate that data. This is additionally supported by the updated measures, Implementation Guidance, and Technical Rationale.

Richard Vendetti - NextEra Energy - 5

Answer

Document Name

Comment

Redundancy and service level agreements are primary methods available to many of the communications methods for Real-time communications. The loss of data is expected in the technology methods currently available. Redundancy elements within a site and in multiple locations are often part of the implementation required under other NERC standards. The language matters and must clearly define the risks, objects and measures for evaluation. Currently CIP-012-2 language appears to put Entities at risk of non-compliance.

More use cases and options should be provided to enable entities and auditors to clearly understand how the requirements may be applied and met based upon available and industry implemented technologies.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT was charged with addressing “availability” in FERC Order 866 and subsequently the SAR for this project. The SDT has provided additional clarity on the definition of “availability” on page two of the Implementation Guidance.

Alison MacKellar - Constellation - 5

Answer

Document Name

Comment

Constellation does not have any additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0

Dislikes 0

| | |
|---|--|
| Response | |
| Thank you for your support. | |
| Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF | |
| Answer | |
| Document Name | |
| Comment | |
| The NAGF has no additional comments. | |
| Likes 0 | |
| Dislikes 0 | |
| Response | |
| Thank you for your support. | |
| Teresa Krabe - Lower Colorado River Authority - 1,5 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>LCRA appreciates the SDT’s effort and thoughtfulness in responding to industry comment and concerns. Project 2021-03 changes the definition of Control Center to include TOs with the capability to electronically control 2 or more locations. LCRA believes that this has the potential to drastically expand the scope of CIP-012 and does not address the original intent of the SAR.</p> <p>TOPs are already receiving data from their TOs field devices. They may choose to send this data to their TO as a courtesy. By implementing additional compliance obligations around this data the new definition may have inadvertent consequences resulting in less sharing of data.</p> | |

LCRA recommends that CIP-012-2 carve out an exclusion to not include TO Control Centers as defined in the proposed CIP-002 project. Alternatively, scoping Real-time Assessment and Real-time monitoring data to only be applicable if that data is used for making Real-time decisions may alleviate concerns.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on where this project is in the standards development processes, the 2021-03 SDT will be able to verify that their proposed changes work with all CIP standards in development, currently approved, or future enforceable. An exclusion of TO Control Centers as defined by 2021-03 is outside the scope of Project 2020-04's SAR.

Kent Feliks - AEP - 3

Answer

Document Name

Comment

These comments represent AEP as a whole, participating in Segments 1,3,5,6.

Likes 0

Dislikes 0

Response

Thank you for your support.

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer

Document Name

Comment

No additional comments.

Likes 0

Dislikes 0

Response

Thank you for your support.

Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC CIP

Answer

Document Name

Comment

It appears that the language in R1 of the standard does not match the R1 language in the Implementation Guidance. The standard states "mitigate the risks", while the Implementation Guidance states "mitigate the cyber security risks."

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT updated the Implementation Guidance to reflect Requirement R1.

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer

Document Name

Comment

Alliant Energy supports the comments submitted by the MRO NSRF.

| | |
|--|---|
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Please see the SDTs response to MRO NSRF. | |
| Marcus Bortman - APS - Arizona Public Service Co. - 6 | |
| Answer | |
| Document Name | |
| Comment | |
| AZPS has no additional comments. | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your support. | |
| Kimberly Turco - Constellation - 6 | |
| Answer | |
| Document Name | |
| Comment | |
| Constellation has no additional comments. | |
| Kimberly Turco on behalf of Constellation Segments 5 and 6 | |
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your support.

Lindsey Mannion - ReliabilityFirst - 10

Answer

Document Name

Comment

While the SDT has achieved their goals with the protection of Control Center to Control Center communications in CIP-012-1 and with the upcoming changes in CIP-012-2, there should be additional discussion around R1.5 to remove or modify the Measure regarding “meeting minutes.” At a minimum, the SDT should bolster the Measure for R1.5 to highlight or emphasize a need for clear and well-defined responsibilities of each party be included, and identified, within the meeting minutes. Lack of clarity or substance in meeting minutes regarding identification of demarcations, or use of old meeting minutes that are not updated to reflect changes in either parties’ environment may not meet the compliance obligations of R1.5.

Further, there is direct reference to “communication links” in R1.3 but no reference to this within R1. For consistency R1 should reflect this reference and RF recommends, “The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, loss of availability, and loss of communication links, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers.”

Likes 0

Dislikes 0

Response

Thank you for your comment.

Meeting minutes are one example of what you can use as evidence, but not limited to the ways an organization can demonstrate compliance.

The reference to the communication links being added to the parent requirement, the SDT asserts that the loss of communication link is covered by the loss of availability. Per FERC Order 866: "require protections regarding the availability of communication links and data communicated between" BES Control Centers.

Roger Fradenburgh - Roger Fradenburgh On Behalf of: Nick Lauriat, Network and Security Technologies, 1; - Roger Fradenburgh

Answer

Document Name

Comment

NST notes that although Requirement R1 Part 1.3 requires, "Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers," top-level Requirement R1 does not establish a requirement to have one or more plans to recover communications links. This oversight should be corrected.

NST offers the following observations about proposed CIP-012 Measures:

R1 Part 1.2:

Regarding, "Procedures explaining the use of alternative systems or methods for providing for the availability of the data," the SDT should clarify what is meant by "alternative systems." The extent of systems supporting CIP-012 needs to be defined and clearly articulated to understand the potential impacts of supporting availability.

Regarding, "Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data," NST notes that such reports are backward-looking and would therefore be, in our opinion, weak evidence that a Responsible Entity has controls designed to mitigate the loss of a communications link between two Control Centers. It is our opinion that real-time link monitoring and alerting would be a better approach than historical records. NST also believes the types of equipment supporting data transmission should be addressed, especially the demarcation points between the equipment of a Responsible Entity and its carriers.

R1 Part 1.3:

Regarding, "Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery," it is NST's opinion that meeting minutes would hardly qualify as strong evidence a Responsible Entity has adequately addressed the referenced Requirement Part.

Regarding, "Methods for the recovery of links such as standard operating procedures, applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans," NST believes it is inappropriate to suggest that CIP-009 recovery plans might address any requirement to recover inter- Control Center communications links. CIP-009 is not applicable to communications links outside of Control Centers.

Regarding, "Documentation of the process to restore assets and systems that provide communications," NST believes the SDT should clarify what "assets and systems" might be in scope here.

R1 Part 1.4:

Regarding, "Identification of points within the infrastructure where the implemented methods reside," NST recommends "...within the inter-Control Center communications infrastructure..." to keep the scope of the Standard to the links specified by FERC.

R1 Part 1.5:

Regarding, "Contract, memorandum of understanding, meeting minutes, agreement or other documentation outlining the responsibilities of each entity," it is NST's opinion that, as with R1 Part 1.3, meeting minutes would hardly qualify as strong evidence a Responsible Entity has adequately addressed the referenced Requirement Part.

NST offers the following observations about proposed updates to CIP-012 Implementation Guidance:

NST believes the proposed changes to CIP-012 implementation guidance reduce rather than add clarity about what a Responsible Entity must or might do to address new availability requirements. We find suggestions to the effect that an Entity might rely on its CIP-008 and CIP-009 plans to address parts of CIP-012 to be of particular concern, for reasons including the fact such guidance creates at least the potential for "double jeopardy" situations in compliance audits. FERC wrote Order 866 precisely because the Commission believes none of the current CIP Standards address protection and recovery of communication links between Control Centers. It is NST's opinion the SDT should refrain from suggesting that perhaps they do, and should therefore be considered for inclusion in an Entity's CIP-012 compliance narratives.

NST also believes the SDT should refrain from making suggestions such as, on page 4, "Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the

alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution." To repeat, it is NST's opinion that FERC did not intend for CIP-012 revisions to add data availability requirements that include sending and receiving Cyber Assets that are within, as opposed to between, Control Centers. The guidance should reaffirm that the focus is on the communications links between Control Centers.

| | |
|------------|---|
| Likes 1 | Central Hudson Gas & Electric Corp., 1, Ridolfino Michael |
| Dislikes 0 | |

Response

Thank you for your comment.

The reference to the communication links being added to the parent requirement, the SDT asserts that the loss of communication link is covered by the loss of availability. Per FERC Order 866: "require protections regarding the availability of communication links and data communicated between" BES Control Centers.

Measures are examples of evidence that may be used, but are not limited to what an entity can use. Based on other comments, the SDT finds that the current measures are sufficient. In addition, meeting minutes are one example of what you can use as evidence, but not limited to the ways an organization can demonstrate compliance.

The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for system recovery, they could use that procedure as evidence for their CIP-012 system recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence. Entities are still free to have multiple system recovery documents to address each Standard and or system separately. The TOP and IRO standards do address availability, but are focused on data exchange infrastructure within the primary control center and do not address data in motion between other Control Centers.

Regarding documentation of process of "assets and systems", this should be defined by the entity.

Part 1.4 covers the scope from FERC Order 866.

In summation, measures are examples that entities can use from the standard, but are not limited to what was drafted.

The SDT asserts it has addressed the concept of availability in FERC Order 866 as a cyber-related risk to the Bulk Electric System. Examples of methods addressing cyber related risks are well documented in the Measures section of the Standard and in the Implementation Guidance.

Jay Sethi - Manitoba Hydro - 1,3,5,6 - MRO

Answer

Document Name

Comment

Manitoba Hydro appreciates the SDT efforts to add increased clarification to this most recent draft of CIP-012-2. Manitoba Hydro has identified similarities among the Standards addressing various facets of Real Time monitoring and Real Time Assessment data (ex. IRO-010, TOP-003, TOP-001, CIP-012). There appears to be an opportunity for NERC to create efficiencies in requirements for Control Center communications.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT would encourage commenters to submit a SAR identifying where they have identified opportunities for efficiencies where the SAR can scope the work to that effect.

James Baldwin - James Baldwin On Behalf of: Matt Lewis, Lower Colorado River Authority, 5, 1; - James Baldwin

Answer

Document Name

Comment

LCRA appreciates the SDT’s effort and thoughtfulness in responding to industry comment and concerns. Project 2021-03 changes the definition of Control Center to include TOs with the capability to electronically control 2 or more locations. LCRA believes that this has the potential to drastically expand the scope of CIP-012 and does not address the original intent of the SAR.

TOPs are already receiving data from their TOs field devices. They may choose to send this data to their TO as a courtesy. By implementing additional compliance obligations around this data the new definition may have inadvertent consequences resulting in less sharing of data.

LCRA recommends that CIP-012-2 carve out an exclusion to not include TO Control Centers as defined in the proposed CIP-002 project. Alternatively, scoping Real-time Assessment and Real-time monitoring data to only be applicable if that data is used for making Real-time decisions may alleviate concerns.

Likes 0

Dislikes 0

Response

Thank you for your comment. Based on where this project is in the standards development processes, the 2021-03 SDT will be able to verify that their proposed changes work with all CIP standards in development, currently approved, or future enforceable. An exclusion of TO Control Centers as defined by 2021-03 is outside the scope of Project 2020-04’s SAR.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer

Document Name

Comment

Please see our response to Question 2 and 3.

Likes 0

Dislikes 0

| Response | |
|---|---|
| Please see the SDT’s response to your questions 2 and 3. | |
| Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro | |
| Answer | |
| Document Name | |
| Comment | |
| <p>BC Hydro suggests adding more clarity to the term 'availability' by providing a more detailed definition.</p> <p>Although the SDT has altered the NIST definition of "Providing timely and reliable access to information" for defining the term 'availability' in the Technical Rationale document, a more detailed and specific definition concerning the application and use, specifically at entities to which this standard applies, will help improve a clear understanding and easier implementation. BC Hydro also suggests including some pertinent use cases and examples.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| Thank you for your comment. The SDT updated Requirement R1 Part 1.2 by removing the term availability and replaced it with “the loss of the ability to communicate Real-time Assessment and Real-time monitoring data.” It was not within the SDTs scope to create a NERC defined term. The SDT encourages you to reach out to your respective Regional Entity regarding the term “availability” within your region. | |
| Andrea Jessup - Bonneville Power Administration - 1,3,5,6 - WECC | |
| Answer | |
| Document Name | |
| Comment | |

CIP-009 specifically addresses the backup and recovery for systems. It does not mention communication paths nor methods of data transport. CIP-009 should be modified to include this requirement; as it stands, there is a mismatch between standards, putting additional burden on implementation and maintenance of CIP-012.

BPA asks that the Standards Drafting Team clarify how mitigations/methods of protections (i.e., data masking and VPN/protocol encryption and the physical access restrictions) are different than CIP-005 and CIP-006 standards that are currently implemented.

BPA believes that there is too much bleed over into other standards such as CIP-005, -006 and -009 that has the potential to cause implementation errors and added burden/cost to maintaining multiple standards that cover like scenarios.

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT continues to assert that references to utilizing plans or procedures that were created to address other NERC Standards were only meant as an option to reduce administrative documents. As an example, if an entity chooses to create a single Standard Operating Procedure for system recovery, they could use that procedure as evidence for their CIP-012 system recovery activities. They could also use that same document as evidence for their CIP-009 system recovery activities and corporate system recovery. The important aspect is that the procedure needs to address all parts of the Standard it is meant to be used as evidence. Entities are still free to have multiple system recovery documents to address each Standard and or system separately. There could be scenarios that certain Cyber Assets (e.g., VPN routers) are used in CIP-012, but are not part of any of the Entity’s inventories BES Cyber Systems.

CIP-005 and CIP-006 are applicable to BES Cyber Systems and CIP-012 is applicable to Control Centers. With regards to the concern about burden, each Standard has templated “Applicability” sections that should clarify the scoping (i.e., what your Entity is subject to), and the SDT has retained applicability of CIP-012 to Control Centers as in the currently enforceable version of the Standard.

John Daho - MEAG Power - 1,3 - SERC

Answer

Document Name

Comment

The terms "transmit" and "communicate" should be used consistently in requirements, requirement parts, measures, technical rationale, etc. For example, Parts 1.1, 1.2 and 1.3 use both "transmit" and "communicate" terms, but it is recommended that the term "transmit" be used rather than "communicate".

Likes 0

Dislikes 0

Response

Thank you for your comment. The SDT believes that communication is the appropriate term as it gives the responsible entity the flexibility to meet the standards within their own programs. Through the various orders and IG, communication links have been discussed in depth and communication encompasses the act of transmitting information.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer

Document Name

Comment

AEPC has signed on to ACES comments below:

ACES would like to thank the SDT's hard work to better clarify this draft. ACES still has the concern because this has the potential to conflict with other NERC reliability standards. Further, the Cyber Assets this impacts directly could and for most entities be Cyber Assets completely outside of any ESP and PSP. Thus the reason we have continued to suggest this belongs as a part of an O&P standard.

Likes 0

Dislikes 0

Response

Please see response to ACES comments.

| | |
|--|---|
| Anna Martinson - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO Group | |
| Answer | |
| Document Name | |
| Comment | |
| <p>The MRO NSRF appreciates the SDT efforts to add increased clarification to this most recent draft of CIP-012-2. The MRO NSRF has identified similarities among the Standards addressing various facets of Real Time monitoring and Real Time Assessment data (ex. IRO-010, TOP-003, TOP-001, CIP-012). While the MRO NSRF understands the differences in the scopes of the different Standards, there appears to be an opportunity for NERC to create efficiencies in Requirements for Control Center communications.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. While the SDT believes there is no overlap in CIP-012-2 with other reliability Standards, the identification of efficiencies in the Standards are always welcomed. The SDT would encourage commenters to submit a SAR identifying where they have identified opportunities for efficiencies where the SAR can scope the work to that effect.</p> | |
| Donna Wood - Tri-State G and T Association, Inc. - 1 | |
| Answer | |
| Document Name | |
| Comment | |
| NA | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |

| | |
|---|---|
| Thank you for your support. | |
| Amy Wesselkamper - PNM Resources - Public Service Company of New Mexico - 1,3 | |
| Answer | |
| Document Name | |
| Comment | |
| <p>Regarding R1.5:</p> <p>R1.1 and R1.2 do not require “Implementing methods”, but rather Identification of methods.</p> <p>R1.5 Should read:</p> <p>If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as identified in Parts 1.1 and 1.2.</p> | |
| Likes | 0 |
| Dislikes | 0 |
| Response | |
| <p>Thank you for your comment. Requirement R1 requires: “The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed...” Therefore, identified is covered throughout the Parts.</p> | |
| <p>Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power</p> | |
| Answer | |
| Document Name | |
| Comment | |

Tacoma Power supports the R1.5 language. However, the redline to last approved file does not match the CIP-012-2 clean version verbiage. For example, the redline to last approved for R1.5 states “required in Parts 1.1 and 1.2”, when it should show “required in Parts 1.1, **1.2, and 1.3.**”

For the last bullet in the measures for R1.3, Tacoma Power recommends changing “vendor” to “provider”. It doesn’t necessarily need to be a vendor who maintains the communication link, so provider is a better choice for the measure. This is a non-substantive change.

Recommended change: “Process or procedure to contact a communications link **provider** to initiate and or verify restoration of service.”

| | |
|----------|---|
| Likes | 0 |
| Dislikes | 0 |

Response

Thank you for your comment. The SDT updated the redline to last approved CIP-012 standard to align with the other posted standards.

The SDT updated the measures within Requirement R1 Part 1.3 to reflect “provider” in place of “vendor.”

Reminder

Standards Announcement

Project 2020-04 Modifications to CIP-012

Additional Ballots and Non-binding Poll Open through November 2, 2023

[Now Available](#)

Additional ballots for **Project 2020-04 Modifications to CIP-012** and non-binding poll of the associated Violation Risk Factors and Violation Severity Levels are open through **8 p.m. Eastern, Thursday, November 2, 2023** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the last comment period are reflected in this draft of the standard.

Reminder Regarding Corporate RBB Memberships

Under the NERC Rules of Procedure, each entity and its affiliates is collectively permitted one voting membership per Registered Ballot Body Segment. Each entity that undergoes a change in corporate structure (such as a merger or acquisition) that results in the entity or affiliated entities having more than the one permitted representative in a particular Segment must withdraw the duplicate membership(s) prior to joining new ballot pools or voting on anything as part of an existing ballot pool. Contact ballotadmin@nerc.net to assist with the removal of any duplicate registrations.

Balloting

Members of the ballot pools associated with this project can log in and submit their votes by accessing the Standards Balloting and Commenting System (SBS) [here](#).

Note: Votes cast in previous ballots, will not carry over to additional ballots. It is the responsibility of the registered voter in the ballot pools to place votes again. To ensure a quorum is reached, if you do not want to vote affirmative or negative, cast an abstention.

- Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.
- Passwords expire every **6 months** and must be reset.
- The SBS is **not** supported for use on mobile devices.

- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The ballot results will be announced and posted on the project page. The drafting team will review all responses received during the comment period and determine the next steps of the project.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Ben Wu](#) (via email) or at 470-542-6882. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Standards Announcement

Project 2020-04 Modifications to CIP-012

Formal Comment Period Open through November 2, 2023

[Now Available](#)

A 45-day formal comment period for **Project 2020-04 Modifications to CIP-012**, is open through **8 p.m. Eastern, Thursday, November 2, 2023** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

The standard drafting team's considerations of the responses received from the previous comment period are reflected in this draft of the standard.

Reminder Regarding Corporate RBB Memberships

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Commenting

Use the [Standards Balloting and Commenting System \(SBS\)](#) to submit comments. An unofficial Word version of the comment form is posted on the [project page](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

Additional ballots for the standard and implementation plan, as well as non-binding polls of the associated Violation Risk Factors and Violation Severity Levels, will be conducted **October 24 – November 2, 2023**.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Ben Wu](#) (via email) or at 470-542-6882. [Subscribe to this project's observer mailing list](#) by selecting "NERC Email Distribution Lists" from the "Service" drop-down menu and specify "Project 2020-04 Modifications to CIP-012 Observer List" in the Description Box.

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/302)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 AB 4 ST**Voting Start Date:** 10/24/2023 12:01:00 AM**Voting End Date:** 11/2/2023 8:00:00 PM**Ballot Type:** ST**Ballot Activity:** AB**Ballot Series:** 4**Total # Votes:** 242**Total Ballot Pool:** 290**Quorum:** 83.45**Quorum Established Date:** 11/2/2023 2:31:53 PM**Weighted Segment Value:** 84.22

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 82 | 1 | 46 | 0.78 | 13 | 0.22 | 0 | 10 | 13 |
| Segment: 2 | 7 | 0.6 | 5 | 0.5 | 1 | 0.1 | 0 | 0 | 1 |
| Segment: 3 | 67 | 1 | 43 | 0.878 | 6 | 0.122 | 0 | 5 | 13 |
| Segment: 4 | 16 | 1 | 10 | 0.833 | 2 | 0.167 | 0 | 1 | 3 |
| Segment: 5 | 66 | 1 | 42 | 0.824 | 9 | 0.176 | 0 | 6 | 9 |
| Segment: 6 | 44 | 1 | 28 | 0.824 | 6 | 0.176 | 0 | 3 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 5 | 0.5 | 0 | 0 | 0 | 1 | 1 |
| Totals: | 290 | 6.1 | 179 | 5.138 | 37 | 0.962 | 0 | 26 | 48 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|--------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|-------------------|-------------|----------------------|
| 1 | Allete - Minnesota Power, Inc. | Hillary Creurer | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | None | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Negative | Third-Party Comments |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Affirmative | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Corey Walker | | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | Abstain | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Karrie Schuldt | | Abstain | N/A |
| 1 | Dominion - Dominion Virginia Power | Elizabeth Weber | | Affirmative | N/A |
| 1 | Duke Energy | Katherine Street | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Negative | Comments Submitted |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Theresa Ciancio | | Negative | Comments Submitted |
| 1 | Gainesville Regional Utilities | David Owens | LaKenya Vannorman | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Abstain | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Third-Party Comments |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|----------------------|
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Alain Mukama | | Affirmative | N/A |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | Negative | Comments Submitted |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | Imperial Irrigation District | Jesus Sammy Alcaraz | Denise Sanchez | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Negative | Third-Party Comments |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | Lower Colorado River Authority | Matt Lewis | James Baldwin | Affirmative | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | None | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Third-Party Comments |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Daniel Valle | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Negative | Comments Submitted |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Abstain | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Abstain | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Affirmative | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | None | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Southwestern Power Administration | Angela Wheat | | Abstain | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | David Plumb | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | Affirmative | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | None | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Third-Party Comments |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | None | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Matthew Harward | Shannon Mickens | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Lovita Griffin | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Alan Xu | | Negative | Comments Submitted |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ron Sporseen | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|-------------------|-------------|----------------------|
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | None | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | None | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Dominion - Dominion Virginia Power | Bill Garvey | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Marvin Johnson | | Affirmative | N/A |
| 3 | Duke Energy - Florida Power Corporation | Marcelo Pesantez | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Eergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Negative | Comments Submitted |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | George Kirschner | Denise Sanchez | Abstain | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Negative | Third-Party Comments |
| 3 | Lincoln Electric System | Sam Christensen | | None | N/A |
| 3 | Los Angeles Department of Water and Power | Fausto Serratos | | None | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | None | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Affirmative | N/A |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Abstain | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|------------------|-------------|--------------------|
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Christopher Murphy | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Affirmative | N/A |
| 3 | Santee Cooper | Vicky Budreau | | Abstain | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | None | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | None | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Nicholas Friebel | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Affirmative | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | None | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Negative | Comments Submitted |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|------------------|-------------|----------------------|
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | None | N/A |
| 5 | APS - Arizona Public Service Co. | Andrew Smith | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Abstain | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Anna Salmon | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Matthew Augustin | | Negative | Comments Submitted |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | Negative | Comments Submitted |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Abstain | N/A |
| 5 | Lakeland Electric | Carmen Rodriguez | | Negative | Third-Party Comments |
| 5 | Lincoln Electric System | Brittany Millard | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Manitoba Hydro | Kristy-Lee Young | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Robin Berry | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|----------------------|
| 5 | NB Power Corporation - New Brunswick Power Transmission Corporation | Fon Hiew | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Richard Vendetti | | Negative | Comments Submitted |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Affirmative | N/A |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Abstain | N/A |
| 5 | Omaha Public Power District | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Abstain | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Affirmative | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | None | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Rebecca Zahler | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Affirmative | N/A |
| 5 | Santee Cooper | Don Cribb | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Leslie Burke | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Mathew Miller | | None | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | None | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|----------------------|
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Tiffany Lake | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Negative | Comments Submitted |
| 6 | Great River Energy | Brian Meloy | | Affirmative | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Abstain | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Negative | Third-Party Comments |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Kelly Bertholet | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Affirmative | N/A |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Third-Party Comments |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Laura Wu | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Anne Kronshage | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-----------------|------------------|-------------|-----------|
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Steve Szablya | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | None | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | None | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Affirmative | N/A |

Showing 1 to 290 of 290 entries

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BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/302)

Ballot Name: 2020-04 Modifications to CIP-012 Implementation Plan AB 4 OT

Voting Start Date: 10/24/2023 12:01:00 AM

Voting End Date: 11/2/2023 8:00:00 PM

Ballot Type: OT

Ballot Activity: AB

Ballot Series: 4

Total # Votes: 239

Total Ballot Pool: 285

Quorum: 83.86

Quorum Established Date: 11/2/2023 2:32:10 PM

Weighted Segment Value: 88.98

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 80 | 1 | 47 | 0.797 | 12 | 0.203 | 0 | 9 | 12 |
| Segment: 2 | 7 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 1 |
| Segment: 3 | 66 | 1 | 45 | 0.9 | 5 | 0.1 | 0 | 4 | 12 |
| Segment: 4 | 16 | 1 | 11 | 0.917 | 1 | 0.083 | 0 | 1 | 3 |
| Segment: 5 | 65 | 1 | 43 | 0.843 | 8 | 0.157 | 0 | 5 | 9 |
| Segment: 6 | 43 | 1 | 30 | 0.882 | 4 | 0.118 | 0 | 2 | 7 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.4 | 4 | 0.4 | 0 | 0 | 0 | 2 | 1 |
| Totals: | 285 | 6 | 186 | 5.339 | 30 | 0.661 | 0 | 23 | 46 |

BALLOT POOL MEMBERS

Show entries

Search:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|--------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|-------------------|-------------|----------------------|
| 1 | Allete - Minnesota Power, Inc. | Hillary Creurer | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | None | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Negative | Third-Party Comments |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Affirmative | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Third-Party Comments |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | Abstain | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Karrie Schuldt | | Abstain | N/A |
| 1 | Dominion - Dominion Virginia Power | Elizabeth Weber | | Affirmative | N/A |
| 1 | Duke Energy | Katherine Street | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Negative | Comments Submitted |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Theresa Ciancio | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | LaKenya Vannorman | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Abstain | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Third-Party Comments |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Alain Mukama | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|----------------------|
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | Negative | Comments Submitted |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Negative | Third-Party Comments |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | Lower Colorado River Authority | Matt Lewis | James Baldwin | Affirmative | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | None | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Third-Party Comments |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Daniel Valle | | Negative | Third-Party Comments |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Negative | Comments Submitted |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Abstain | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Abstain | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Affirmative | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | None | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|----------------------|
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Southwestern Power Administration | Angela Wheat | | Abstain | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | David Plumb | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | Affirmative | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | None | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | None | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Matthew Harward | Shannon Mickens | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Lovita Griffin | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Alan Xu | | Negative | Comments Submitted |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ron Sporseen | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | None | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | None | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Third-Party Comments |
| 3 | Dominion - Dominion Virginia Power | Bill Garvey | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|-------------------|-------------|----------------------|
| 3 | DTE Energy - Detroit Edison Company | Marvin Johnson | | Affirmative | N/A |
| 3 | Duke Energy - Florida Power Corporation | Marcelo Pesantez | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | George Kirschner | Denise Sanchez | Abstain | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Negative | Third-Party Comments |
| 3 | Lincoln Electric System | Sam Christensen | | None | N/A |
| 3 | Los Angeles Department of Water and Power | Fausto Serratos | | None | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Ronald Bauer | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | None | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Third-Party Comments |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Affirmative | N/A |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Abstain | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Christopher Murphy | | Affirmative | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|--------------------|
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Affirmative | N/A |
| 3 | Santee Cooper | Vicky Budreau | | Abstain | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | None | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrold Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | None | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Nicholas Friebel | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Affirmative | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | None | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | None | N/A |
| 5 | APS - Arizona Public Service Co. | Andrew Smith | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|----------------------|
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Third-Party Comments |
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Abstain | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Anna Salmon | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Eergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Matthew Augustin | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | Negative | Comments Submitted |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Abstain | N/A |
| 5 | Lakeland Electric | Carmen Rodriguez | | Negative | Third-Party Comments |
| 5 | Lincoln Electric System | Brittany Millard | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Robin Berry | | None | N/A |
| 5 | NB Power Corporation - New Brunswick Power Transmission Corporation | Fon Hiew | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Third-Party Comments |
| 5 | NextEra Energy | Richard Vendetti | | Negative | Comments Submitted |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|----------------------|
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Affirmative | N/A |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Abstain | N/A |
| 5 | Omaha Public Power District | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Abstain | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Affirmative | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | None | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Rebecca Zahler | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Affirmative | N/A |
| 5 | Santee Cooper | Don Cribb | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Leslie Burke | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Mathew Miller | | None | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | None | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Third-Party Comments |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Constellation | Sean Bodkin | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|----------------------|
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Eergy | Tiffany Lake | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | Affirmative | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Abstain | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Negative | Third-Party Comments |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Manitoba Hydro | Kelly Bertholet | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | Third-Party Comments |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Affirmative | N/A |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Laura Wu | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Anne Kronshage | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Steve Szablya | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | None | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | Affirmative | N/A |
| | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-----------------|------------------|-------------|-----------|
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | None | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

Showing 1 to 285 of 285 entries

Previous Next

BALLOT RESULTS

Comment: View Comment Results (/CommentResults/Index/302)

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 Non-Binding Poll AB 4 NB**Voting Start Date:** 10/24/2023 12:01:00 AM**Voting End Date:** 11/2/2023 8:00:00 PM**Ballot Type:** NB**Ballot Activity:** AB**Ballot Series:** 4**Total # Votes:** 224**Total Ballot Pool:** 277**Quorum:** 80.87**Quorum Established Date:** 11/2/2023 3:29:17 PM**Weighted Segment Value:** 80.73

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes | Negative Fraction | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|----------------|-------------------|---------|---------|
| Segment: 1 | 77 | 1 | 39 | 0.75 | 13 | 0.25 | 11 | 14 |
| Segment: 2 | 7 | 0.6 | 5 | 0.5 | 1 | 0.1 | 0 | 1 |
| Segment: 3 | 64 | 1 | 38 | 0.864 | 6 | 0.136 | 6 | 14 |
| Segment: 4 | 15 | 1 | 9 | 0.818 | 2 | 0.182 | 1 | 3 |
| Segment: 5 | 64 | 1 | 35 | 0.795 | 9 | 0.205 | 9 | 11 |
| Segment: 6 | 42 | 1 | 25 | 0.806 | 6 | 0.194 | 3 | 8 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.4 | 4 | 0.4 | 0 | 0 | 2 | 1 |
| Totals: | 277 | 6 | 155 | 4.934 | 37 | 1.066 | 32 | 53 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|---------------------|------------------|-------------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | None | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | None | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|-------------------|-------------|--------------------|
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | Comments Submitted |
| 1 | Basin Electric Power Cooperative | David Rudolph | | None | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | Comments Submitted |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Negative | Comments Submitted |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Affirmative | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Corey Walker | | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | Comments Submitted |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | Abstain | N/A |
| 1 | CPS Energy | Gladys DeLaO | | None | N/A |
| 1 | Dairyland Power Cooperative | Karrie Schuldt | | Abstain | N/A |
| 1 | Dominion - Dominion Virginia Power | Elizabeth Weber | | Affirmative | N/A |
| 1 | Duke Energy | Katherine Street | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Negative | Comments Submitted |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Theresa Ciancio | | Negative | Comments Submitted |
| 1 | Gainesville Regional Utilities | David Owens | LaKenya Vannorman | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Abstain | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | Comments Submitted |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Alain Mukama | | Affirmative | N/A |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | Negative | Comments Submitted |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------------|-------------------|-------------|--------------------|
| 1 | Lincoln Electric System | Josh Johnson | | Abstain | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | None | N/A |
| 1 | Lower Colorado River Authority | Matt Lewis | James Baldwin | Affirmative | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | None | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | Comments Submitted |
| 1 | NB Power Corporation | Jeffrey Streifling | | Affirmative | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | Comments Submitted |
| 1 | New York Power Authority | Daniel Valle | | Negative | Comments Submitted |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Negative | Comments Submitted |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Abstain | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Abstain | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Affirmative | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | None | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | None | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Abstain | N/A |
| 1 | SaskPower | Wayne Guttormson | | Abstain | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Southwestern Power Administration | Angela Wheat | | Affirmative | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | David Plumb | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|--------------------|
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | Affirmative | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | None | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | Comments Submitted |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | None | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Matthew Harward | Shannon Mickens | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Abstain | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Lovita Griffin | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Alan Xu | | Negative | Comments Submitted |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ron Sporseen | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | None | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | None | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | None | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | Comments Submitted |
| 3 | Dominion - Dominion Virginia Power | Bill Garvey | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Marvin Johnson | | Affirmative | N/A |
| 3 | Duke Energy - Florida Power Corporation | Marcelo Pesantez | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|-------------------|-------------|--------------------|
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Negative | Comments Submitted |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | George Kirschner | Denise Sanchez | Abstain | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Negative | Comments Submitted |
| 3 | Lincoln Electric System | Sam Christensen | | None | N/A |
| 3 | Los Angeles Department of Water and Power | Fausto Serratos | | None | N/A |
| 3 | M and A Electric Power Cooperative | Stephen Pogue | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | None | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | Comments Submitted |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Affirmative | N/A |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Abstain | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | None | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Christopher Murphy | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | Comments Submitted |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Affirmative | N/A |
| 3 | Santee Cooper | Vicky Budreau | | Abstain | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | None | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrold Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|--------------------|
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | None | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Affirmative | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | None | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Negative | Comments Submitted |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | Comments Submitted |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Abstain | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | None | N/A |
| 5 | APS - Arizona Public Service Co. | Andrew Smith | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | Affirmative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | Comments Submitted |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | None | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | Comments Submitted |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|--------------------|
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Abstain | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Anna Salmon | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | None | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Matthew Augustin | | Negative | Comments Submitted |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | Negative | Comments Submitted |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Abstain | N/A |
| 5 | Lakeland Electric | Carmen Rodriguez | | Negative | Comments Submitted |
| 5 | Lincoln Electric System | Brittany Millard | | Abstain | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | None | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Robin Berry | | None | N/A |
| 5 | NB Power Corporation - New Brunswick Power Transmission Corporation | Fon Hiew | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Abstain | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | Comments Submitted |
| 5 | NextEra Energy | Richard Vendetti | | Negative | Comments Submitted |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Affirmative | N/A |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Abstain | N/A |
| 5 | Omaha Public Power District | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | Comments Submitted |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Abstain | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|--------------------|
| 5 | Portland General Electric Co. | Ryan Olson | | None | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | None | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Rebecca Zahler | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | Comments Submitted |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Affirmative | N/A |
| 5 | Santee Cooper | Don Cribb | | Abstain | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Leslie Burke | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Affirmative | N/A |
| 6 | AEP | Mathew Miller | | None | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | None | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | Comments Submitted |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Tiffany Lake | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Negative | Comments Submitted |
| 6 | Great River Energy | Brian Meloy | | Affirmative | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Abstain | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Negative | Comments Submitted |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | None | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|--------------------|
| 6 | New York Power Authority | Shelly Dineen | | Negative | Comments Submitted |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Affirmative | N/A |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | Comments Submitted |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | None | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Laura Wu | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Anne Kronshage | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | Comments Submitted |
| 6 | Santee Cooper | Marty Watson | | Abstain | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | None | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | None | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

Showing 1 to 277 of 277 entries

Previous 1 Next

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

Description of Current Draft

This is an additional 45-day formal comment period with ballot.

| Completed Actions | Date |
|---|---------------------------------|
| Standards Committee approved Standard Authorization Request (SAR) for posting | March 18, 2020 |
| SAR posted for comment | April 8, 2020 |
| 45-day formal comment period with ballot | April 26 – June 9, 2021 |
| 45-day formal comment period with ballot | September 19 – November 2, 2023 |
| 10-day final ballot | November 28 – December 7, 2023 |

| Anticipated Actions | Date |
|---------------------|---------------|
| Board adoption | December 2023 |

New or Modified Term(s) Used in NERC Reliability Standards

This section includes all new or modified terms used in the proposed standard that will be included in the *Glossary of Terms Used in NERC Reliability Standards* upon applicable regulatory approval. Terms used in the proposed standard that are already defined and are not being modified can be found in the *Glossary of Terms Used in NERC Reliability Standards*. The new or revised terms listed below will be presented for approval with the proposed standard. Upon Board adoption, this section will be removed.

Term(s):

None

A. Introduction

1. **Title:** Cyber Security – Communications between Control Centers
2. **Number:** CIP-012-2
3. **Purpose:** To protect the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data transmitted between Control Centers.
4. **Applicability:**
 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator**
 - 4.1.3. **Generator Owner**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner**
 - 4.2. **Exemptions:** The following are exempt from Reliability Standard CIP-012-2:
 - 4.2.1. Cyber Assets at Facilities regulated by the Canadian Nuclear Safety Commission.
 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-2.

B. Requirements and Measures

- R1. The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*

- 1.1. Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2. Identification of method(s) used to mitigate the risk(s) posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.
- M1.** Examples of evidence may include, but are not limited to, documented plan(s) that meet the mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each Part:
- Part 1.1
- Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers
 - Physical access restrictions to unencrypted portions of the network
- Part 1.2
- Identification of alternative communication paths or methods between Control Centers
 - Procedures explaining the use of alternative systems or methods for providing for the availability of the data
 - Service level agreements with carriers containing high availability provisions
 - Availability or uptime reports for equipment supporting the transmission of Real-time Assessment and Real-time monitoring data
- Part 1.3
- Contract, memorandum of understanding, meeting minutes, agreement or other information outlining the methods used for recovery
 - Methods for the recovery of links such as standard operating procedures,

applicable sections of CIP-009 recovery plan(s), or similar technical recovery plans

- Documentation of the process to restore assets and systems that provide communications
- Process or procedure to contact a communications link vendor to initiate and or verify restoration of service

Part 1.4

- Descriptions or logical diagrams indicating where the implemented methods reside
- Identification of points within the infrastructure where the implemented methods reside
- Third party Agreements detailing where the methods are implemented if such methods are implemented by the third party

Part 1.5

- Contract, memorandum of understanding, meeting minutes, agreement, or other documentation outlining the responsibilities of each entity

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

1.2. Evidence Retention: The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the CEA may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The Responsible Entity shall keep data or evidence to show compliance as identified below unless directed by its CEA to retain specific evidence for a longer period of time as part of an investigation.

- The Responsible Entities shall keep data or evidence of each Requirement in this Reliability Standard for three calendar years.
- If a Responsible Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved or for the time specified above, whichever is longer.

- The CEA shall keep the last audit records and all requested and submitted subsequent audit records.
- 1.3. Compliance Monitoring and Enforcement Program:** As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

Violation Severity Levels

| R # | Violation Severity Levels | | | |
|-----|---------------------------|--|--|--|
| | Lower VSL | Moderate VSL | High VSL | Severe VSL |
| R1. | N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document its plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

D. Regional Variances

None.

E. Associated Documents

- Implementation Plan.
- Technical Rationale for CIP-012-2.

Version History

| Version | Date | Action | Change Tracking |
|---------|------------------|---|-------------------------------|
| 1 | | Respond to FERC Order No. 822 | New |
| 1 | August 16, 2018 | Adopted by NERC Board of Trustees | |
| 1 | January 23, 2020 | FERC Order issued approving CIP-012-1Docket No. RM18-20-000 | |
| 2 | TBD | Adopted by NERC Board of Trustees | Revised under Project 2020-04 |

Standard Development Timeline

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Term(s):

None

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2. **Number:** CIP-012-~~12~~
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 - 4.1. **Functional Entities:** The requirements in this standard apply to the following functional entities, referred to as “Responsible Entities,” that own or operate a Control Center.-
 - 4.1.1. **Balancing Authority**
 - 4.1.2. **Generator Operator-**
 - 4.1.3. **Generator Owner-**
 - 4.1.4. **Reliability Coordinator**
 - 4.1.5. **Transmission Operator**
 - 4.1.6. **Transmission Owner-**
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 - 4.2.2. The systems, structures, and components that are regulated by the Nuclear Regulatory Commission under a cyber security plan pursuant to 10 C.F.R. Section 73.54.
 - 4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.
5. **Effective Date:** See Implementation Plan for CIP-012-~~12~~.

B. Requirements and Measures

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure- and, unauthorized modification-of, and loss of availability, of data used in Real-time Assessment and Real-time monitoring data while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]

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1.3. Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;

1.2.1.4. Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and

1.3.1.5. If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for applying security protection to the transmission of Real-time Assessment and Real-time monitoring data between those Control Centers. implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

Evidence

M1. Examples of evidence may include, but ~~is~~are not limited to, documented plan(s) that meet the security mitigation objective of Requirement R1 and documentation demonstrating the implementation of the plan(s). Examples of methods identified in the plan(s) may include, but are not limited to, one or more of the following for each part:

Part 1.1

- Methods of mitigation used to protect against the unauthorized disclosure and unauthorized modification of the data (e.g., data masking, encryption/decryption) while such data is being transmitted between Control Centers
- Physical access restrictions to unencrypted portions of the network

Part 1.2

- Identification of alternative communication paths or methods between Control Centers
- Procedures explaining the use of alternative systems or methods for providing for the availability of the data
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information outlining the methods used for recovery

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1.1. Compliance Enforcement Authority: “Compliance Enforcement Authority” (CEA) means NERC, the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

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- If a Responsible Entity is found non-compliant, it shall keep information

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1.3. Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

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None.

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- Implementation Plan.
- Technical Rationale for CIP-012-~~1~~2.
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|----------|------------------|--|--------------------------------------|
| 1 | | Respond to FERC Order No. 822 | New |
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Implementation Plan

Project 2020-04 Modifications to CIP-012-2

Applicable Standard

- Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Requested Retirements

- Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Prerequisite Standard

- None

Applicable Entities

- Balancing Authority
- Generator Operator
- Generator Owner
- Reliability Coordinator
- Transmission Operator
- Transmission Owner

Background

On January 23, 2020, FERC issued Order No. 866 approving CIP-012-1. While approving the standard, FERC expressed concern that CIP-012-1 did not address protections for the availability of communications links and data communicated between Control Centers. FERC determined that this was a reliability gap, and thus, in Order No. 866, directed NERC to “develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between bulk electric system Control Centers.”

Effective Date

Reliability Standard CIP-012-2 – Cyber Security – Communications between Control Centers

Where approval by an applicable governmental authority is required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24) calendar months after the effective date of the applicable governmental authority’s order approving the standard, or as otherwise provided for by the applicable governmental authority.

Where approval by an applicable governmental authority is not required, Reliability Standard CIP-012-2 shall become effective on the first day of the first calendar quarter that is twenty-four (24)

calendar months after the date the standard is adopted by the NERC Board of Trustees, or as otherwise provided for in that jurisdiction.

Retirement Date

Reliability Standard CIP-012-1 – Cyber Security – Communications between Control Centers

Reliability Standard CIP-012-1 shall be retired immediately prior to the effective date of CIP-012-2 in the particular jurisdiction in which the revised standard is becoming effective.

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

November 2023

RELIABILITY | RESILIENCE | SECURITY



3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

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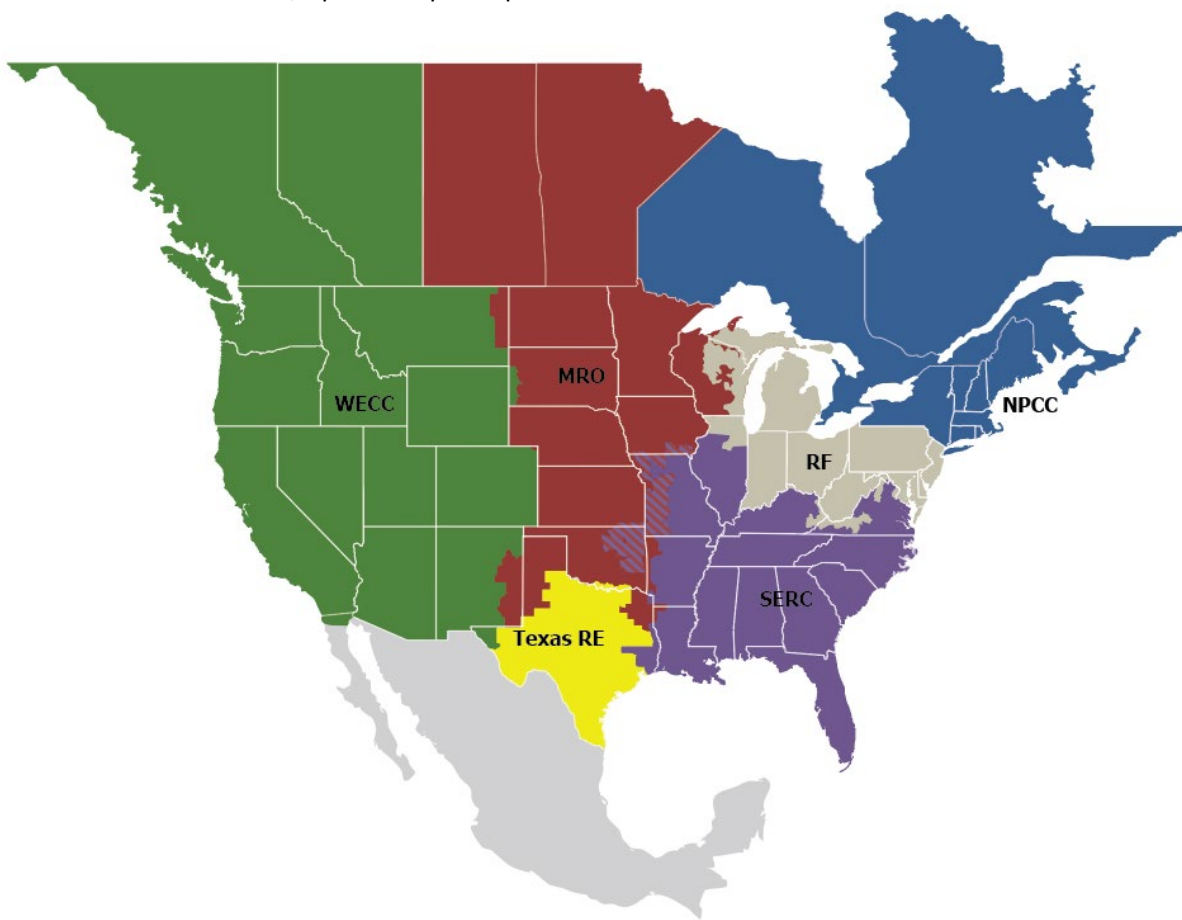
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | Reliability First |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the Standard Drafting Team’s (SDT) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communication links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT refined the subparts of R1, to include additional requirements for entities to: (a) requiring entities to identify methods used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have addressed these contingencies in their

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

existing recovery and/or incident response plan(s). Relevant evidence arising out of these plans may be referenced to meet CIP-012 requirements, avoiding duplication of administrative efforts.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their Balancing Authority (BA) or Transmission Operator (TOP) Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this scenario which is described in further detail below.

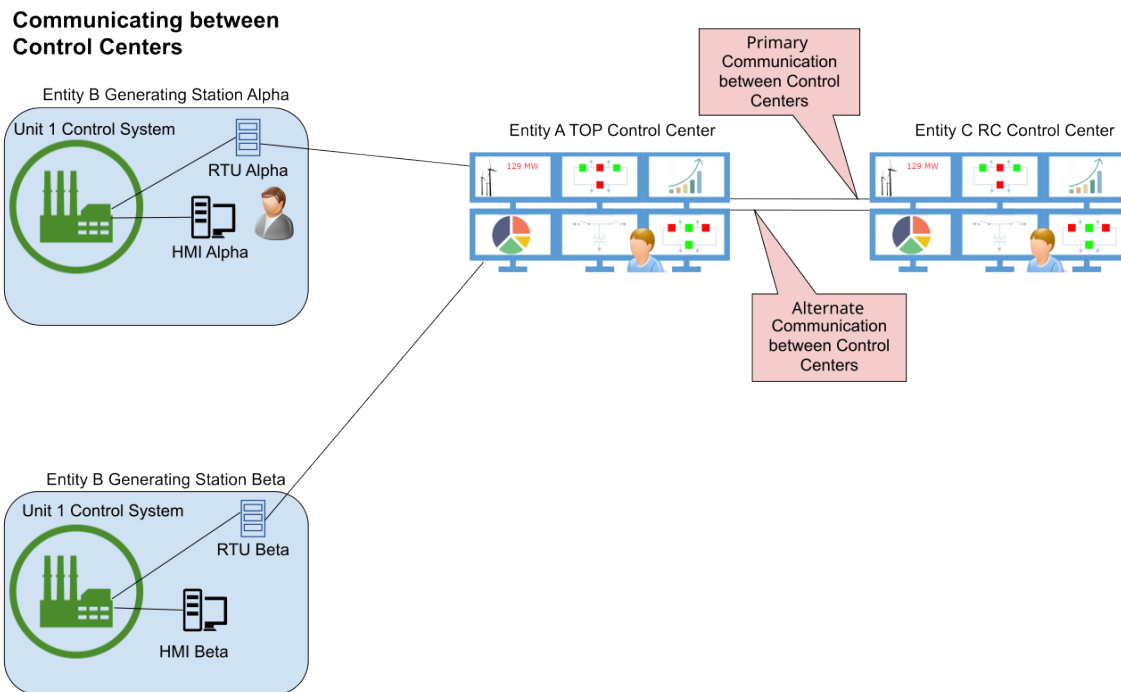


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

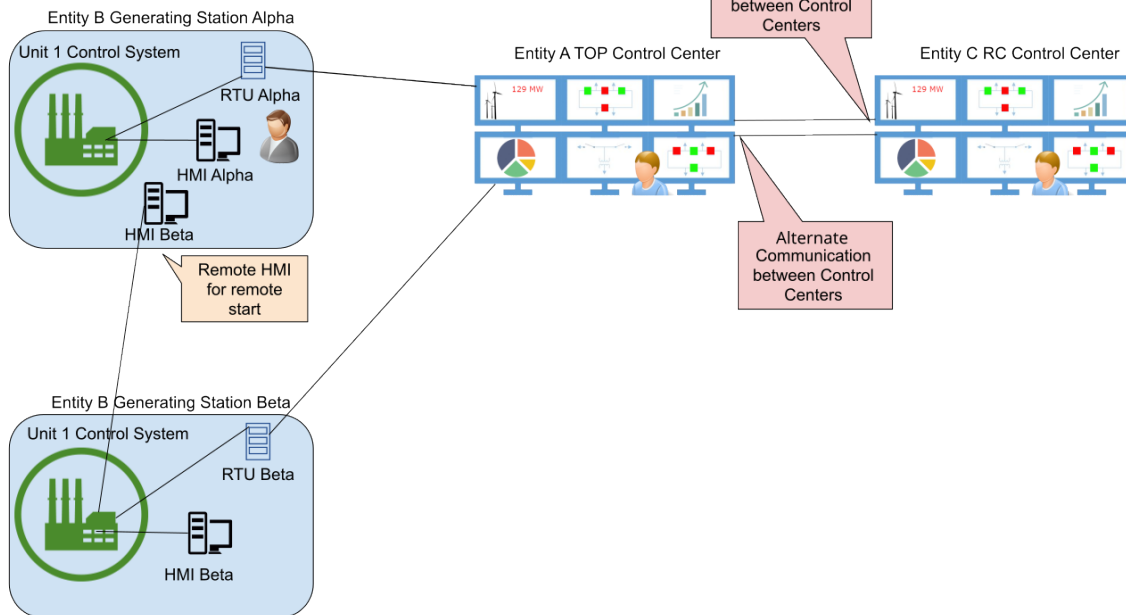


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

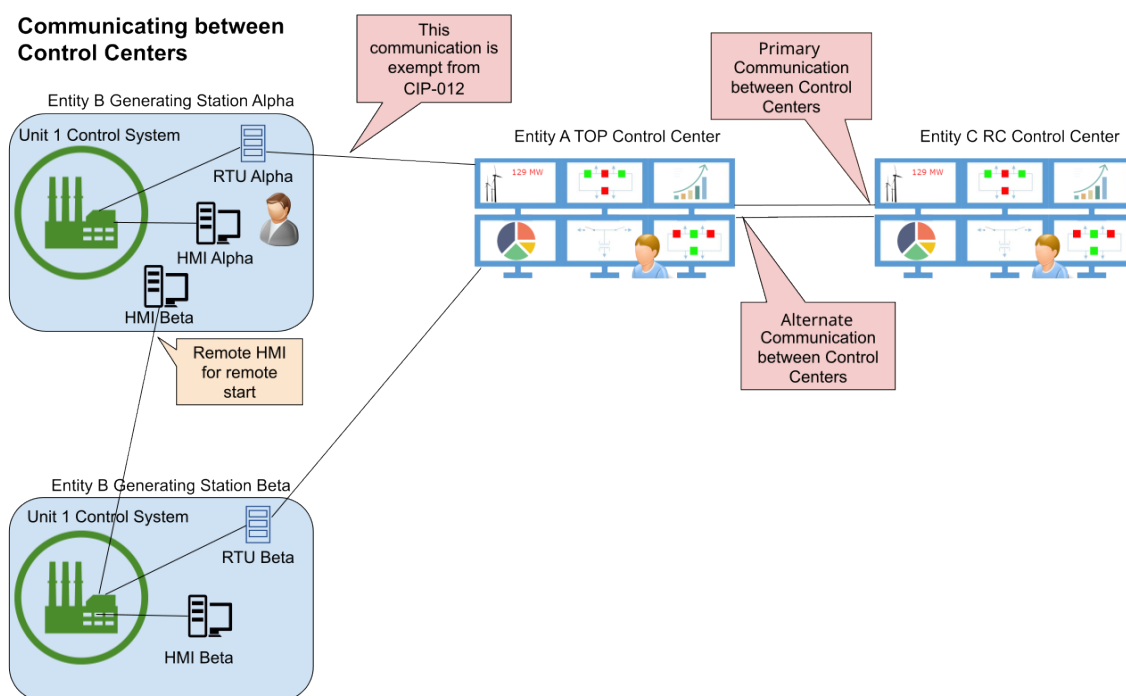


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for Transmission Owners (TOs) and Generation Operators (GOPs), the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers.

The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

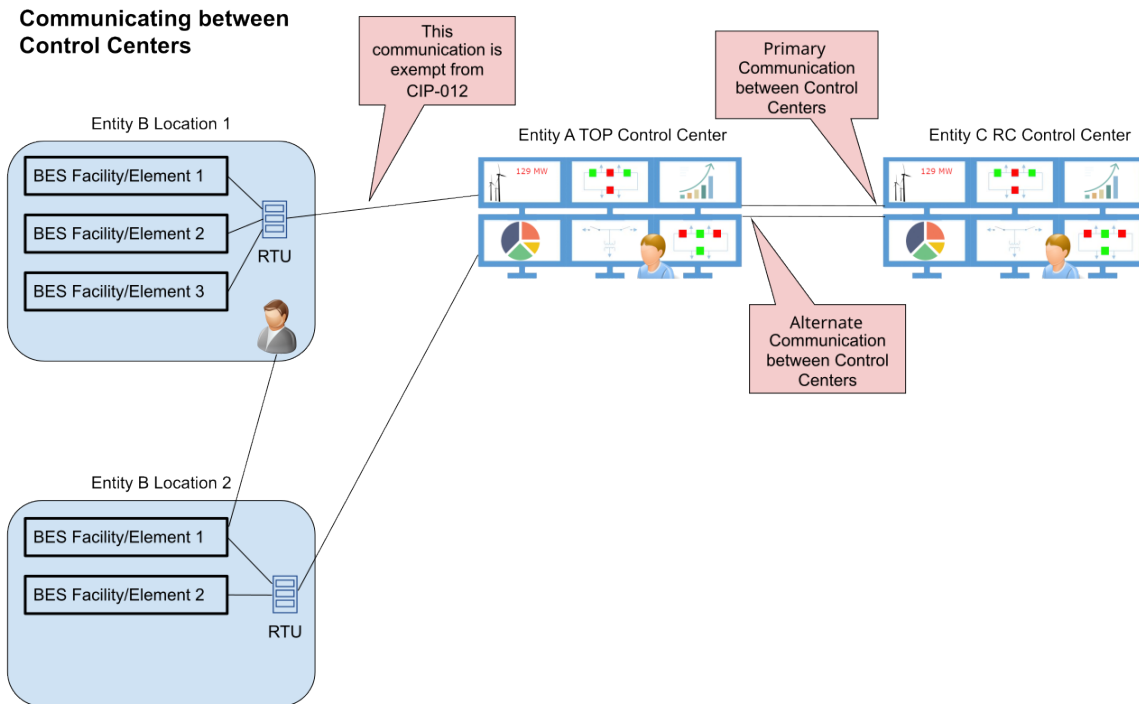


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risk(s) posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of method(s) used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1,1.2, and 1.3.

General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

Part 1.1 requires the Responsible Entity to identify within the CIP-012 plan the security protections of this data. This requirement focuses on Real-time Assessment and Real-time monitoring data while it is in transit between applicable Control Centers. Security protections include physical protection of components and equipment as well logical protection of the data in transit.

Part 1.2 requires the identification of methods within the CIP-012 plan to mitigate the risks posed by a loss of the ability to communicate Real-time Assessment and Real-time monitoring data. A loss of data transmission capability between Control Centers can occur as the result of many scenarios. These may include misconfiguration of equipment, a physical break of transmission medium, or cyber-attack. As a CIP Standard, the focus of CIP-012 remains cyber protections around maintaining availability. Circuit redundancy, alternate systems of data transmission, and cyber protections for the circuit(s) are a few potential methods of maintaining the ability to communicate Real-time Assessment and Real-time monitoring data.

Part 1.3 addresses the need to identify measures to initiate the recovery of communication links. An important element of data communications is the availability of the communication links themselves. Communication links are the medium by which the data is transmitted between Control Centers (e.g., fiber, copper lines, satellite, etc.). Being able to recover them from a failure, regardless of cause, is important to the overall movement of the data. This can be handled directly within the CIP-012 plan, or the CIP-012 plan may point to other applicable plans that accomplish the objective of this requirement.

Part 1.4 requires the identification of where methods to mitigate are applied. Identifying where these protections are implemented will achieve appropriate coverage of protections. This can be accomplished with a document describing the locations of the components, diagrams indicating the locations or a combination of both, within the plan. For further information, please see 'Identification of Where Protections are Applied by the Responsible Entity' section below.

Part 1.5 addresses requirements for each side of the data transfer when Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates restoration when there is a problem with the transmission of the data.

Again, the SDT does not intend for the listed order of the requirement subparts to convey any sequence or significance.

Overview of Confidentiality, Integrity, and Availability

The SDT drafted CIP-012 to address the confidentiality, integrity, and availability of Real-time Assessment and Real-time monitoring data. This is accomplished by drafting the requirement to mitigate the risks posed by unauthorized disclosure (confidentiality), unauthorized modification (integrity), and transmission of information (availability). For this Standard, the SDT relied on the definitions of confidentiality, integrity, and availability as defined by National Institute of Standards and Technology (NIST):

- Confidentiality is defined as, “Preserving authorized restrictions on information access and disclosure, including means for protecting personal privacy and proprietary information.”³
- Integrity is defined as, “Guarding against improper information modification or destruction, and includes ensuring information non-repudiation and authenticity.”⁴
- Based on the NIST definition⁵, availability is defined by the SDT as, “providing timely and reliable access to information.”

The CIP-012 Requirement to preserve the availability of the data is included to mitigate the risks posed by loss of data flow (availability) between applicable Control Centers. The SDT acknowledges that the availability and use of Real-time Assessment and Real-time monitoring data is required by the performance obligation of the Operations and Planning Reliability Standards. The SDT drafted CIP-012 to address the data while in motion between applicable Control Centers. The SDT maintains that this data, while at rest, resides within BES Cyber Systems and is explicitly protected by other CIP Standards. The use of this data is an Operations and Planning concern and is explicitly covered in the suite of NERC Reliability Standards.

When real-time assessment or real-time monitoring data is lost, an entity does not have the data needed for secure operation of Bulk Electric System. Mitigating the risk posed by loss of Real-time Assessment and Real-time monitoring data may be achieved in several ways which are identified within the Measures section of the Standard.

Alignment with IRO and TOP Standards

The SDT recognized the FERC reference to additional Reliability Standards and the responsibilities to protect the applicable data in accordance with NERC Reliability Standards TOP-003 and IRO-010. The SDT used these references to drive the identification of sensitive BES data and chose to base the CIP-012 requirements on the Real-time data specification elements in these standards. This approach provides consistent scoping of identified data and does not require each entity to devise its own list or inventory of this data. Many entities are required to provide this data under agreements executed with their RC, BA, or TOP. Data requiring protection in CIP-012 consists of a subset of data that is identified by the RC, BA, and TOP in the TOP-003 and IRO-010 data specification standards, limited to Real-time Assessment data and Real-time monitoring data. CIP-012 excludes other data typically transferred between Control Centers such as Operational Planning Analysis data, weather data, market data, and other data that is not used by the RC, BA, and TOP to perform Real-time reliability assessments and analysis identified in TOP-003 and IRO-010. The SDT determined that Operational Planning Analysis data, if rendered unavailable, degraded, or misused, would not adversely impact the reliable operation of the BES within 15 minutes of the activation or exercise of the compromise as detailed in CIP-002-5.1a. The SDT notes that there may be special instances during which Real-time Assessment or Real-time monitoring data is not identified by the RC, BA, or TOP. This would include data that may be exchanged between a Responsible Entity’s primary and backup Control Center.

If Responsible Entities incorporate CIP-012 protections that introduce new data exchange infrastructure into the primary Control Center, they must ensure continued compliance with the provisions of TOP-001 and IRO-002, which require redundant and diversely routed data exchange infrastructure implementation and testing.

Identification of Where Protections are Applied by the Responsible Entity

The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows

³ [NIST Special Publication 800-53A, Revision 4](#), page B-3

⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under “Availability” from 44 U.S.C., Sec. 3542 (b)(1)(C)

latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place. If the point where security protections (e.g., encryption/decryption) is applied on a communication link that is located outside of the Responsible Entities' Control Center PSP (e.g., physically secured area, telecom room), then security protections are still required for the data until it crosses into the Control Center PSP.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.4 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.5.

Control Center Ownership

The CIP-012 Standard Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. It also covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

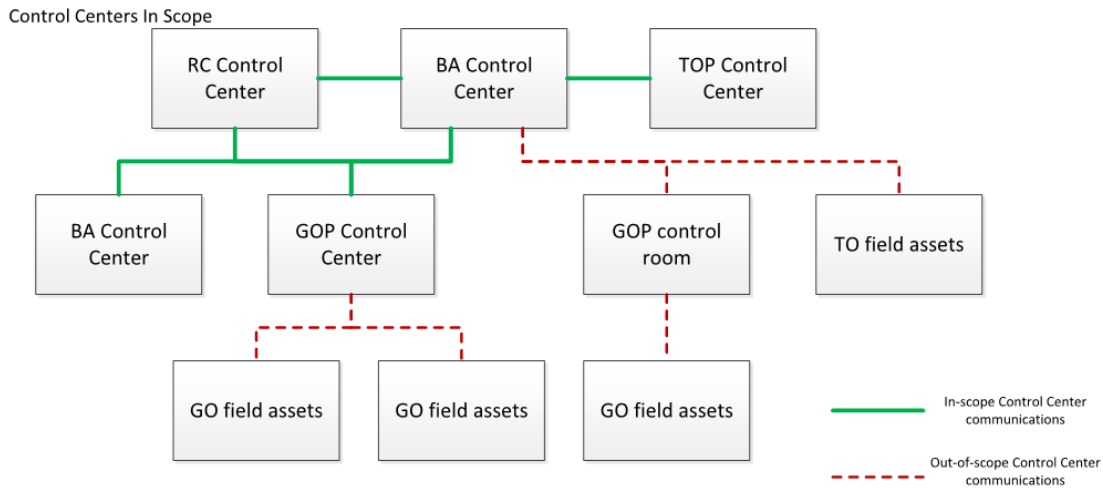


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.5 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Cyber Security – Communications between Control Centers

Technical Rationale and Justification for
Reliability Standard CIP-012-2

September–November 2023

RELIABILITY | RESILIENCE | SECURITY



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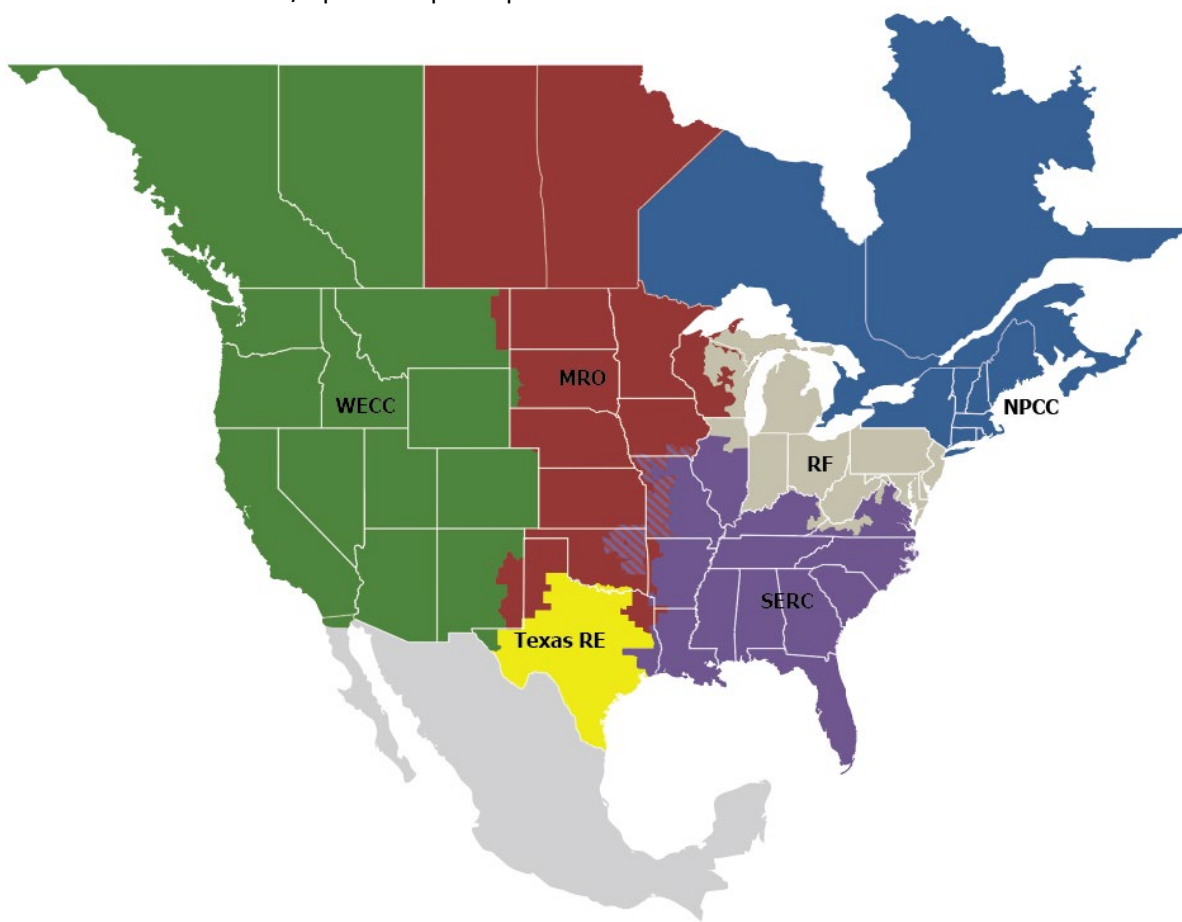
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities, is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six Regional Entity boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one Regional Entity while associated Transmission Owners/Operators participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | Reliability First |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

This document explains the technical rationale and justification for the proposed Reliability Standard CIP-012. It provides stakeholders and the ERO Enterprise with an understanding of the technology and technical requirements in the Reliability Standard. It also contains information on the Standard Drafting Team’s (SDT) intent in drafting the requirements. This Technical Rationale and Justification for CIP-012 is not a Reliability Standard and should not be considered mandatory and enforceable.

CIP-012-1

On January 21, 2016, the Federal Energy Regulatory Commission (FERC or Commission) issued Order No. 822, approving seven Critical Infrastructure Protection (CIP) Reliability Standards and new or modified terms in the Glossary of Terms Used in NERC Reliability Standards, and directing modifications to the CIP Reliability Standards. Among others, the Commission directed the North American Electric Reliability Corporation (NERC) to “develop modifications to the CIP Reliability Standards to require Responsible Entities¹ to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement controls to protect sensitive Bulk Electric System (BES) data and communication links between BES Control Centers. Due to the sensitivity of the data being communicated between Control Centers, as defined in the Glossary of Terms Used in NERC Reliability Standards, the standard applies to all impact levels (i.e., high, medium, and low impact).

Although the Commission directed NERC to develop modifications to CIP-006, the SDT determined that modifications to CIP-006 would not be appropriate for securing the data. There are differences between the plan(s) required to be developed and implemented for CIP-012-1 and the protection required in CIP-006 Requirement R1 Part 1.10. CIP-012-1 Requirements R1 and R2 protect the applicable data during transmission between two separate Control Centers. CIP-006 Requirement R1 Part 1.10 protects nonprogrammable communication components within an Electronic Security Perimeter (ESP) but outside of a Physical Security Perimeter (PSP). The transmission of applicable data between Control Centers takes place outside of an ESP. Therefore, the protection-addressed in CIP-006 Requirement R1 Part 1.10 does not apply.

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the *availability* of communication links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT refined the subparts of R1, to include additional requirements for entities to: (a) requiring entities to identify methods used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a Responsible Entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged there should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have addressed these contingencies in their

¹ As used in the CIP Standards, a Responsible Entity refers to the registered entities subject to the CIP Standards.

² See Order No. 866 at PP 35-36.

existing recovery and/or incident response plan(s). Relevant evidence arising out of these plans may be referenced to meet CIP-012 requirements, avoiding duplication of administrative efforts.

The SDT drafted requirements to provide Responsible Entities the latitude to protect the communication links, the data, or both to mitigate the associated risks, consistent with the capabilities of the Responsible Entity's operational environment.

CIP-012 Exemption (4.2.3) for certain Control Centers

In the process of drafting CIP-012, the SDT became aware of certain generating plant or Transmission substation situations where such field assets could be dual-classified as Control Centers based on the current Control Center definition. Communication from these assets to their Balancing Authority (BA) or Transmission Operator (TOP) Control Centers, however, is not included in the intended scope of CIP-012. This is because the communications do not differ from those of any other generating plant or substation. The SDT wrote an exemption (Section 4.2.3 within CIP-012) for this scenario which is described in further detail below.

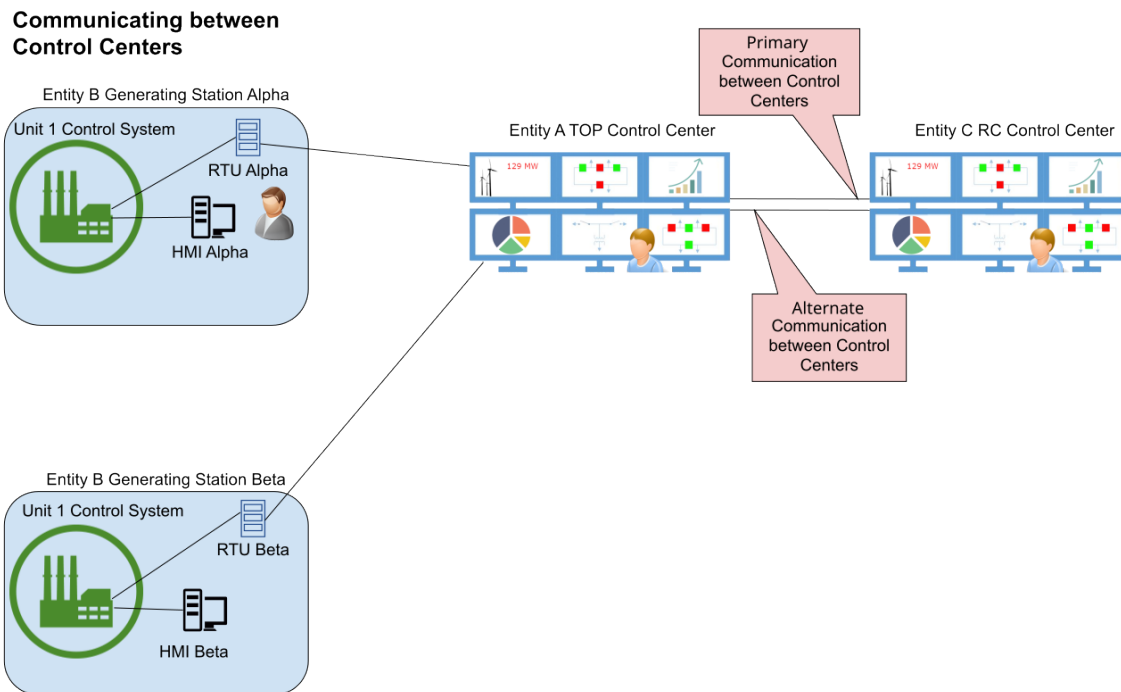


Figure 1

Figure 1 presents a typical scenario with two Control Centers communicating – in this instance Entity C's RC Control Center and Entity A's TOP Control Center. The communication between them is the intended scope of CIP-012's requirements if they meet the types of data inclusions and exclusions within the standard. The TOP Control Center is communicating with an RTU at two of Entity B's generating plants (Stations Alpha and Beta). Those RTU's are gathering information from each generating unit's control system. Each generating unit at each plant has an HMI (Human/Machine Interface; an operator workstation) that the local personnel use to operate their respective units.

Entity B decides that the generating unit at Station Beta, a small peaking facility, will only have an operator on site during the day. The operator at Station Alpha should be able to remotely start the unit at Station Beta if necessary.

Communicating between Control Centers

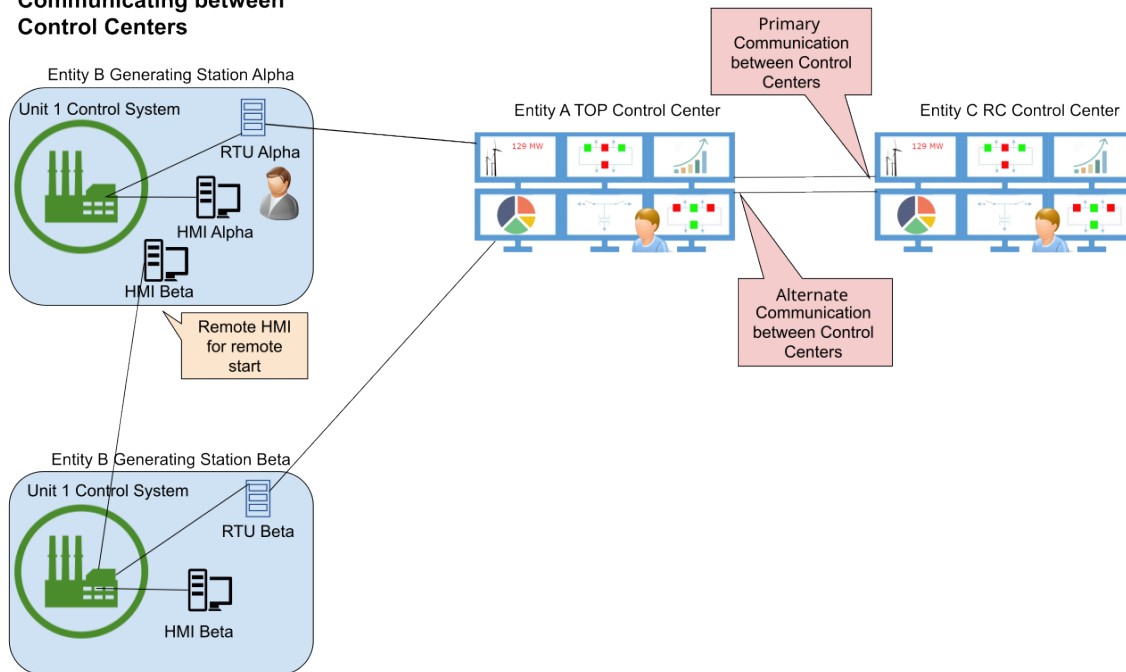


Figure 2

In Figure 2, Entity B installs a dedicated communications circuit from the control system on Station Beta’s control system and puts a dedicated HMI at Station Alpha for operator use. Station Alpha is now “one or more facilities hosting operating personnel that monitor and control the BES in real time to perform the reliability tasks of . . . a Generator Operator for generation Facilities at two or more locations” because stations Alpha and Beta are two different plant locations. Station Alpha can now be dual classified not only as a generation resource but also as a Control Center.

The communications to the TOP and RC Control Centers in Figure 1 have not changed. No new cyber systems are in place that can impact multiple units. In addition, no cyber systems have been added performing Control Center functions. The only change is that an HMI for Station Beta has been moved within close physical proximity to an HMI for Station Alpha.

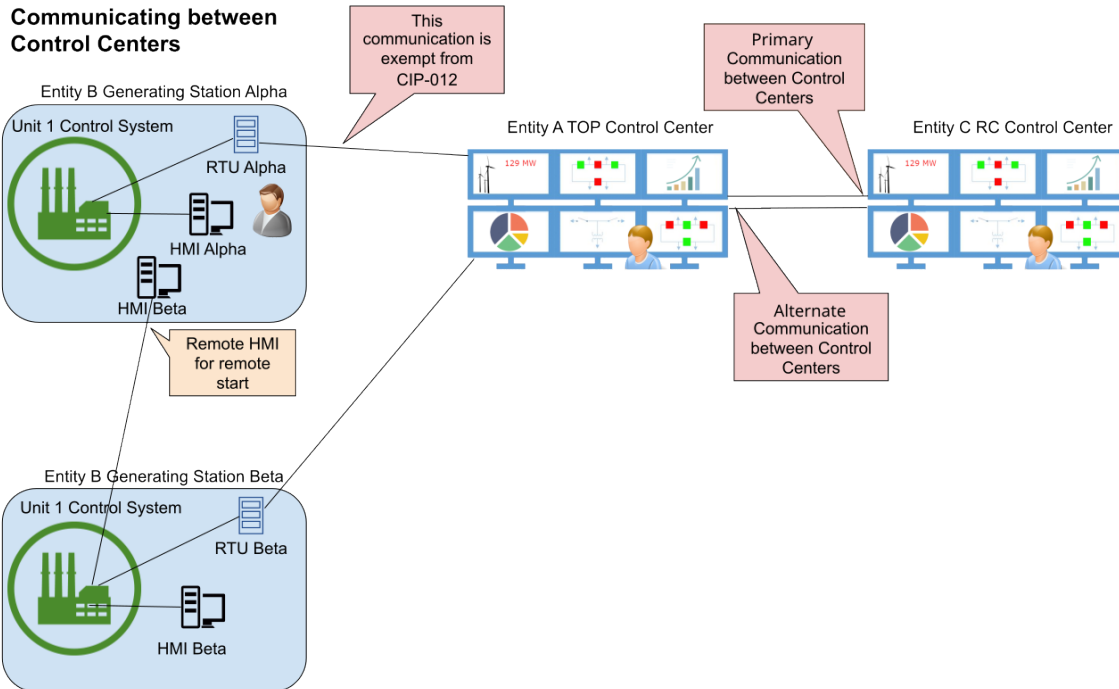


Figure 3

Although nothing has changed between them, this proximity (without the exemption preventing it), would make the communication noted in Figure 3 between Station Alpha and Entity A’s TOP Control Center subject to CIP-012. Two HMIs have been moved into the same room and a new NERC CIP Standard applies to two entities. Because of exemption 4.2.3, the communication is out of scope of CIP-012.

This is an anomaly of the current Control Center definition of a facility, room, or building from which certain functions can be performed without regard to how they are done or what systems they are using. This is a generation specific example, but the potential situation exists where there are substations with an HMI or protective relay that “operating personnel” within the substation could use to impact an adjacent substation. It is also clear that in the criteria for Transmission Owners (TOs) and Generation Operators (GOPs), the “two or more locations” is not a precise enough filter for defining what a Control Center truly is. The SDT’s attempts to address this issue by clarifying the definition of Control Center pointed out larger issues that are not within the SDT’s SAR to address. Accordingly, the SDT is handling the issue through the 4.2.3 exemption within the CIP-012 standard which reads:

4.2.3. A Control Center that transmits to another Control Center Real-time Assessment or Real-time monitoring data pertaining only to the generation resource or Transmission station or substation co-located with the transmitting Control Center.

This exemption is to exclude from CIP-012 the normal RTU-style communication from a field asset providing that field asset’s status. Throughout this scenario or others like it, that communication has not changed and is still the same data pertaining only to the single location. The SDT recognizes that this communication is not the intent of the Standard for protecting communications between Control Centers and this type of equipment may be using older legacy communication technology and protocols.

The 4.2.3 exemption covers generation resources or Transmission station or substation locations that host operating personnel and can control BES Facilities at more than one location, possibly making them co-located Control Centers.

The communication is exempt from CIP-012 if each location is communicating the Real-time Assessment or Real-time monitoring data with another Control Center pertaining only to its own location.

The above diagrams were generation specific. The following diagram is a more generic example:

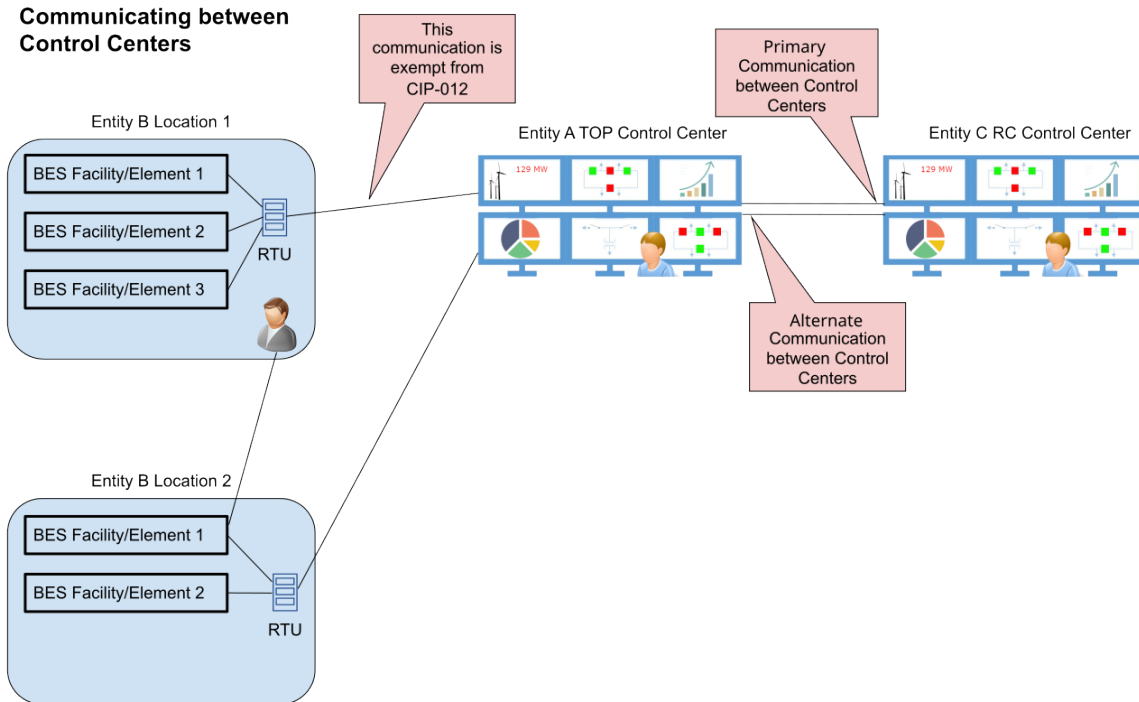


Figure 4

In Figure 4, each location only communicates its own Real-time Assessment or Real-time monitoring data pertaining to that single location, not Real-time Assessment or Real-time monitoring data from any other location. The communication from Entity B location one (1) to Entity A would be exempt from CIP-012.

If Location 2 communicates its data through Location 1 and Location 1 was both controlling and aggregating data from multiple locations to Entity A's TOP Control Center, the communication between Location 1 and Entity A's TOP Control Center would not be exempt from CIP-012.

Requirement R1

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used for Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
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General Considerations for Requirement R1

Requirement R1 focuses on implementing a documented plan to protect information that is critical to the Real-time operations of the Bulk Electric System while in transit between applicable Control Centers. The SDT does not intend for the listed order of the requirement parts to convey any sequence or significance. The SDT also chose to revise the subparts of R1 based on industry feedback to require the identification of methods or measures to help entities quantify what was needed to satisfy the requirements.

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Part 1.5 addresses requirements for each side of the data transfer when Control Centers are owned or managed by different Responsible Entities. Having a clear understanding of where each side of a link each entity's responsibilities begin and end facilitates ~~timely~~ restoration when there is a problem with the transmission of the data.

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The SDT noted the need for a Responsible Entity to identify where it will apply protections for applicable data. The SDT did not specify the location where CIP-012 security and availability protections must be applied. This allows

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⁴ [NIST Special Publication 800-53A, Revision 4](#), page B-6

⁵ [NIST SP 800-59](#) under “Availability” from 44 U.S.C., Sec. 3542 (b)(1)(C)

latitude for Responsible Entities to implement the security and availability controls in a manner best fitting their individual circumstances. This latitude ensures entities can still take advantage of measures, such as deep packet inspection implemented at or near the Electronic Access Point (EAP) when Electronic Security Perimeters (ESPs) are present, while maintaining the capability to protect the applicable data being transmitted between Control Centers.

The SDT also recognizes that CIP-012 protections may be applied to a Cyber Asset that is not an identified BES Cyber Asset (BCA), Protected Cyber Asset (PCA), or Electronic Access Control or Monitoring System (EACMS). The identification of the Cyber Asset at the location where security protection is applied does not expand the scope of Cyber Assets identified as applicable under the full complement of the Cyber Security Standards.

The SDT understands that in data exchanges between Control Centers, a single entity may not be responsible for both ends of the communication link. The SDT intends for a Responsible Entity to identify only where it applied security and availability protection. The Responsible Entity should coordinate with a neighboring entity in instances where the neighboring entity has applied protections at the neighboring entity's facility that affect the Responsible Entity's data flows to ensure appropriate protections are in place. If the point where security protections (e.g., encryption/decryption) is applied on a communication link that is located outside of the Responsible Entities' Control Center PSP (e.g., physically secured area, telecom room), then security protections are still required for the data until it crosses into the Control Center PSP.

A Responsible Entity may decide to take responsibility for both ends of a communication link. For example, it may place a router in a neighboring entity's data center. In a scenario where a Responsible Entity has taken responsibility for applying protections on both ends of the communication link, the Responsible Entity should identify where it applied protections at both ends of the link. The SDT intends for there to be alignment between the identification of where protections are applied in CIP-012 Requirement R1, Part 1.4 and the identification of Responsible Entity responsibilities in CIP-012 Requirement R1, Part 1.5.

Control Center Ownership

The CIP-012 Standard Requirement addresses protection for Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers owned by a single Responsible Entity. It also covers the applicable data transmitted between Control Centers owned by two or more separate Responsible Entities. Unlike protection between a single Responsible Entity's Control Centers, applying protection between Control Centers owned by more than one Responsible Entity requires additional coordination. The requirement does not explicitly require formal agreements between Responsible Entities partnering for protection of applicable data. It is strongly recommended, however, that these partnering entities develop agreements, or use existing ones, to define responsibilities to ensure the security objective is met. An example noted in FERC Order No. 822 Paragraph 59 is, "if several registered entities have joint responsibility for a cryptographic key management system used between their respective Control Centers, they should have the prerogative to come to a consensus on which organization administers that particular key management system."

As an example, Figure 5 shows several in-scope data transmissions between Control Centers that a Responsible Entity should consider. The reference model example does not include all possible scenarios. The solid green lines are in-scope communications and the dashed red lines are out-of-scope communications.

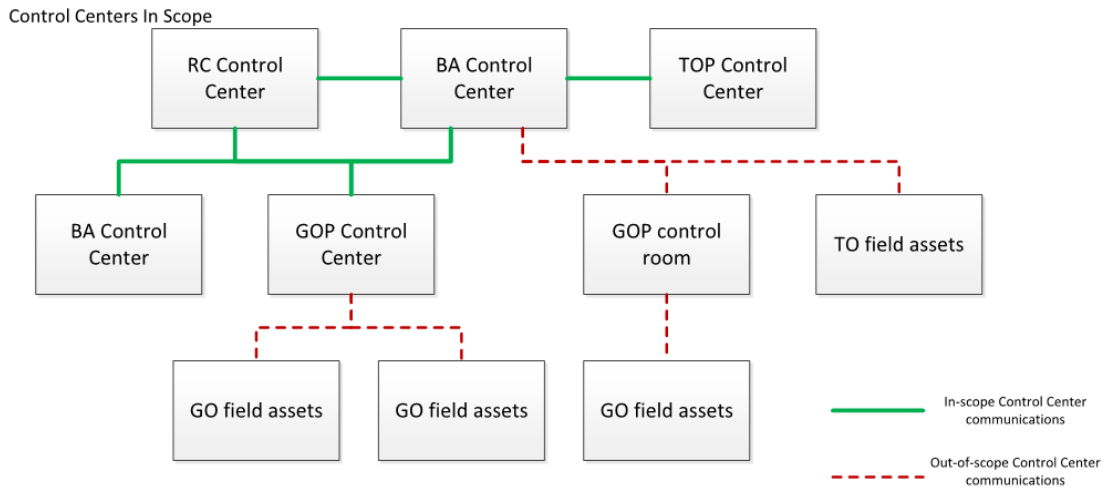


Figure 5: This reference model is an example and does not include all possible scenarios.

The SDT included Part 1.5 of the plan to address the situation when multiple registered entities are involved with protecting the data transmitted between Control Centers. Part 1.5 provides a mechanism to specify which entity is responsible for the application of security and availability controls. The SDT included this requirement part to address security and availability concerns as well as audit concerns. Where data is transmitted between different entities, the SDT asserts that it is necessary for both entities to understand the responsibilities of applying controls to ensure the data is protected through its entire transmission and there is no gap in security or availability protections. The SDT also asserts this requirement part will provide evidence which may prevent the simultaneous auditing of multiple entities for each communication link between Control Centers when operated by different Responsible Entities. Controls applied by the entity to achieve compliance with Parts 1.1 through 1.4 of the plan should correlate to the documented responsibilities in Part 1.5 of the entity’s plan.

References

Here are several references to assist entities in developing plan(s) for protection of communication links:

- [NIST Special Publication 800-53A, Revision 4](#): Security and Privacy Controls for Federal Information Systems and Organizations
- [NIST Special Publication 800-82](#): Guide to Industrial Control Systems (ICS) Security
- [NIST Special Publication 800-175B](#): Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms
- [NIST Special Publication 800-47](#): Security Guide for Interconnecting Information Technology Systems

Violation Risk Factor and Violation Severity Level Justifications

Project 2020-04 Modifications to CIP-012

This document provides the standard drafting team's (SDT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in CIP-012-2. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for Violation Risk Factors

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to Bulk Electric System instability, separation, or a cascading sequence of failures, or could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System. However, violation of a medium risk requirement is unlikely to lead to Bulk Electric System instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to Bulk Electric System instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor, control, or restore the Bulk Electric System.

FERC Guidelines for Violation Risk Factors

Guideline (1) – Consistency with the Conclusions of the Final Blackout Report

FERC seeks to ensure that VRFs assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System. In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

Guideline (2) – Consistency within a Reliability Standard

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) – Consistency with NERC’s Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular VRF level conforms to NERC’s definition of that risk level.

Guideline (5) – Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

NERC Criteria for Violation Severity Levels

VSLs define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

VSLs should be based on NERC’s overarching criteria shown in the table below:

| Lower VSL | Moderate VSL | High VSL | Severe VSL |
|--|--|--|--|
| The performance or product measured almost meets the full intent of the requirement. | The performance or product measured meets the majority of the intent of the requirement. | The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent. | The performance or product measured does not substantively meet the intent of the requirement. |

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard meet the FERC Guidelines for assessing VSLs:

Guideline (1) – Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline (2) – Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

Guideline (3) – Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline (4) – Violation Severity Level Assignment Should Be Based on a Single Violation, Not on a Cumulative Number of Violations

Unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

VRF Justification for CIP-012-2, Requirement R1

The VRF did not change from the previously FERC approved CIP-012-1 Reliability Standard.

VSL Justification for CIP-012-2, Requirement R1

The VSL did not substantially change from the previously FERC approved CIP-012-1 Reliability Standard. The severe VSL was modified to reflect the proposed Requirement R1 which now has five subparts.

| VSLs for CIP-012-2, Requirement R1 | | | |
|------------------------------------|--|--|--|
| Lower | Moderate | High | Severe |
| N/A | The Responsible Entity documented its plan(s), but failed to include one of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity documented its plan(s), but failed to include two of the applicable Parts of the plan as specified in Requirement R1. | The Responsible Entity failed to document plan(s) for Requirement R1; Or The Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1, except under CIP Exceptional Circumstances. |

VSL Justifications for CIP-012-2 Requirement R1

| | |
|---|---|
| <p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p> | <p>The proposed VSL does not have the unintended consequence of lowering the level of compliance.</p> |
| <p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p> | <p>The requirement is for the Responsible Entity to implement one or more documented plan(s) as specified in Requirement R1.</p> <p>Guideline 2a is not applicable as these VSLs are not binary. The VSLs do not contain ambiguous language.</p> <p>The moderate VSL addresses where the Responsible Entity documented its plan(s), but failed to include one of the applicable parts of the plan as specified in Requirement R1.</p> <p>The high VSL addresses where the Responsible Entity documented its plan(s), but failed to include two of the applicable parts of the plan as specified in Requirement R1.</p> <p>The severe VSL addresses where the Responsible Entity failed to document plan(s) for Requirement R1, or where the Responsible Entity failed to implement three or more Parts of its plan(s) for Requirement R1.</p> |
| <p>FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p> | <p>The proposed VSL uses the same terminology as used in the associated requirement and is, therefore, consistent with the requirement.</p> |

| | |
|--|---|
| <p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p> | <p>Each VSL is based on a single violation and not cumulative violations.</p> |
|--|---|

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

November 2023

RELIABILITY | RESILIENCE | SECURITY



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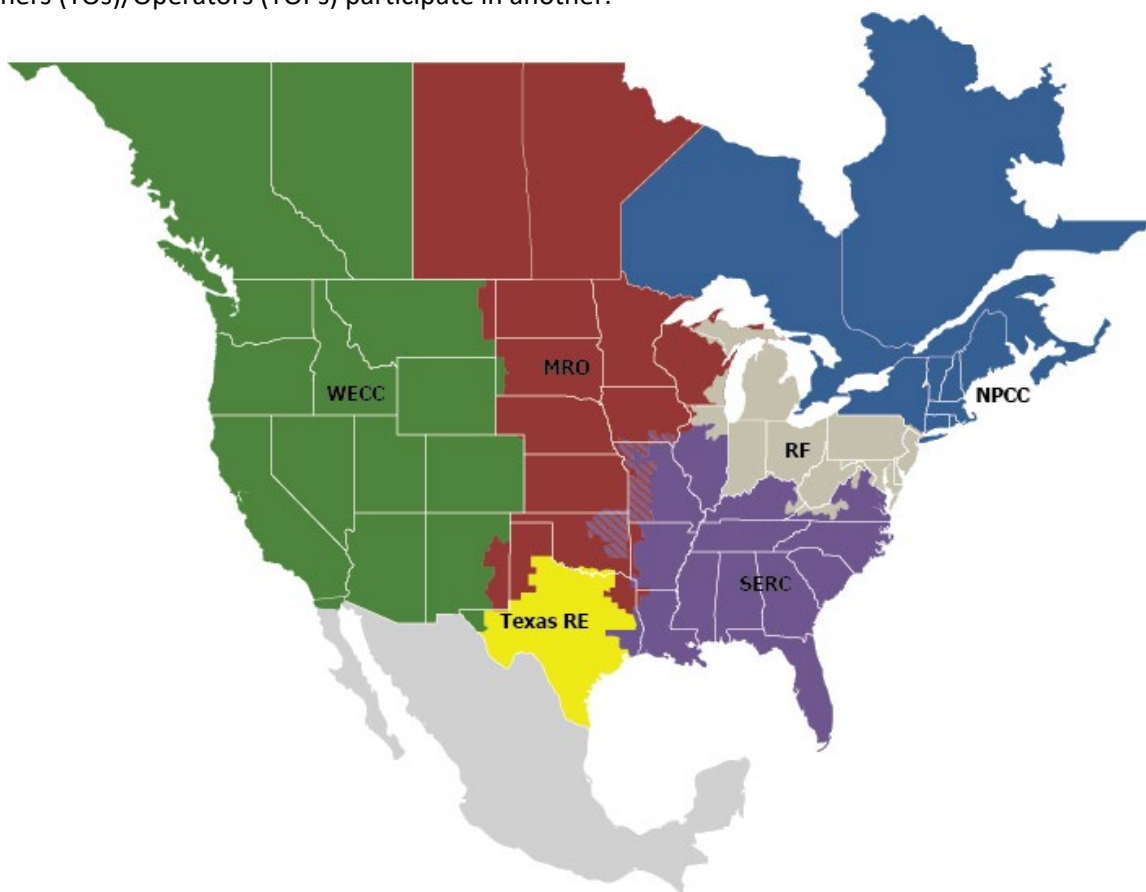
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged. There should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#).

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability, both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure, unauthorized modification, and loss of availability, of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of methods used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order No. 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “Providing timely and reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. If a Responsible Entity's CIP or Operations and Planning (O&P) plans address all of the required elements for CIP-012-2, any relevant evidence arising out of these plans may be referenced as part of their CIP-012 plan to meet the requirements and avoiding duplication of administrative efforts.

For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN.
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data.
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of Ability to Communicate Data (R1.2)

Mitigating the risks posed by loss of ability to communicate Real-time Assessment and Real-time monitoring data consists of taking measures to help protect the continued flow of data. This can be accomplished in a variety of ways including redundant links, diverse systems or services designed to protect against loss of ability to communicate such data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of ability to communicate such data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used to Initiate Recovery (R1.3)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to initiate the recovery of data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes, or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should clarify the limitations where any components of the availability solution fall outside of the scope of the referenced plan. Any components not included in the referenced plan may be brought into the referenced plan itself or included directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide

availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section regarding communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an Inter-Control Center Communications Protocol (ICCP) link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

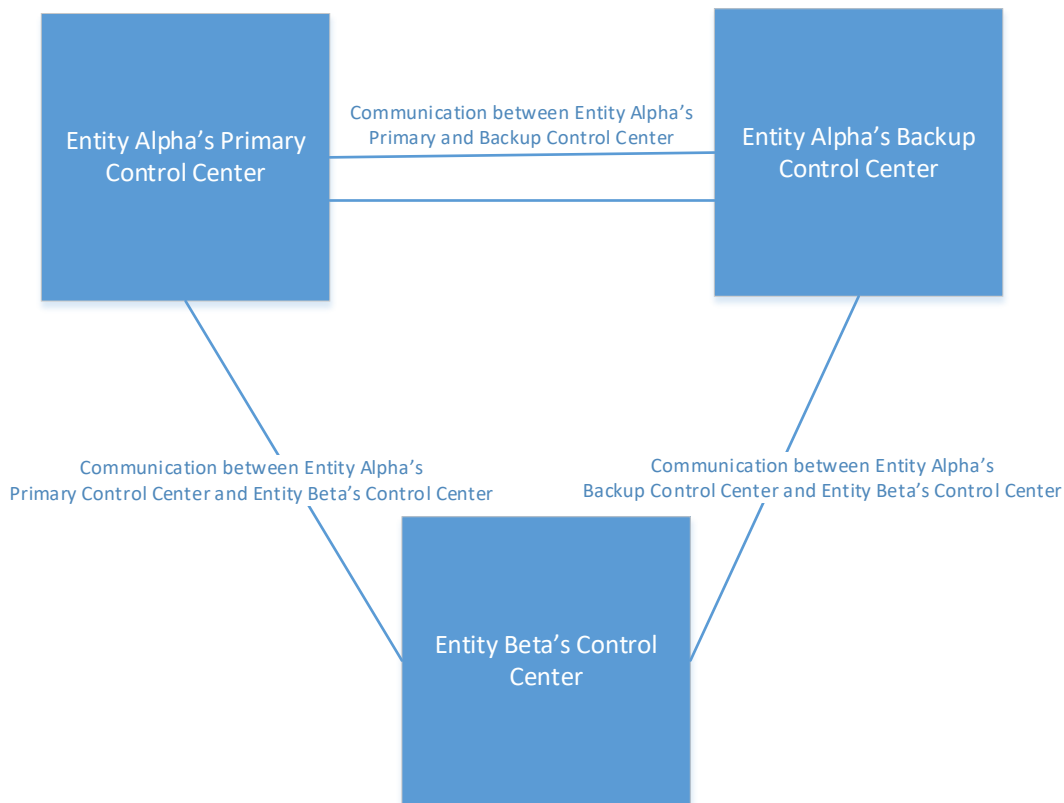


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with Requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in Requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using ICCP.

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center PSP. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center PSP (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is protected. Entity Beta ensures Entity Alpha's communication link endpoint equipment is protected by including the communication endpoint within a Control Center PSP or where other physical protection is applied. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of Ability to Communicate Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used to Initiate Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center PSP and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a PSP or where other physical protection is applied. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.

- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include, but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model

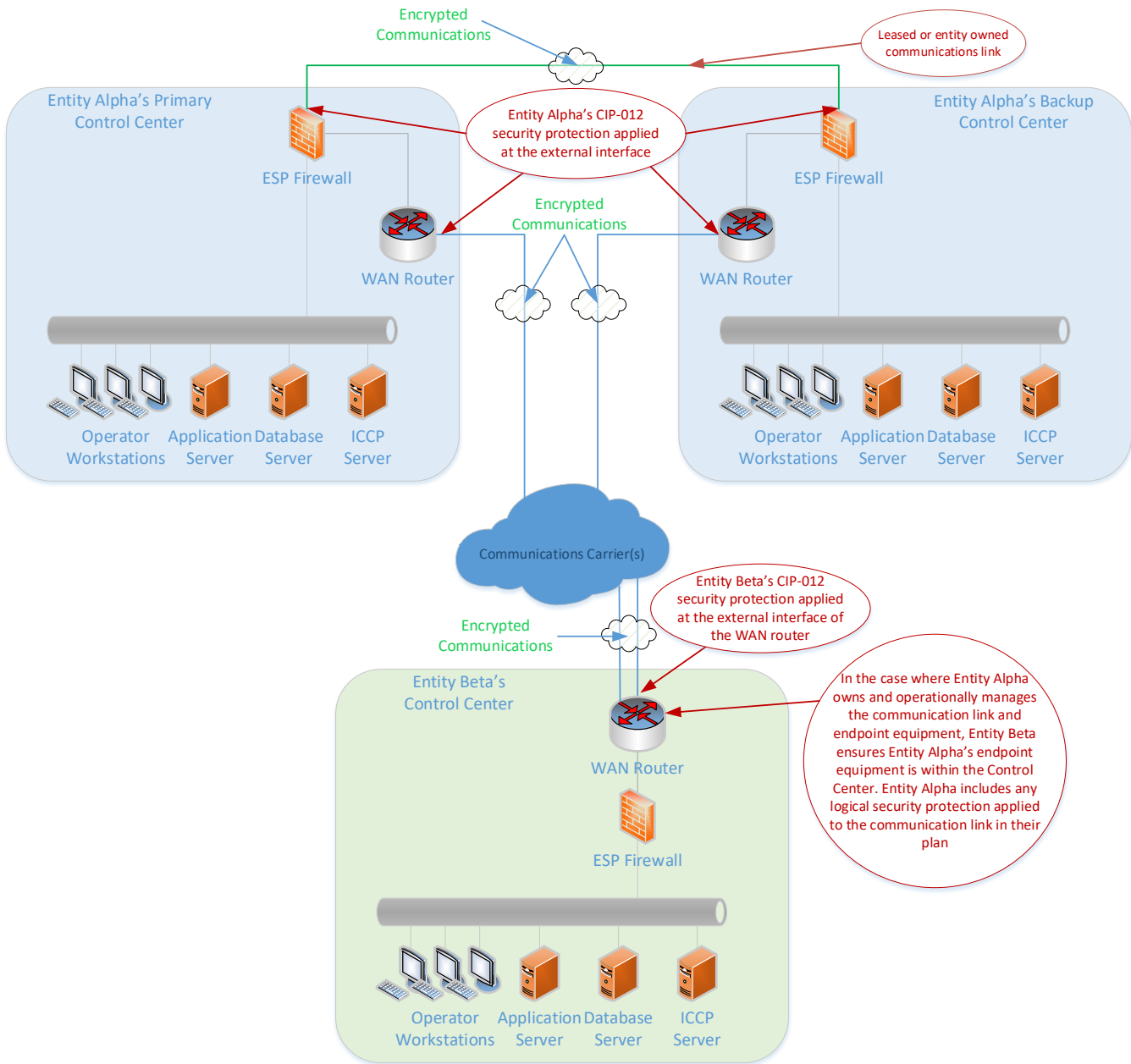


Figure 2: Network diagram and identification of where logical protection is applied

Reference Model

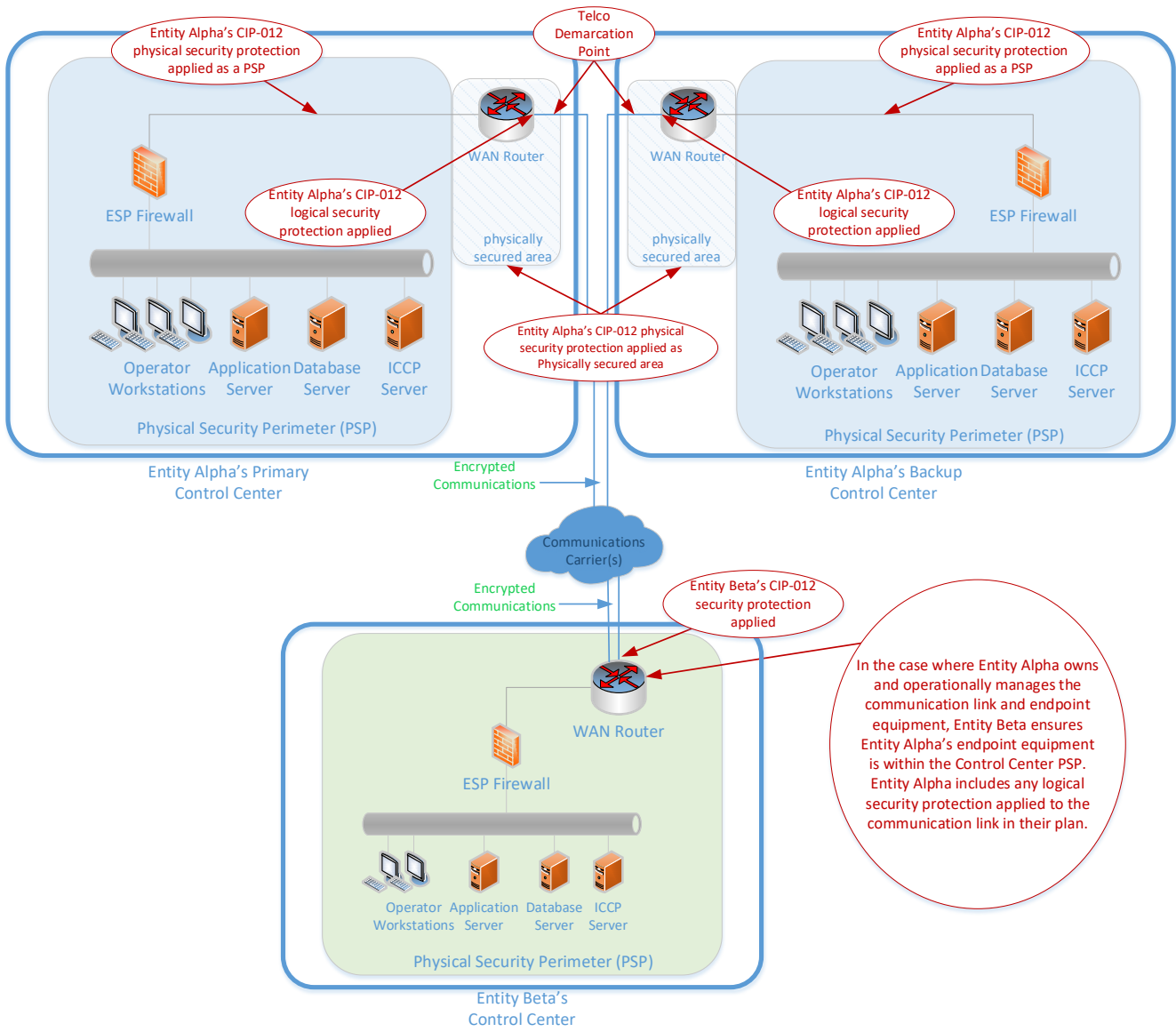


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

DRAFT Implementation Guidance
Pending Submittal for ERO Enterprise Endorsement

Cyber Security – Communications Between Control Centers

Implementation Guidance for CIP-012-2

~~September~~ November 2023

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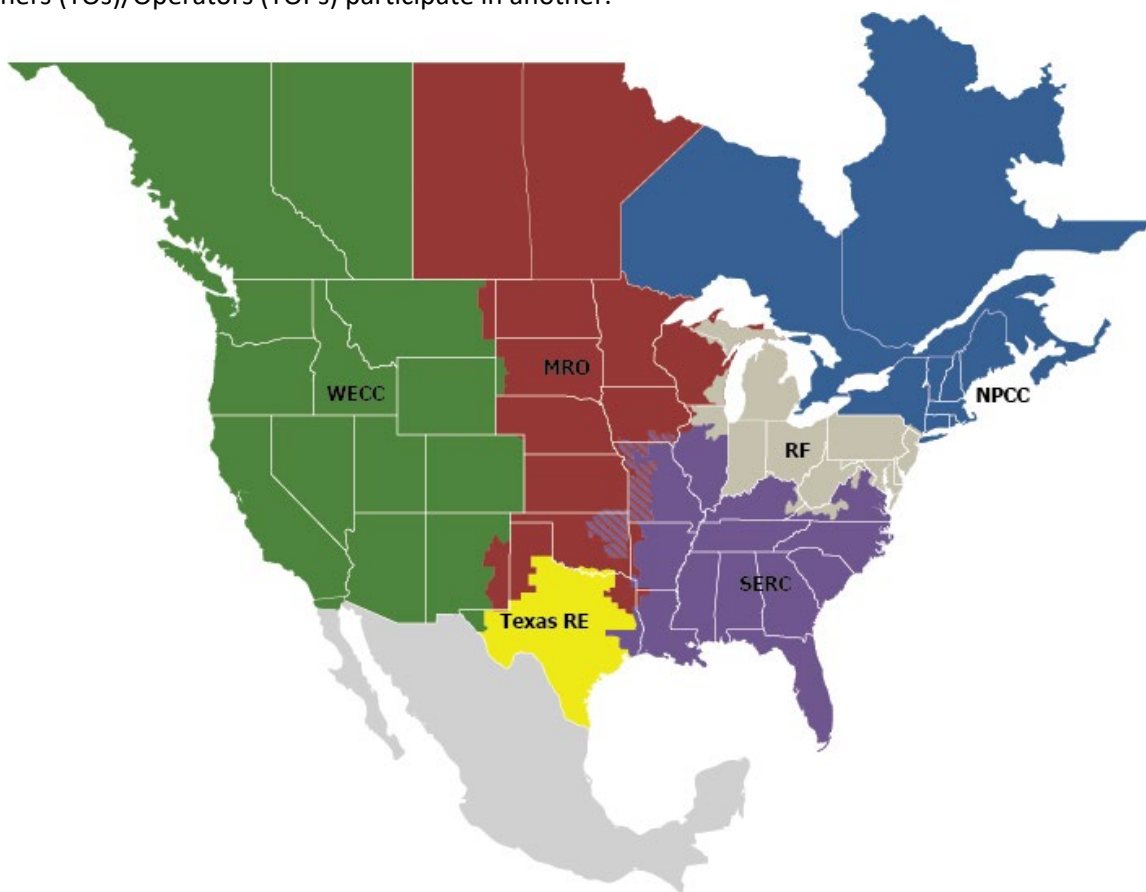
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



| | |
|-----------------|--------------------------------------|
| MRO | Midwest Reliability Organization |
| NPCC | Northeast Power Coordinating Council |
| RF | ReliabilityFirst |
| SERC | SERC Reliability Corporation |
| Texas RE | Texas Reliability Entity |
| WECC | WECC |

Introduction

The Project 2020-04 Standard Drafting Team (SDT) drafted this Implementation Guidance to provide example approaches for compliance with CIP-012-2. Implementation Guidance does not prescribe the only approach, but highlights one or more approaches that would be effective in achieving compliance with the standard. Because Implementation Guidance only provides examples, entities may choose alternative approaches that better fit their individual situations¹.

Responsible Entities may find it useful to consider this Implementation Guidance document along with the additional context and background provided in the SDT-developed Technical Rationale and Justification for CIP-012-2 document.

This document will be reviewed and updated upon initiation of a standards development project to modify the CIP-012-2 standard.

Background

CIP-012-1

The Commission issued Order No. 822 on January 21, 2016 approving seven CIP Reliability Standards and new or modified definitions, and directed modifications be made to the CIP Reliability Standards. Among other items, the Commission directed NERC to “develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).” (Order 822, Paragraph 53)

In response to the directive in Order No. 822, the Project 2016-02 SDT drafted Reliability Standard CIP-012-1 to require Responsible Entities to implement one or more documented plan(s) to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between any applicable Control Centers. Due to the sensitivity of the data being communicated between Control Centers, the standard applies to all impact levels (i.e., high, medium, or low impact).

CIP-012-2

On January 23, 2020, the Federal Energy Regulatory Commission (FERC) issued Order No. 866 approving CIP-012-1 and directing NERC to develop modifications to CIP-012-1 to require Responsible Entities to develop one or more plan(s) to implement protections for the availability of communications links and data communicated between the Bulk Electric System (BES) Control Centers. In response to the directive in Order No. 866, the Project 2020-04 SDT developed modifications to CIP-012-2 to include availability requirements.

In Order No. 866, FERC also stated that “maintaining the availability of communication networks and data should include provisions for incident recovery and continuity of operations in a responsible entity’s compliance plan.” FERC recognized that the redundancy of communication links cannot always be guaranteed and acknowledged. There should be plans for both recovery of compromised communication links and use of backup communication capability². The SDT recognized that Responsible Entities may already have plans to address these contingencies in their CIP-008 or CIP-009 plan(s) and these could be referenced as part of their CIP-012 plan(s) to meet the requirement and avoid duplication of effort.

¹ [NERC’s Compliance Guidance Policy](#).

² See Order No. 866 at PP 35-36.

The SDT modified requirements to provide Responsible Entities with the latitude to protect Real-time Assessment and Real-time monitoring data, mitigating against the risks posed by unauthorized disclosure, unauthorized modification and loss of availability, both to satisfy the security and availability objectives.

Requirements

- R1.** The Responsible Entity shall implement, except under CIP Exceptional Circumstances, one or more documented plan(s) to mitigate the ~~cyber-security~~ risks posed by unauthorized disclosure, unauthorized modification, and loss of availability of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between any applicable Control Centers. The Responsible Entity is not required to include oral communications in its plan. The plan shall include: *[Violation Risk Factor: Medium] [Time Horizon: Operations Planning]*
- 1.1.** Identification of method(s) used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of data used in Real-time Assessment and Real-time monitoring while such data is being transmitted between Control Centers;
 - 1.2.** Identification of method(s) used to mitigate the risk posed by the loss of the ability to communicate Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.3.** Identification of methods used to initiate the recovery of communication links used to transmit Real-time Assessment and Real-time monitoring data between Control Centers;
 - 1.4.** Identification of where the Responsible Entity implemented method(s) as required in Parts 1.1 and 1.2; and
 - 1.5.** If the Control Centers are owned or operated by different Responsible Entities, identification of the responsibilities of each Responsible Entity for implementing method(s) as required in Parts 1.1, 1.2, and 1.3.

General Considerations

Plan Development

As noted in the Technical Rationale and Justification for CIP-012-2, the focus of requirement R1 is implementing a documented plan to protect information that is critical to the real-time operations of the BES while in transit between applicable Control Centers. With the approval of CIP-012-1 in Order No. 866, FERC also directed NERC to address protections regarding the availability of communications links and data communicated between BES Control Centers. CIP-012-2 was developed to address these additional needed availability protections for data while in transit.

For CIP-012-2, the SDT modified the definition of availability as defined by National Institute of Standards and Technology (NIST)³:

- Availability is defined as “Providing timely and reliable access to information”

The number of plan(s) and their content may vary depending on a Responsible Entity's management structure and operating conditions. The Responsible Entity may document as many plans as necessary to meet its needs. If a Responsible Entity's CIP or Operations and Planning (O&P) plans address all of the required elements for CIP-012-2, any relevant evidence arising out of these plans may be referenced as part of their CIP-012 plan to meet the requirements and avoiding duplication of administrative efforts.

For instance, they may reference within their CIP-012 plan the location within their CIP-009 plan that covers the recovery portion needed to meet the CIP-012 R1.3 requirement. A Responsible Entity may choose to document one plan per Control Center or choose an all-inclusive, single plan for its Control Center communication environment. A Responsible Entity may choose to document one plan for communications between Control Centers it owns and a separate plan for communications between its Control Centers and the Control Centers of a neighboring Entity. The number and structure of the plans is at the discretion of the Responsible Entity as long as the plan(s) include the required elements described in Parts 1.1 through 1.5 of requirement R1.

Responsible Entities should note that “associated data centers” are included in the Control Center definition. Also, data at rest and oral communication fall outside the scope of CIP-012⁴.

Identification of Real-time Assessment and Real-time Monitoring Data

Responsible Entities can expect to receive or have received requests for Operations Planning Analysis, Real-time Assessment and Real-time monitoring data from their Reliability Coordinator (RC), Balancing Authority (BA) and Transmission Operator (TOP). These data requests, pursuant to the data specification from TOP-003 and IRO-010 requirements, may also include other types of data under the same request. CIP-012 requires protection only for Real-time Assessment and Real-time monitoring data. If the provided data specification does not indicate which data is Real-time Assessment and Real-time monitoring data, Responsible Entities could choose to conduct an assessment to identify this data from among the other data requested or being communicated. Once a data assessment is completed, the Responsible Entity should confirm its findings with the other communicating entity before applying security controls. If the Real-time Assessment and Real-time monitoring data is not clearly identified in the provided data specification, the Responsible Entity should document the methodology used and all actions taken to identify the Real-time Assessment and Real-time monitoring data.

³ NIST SP 800-59 under Availability from 44 U.S.C., Sec. 3542 (b)(1)(C)

⁴ NERC Order No. 866 at PP 11.

Mitigate Risks Associated with Unauthorized Disclosure and Modification (R1.1)

Entities have latitude to identify and choose which security protections are used to mitigate the risks posed by unauthorized disclosure and unauthorized modification of Real-time Assessment and Real-time monitoring data while being transmitted between Control Centers.

This security protection could consist of logical protection, physical protection, or some combination of both. To determine security protection, the requirement specifies that it must mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data. Physical protection is usually appropriate if two Control Centers are in close physical proximity such that the cabling and connections over which the data travels between them is physically protected between the two. Physical protection may also be appropriate when the equipment that is performing encryption is close to but still outside a Control Center and physical protection is used to protect the cabling and connections between the encryption endpoint and the Control Center itself.

Security protection implementation can be demonstrated in many ways. If a Responsible Entity uses physical protection, it may demonstrate implementation through review of an applicable Control Center floor plan with details subsequently confirmed through visual inspection, which identifies the physical security measures in place protecting the communication link. If the Responsible Entity uses logical protection, it may demonstrate implementation through an export of the device configuration which applies the security protection. Some examples include:

- An export of the configuration of a firewall showing the configuration of a VPN tunnel and the routing that directs applicable data through the VPN.
- An export of the configuration of a transport level device that demonstrates encryption is enabled for applicable (or all) data.
- Configuration of an application that demonstrates that the applicable data is encrypted from the application to the remote client or application.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Responsible Entities also have flexibility in determining how the CIP-012 availability component is implemented. Information identified as Real-time Assessment and Real-time monitoring data has a quality component that must be met via Requirements in IRO-010 and TOP-003. TOP-003 requirement R1.3 and R1.4 specifically represent time constraints regarding a Responsible Entity providing Real-time Assessment and Real-Time monitoring data. An inability to access this data in a timely manner may impact a Responsible Entity's ability to provide or utilize this data when needed. A Responsible Entity must identify how the availability objective in CIP-012 is met while data is being transmitted. Availability can be achieved utilizing diversity, redundancy, or a combination of both. Diversity is using heterogeneity to minimize common mode failures⁵. For example, using two or more communication protocols or channels with differing characteristics. Redundancy is providing multiple protected instances of critical resources⁶. For example, having more than one circuit path or method to deliver the data. A diverse and redundant solution for CIP-012 may use multiple circuit types (e.g., fiber optic and radio) and different systems (e.g., a primary and a secondary) to mitigate against multiple failure scenarios associated with data availability.

⁵ [NIST SP 800-160v2](#), 11

⁶ [NIST SP 800-160v2](#), 11

As noted previously, availability is generally defined as ensuring timely and reliable access to information. The availability of data in transit can be achieved in a number of ways. One example method would be to use redundant circuits traversing discrete paths which would help ensure that, should one circuit path degrade or fail, data can continue to flow. Another discrete path approach is to get the same data points from multiple Control Centers. For example, a Reliability Coordinator may be willing to pass through the originator's data to your Control Center, enabling a secondary source from a discrete path. This can be demonstrated via network diagrams indicating carrier diversity or discrete pathing.

Another method would be to use multiple systems that can aid availability in that one software solution providing data can fail independently of the other while data continues to flow via the alternate software/protocol stack. This can also be demonstrated utilizing network or system diagrams that identify the method(s) by which the protections are afforded by the solution.

Mitigating Risks Posed by Loss of Ability to Communicate Data (R1.2)

Mitigating the risks posed by loss of ability to communicate Real-time Assessment and Real-time monitoring data consists of taking measures to help protect the continued flow of data. This can be accomplished in a variety of ways including redundant links, diverse systems or services designed to protect against loss of ability to communicate such data. Real-time Assessment and Real-time monitoring data is required by the Responsible Entity to maintain the functionality and stability of the BES. The methods used to mitigate the loss of ability to communicate such data should be agreed upon by both entities when this responsibility is shared between multiple entities.

Methods Used to initiate Recovery (R1.3)

A component of maintaining availability is identifying, as part of the CIP-012 plan, the information needed to initiate the recovery of data communication links should they be interrupted. This objective is consistent with the TOP and IRO Standards. Restoration of communications services can be addressed specifically within the Responsible Entity's CIP-012 plan or within other applicable plans referenced by their CIP-012 plan. When sharing data with other Responsible Entities, support responsibilities and restoration alignments can be documented in a variety of methods such as a joint procedure, a memorandum of understanding, contractual agreements, meeting minutes, or other documentation of the defined responsibilities between the two parties.

The SDT also recognizes that the availability components within the plan may or may not be applied to Cyber Assets identified as BES Cyber Assets. When addressing restoration of links or circuits within a CIP-012 plan by referencing another plan (e.g., a CIP-009 recovery plan), the Responsible Entity should clarify the limitations where any components of the availability solution fall outside of the scope of the referenced plan. Any components not included in the referenced plan may be brought into the referenced plan itself or included directly within the CIP-012 plan.

Identification of Where Security and Availability Protections are Applied (R1.4)

A Responsible Entity should consider its environment when identifying where security and availability protections should be applied. One approach is to implement the protections within the Control Center itself to ensure that data confidentiality and integrity is protected throughout the transmission. The Responsible Entity can identify where security protection is applied using a logical or physical location. The application of security in accordance with CIP-012 requirements does not add additional assets to the scope of the CIP Reliability Standards. Locations of applied security protection may vary based on many factors such as impact levels of the Control Center, different technologies, or infrastructures. Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Identification of where a Responsible Entity applies security and availability protections could be demonstrated with a list or a Control Center diagram showing physical or logical security controls and components used to provide

availability protections. Physical diagrams may require visual confirmation of these controls. These diagrams or a list could be included within the plan developed for requirement R1. A Responsible Entity could also use labels to identify on-site devices where CIP-012 security and availability protections are applied.

When exchanging data between two entities, if a Responsible Entity only manages one end of a communication link, the Responsible Entity is not responsible for identifying where the security protection is applied by the neighboring entity with which it is exchanging data. However, if a Responsible Entity has taken responsibility for both ends of the communication link (such as by placing a router within the neighboring entity's data center), then the Responsible Entity shall identify where the security protection is applied at both ends of the link. The Responsible Entity on each side of the link must also identify where their availability protections are applied, respectively.

Similarly, if a Responsible Entity owns and operates both Control Centers which are exchanging data (such as in the case of a primary and backup Control Center), then the Responsible Entity shall identify where security and availability protections are applied at both ends of the link.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities (R1.5)

The Technical Rationale and Justification for CIP-012 identifies key considerations in the Control Center Ownership section regarding communications between Control Centers with different owners or operators. Many operational relationships between Responsible Entities are unique. Consequently, there is no single way to identify responsibilities for applying security and availability protections to the transmission of Real-time Assessment and Real-time monitoring data between Control Centers. Discussions between Responsible Entities might identify requirements for after-hours support in situations where data availability is reliant on independent actions such as an Inter-Control Center Communications Protocol (ICCP) link reset.

The implementation of responsibilities must be documented to clearly identify the responsible parties and the point of demarcation where responsibility of the communications link transfers from one entity to the other. This documentation may include network diagrams, a joint procedure, a memorandum of understanding, or meeting minutes, documenting the defined responsibilities for each party.

Where the operational obligations of an entire communication link, including both endpoints, belong to the Control Center of another Responsible Entity, the Responsible Entity without operational obligations for the communication link may demonstrate compliance by ensuring the communications link endpoint is within its Control Center, which could be limited to including the communication link endpoint within a PSP or where other physical protection is applied.

Reference Model

For this Implementation Guidance, the SDT uses a basic reference model of Primary and Backup Control Centers (Entity Alpha) to illustrate approaches to demonstrating compliance. These Control Centers communicate to each other and to a neighboring entity's Control Center (Entity Beta) in configurations outlined by the diagrams in this section. The SDT recognizes that the reference model does not contain many of the complexities of a real Control Center. For this Implementation Guidance, the registration or functions performed in the reference model Control Center are also not considered. A high-level block diagram of the basic reference model is shown below in Figure 1. This Implementation Guidance is developed from the perspective of Entity Alpha.

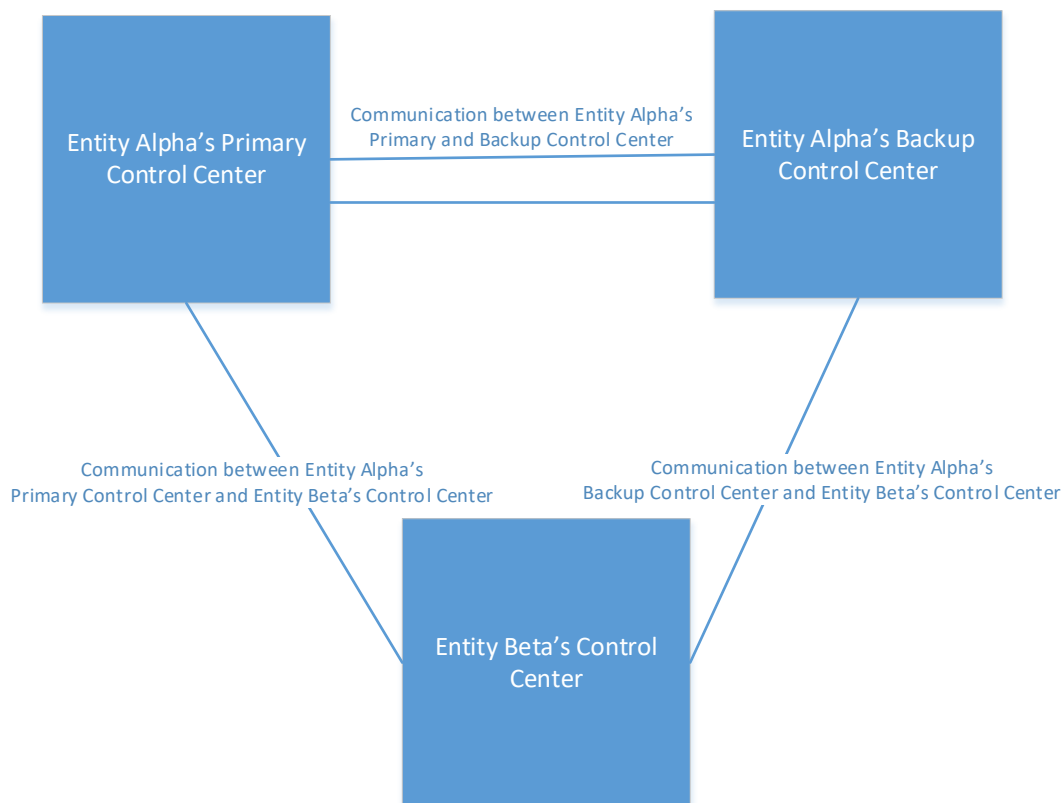


Figure 1: High Level Block Diagram of Reference Model Control Centers

Reference Model Discussion

Requirement R1 requires the implementation of a documented plan. To comply with Requirement R1, one approach to a plan is to first determine which communications are in scope of CIP-012. There are multiple ways to identify an entity's scope in Requirement R1. For example, Entity Alpha in the reference model may first identify the Control Centers with which it communicates. Entity Alpha would determine that there are three: Entity Alpha's Primary Control Center, Entity Alpha's Backup Control Center, and Entity Beta's Control Center. Entity Alpha does not need to consider whether Entity Beta further shares its data with another Entity. That is the responsibility of Entity Beta and is outside of Entity Alpha's purview. Additionally, Entity Alpha does not need to consider any communications to other non-Control Center facilities such as generating plants or substations. These communications are out of scope for CIP-012.

Now that Entity Alpha has identified the Control Centers with which it communicates, Entity Alpha identifies either: (1) the Real-time Assessment and Real-time monitoring data; or (2) communication links which are used to transmit Real-time Assessment and Real-time monitoring data between Control Centers. In either case, Entity Alpha could

refer to the data specification for Real-time Assessment and Real-time monitoring data identified in TOP-003 and IRO-010. These standards also include the periodicity requirements of the data, to establish the bounds for availability. For this reference model scenario, identifying the communication links used to transmit Real-time Assessment and Real-time monitoring data may be the most straightforward approach. Through an evaluation of communication links between Control Centers and an evaluation of how it transmits and receives Real-time Assessment and Real-time monitoring data, Entity Alpha determined that it communicates applicable data between its primary and backup Control Centers across redundant communication links. Entity Alpha also determined that it communicates applicable data to and from Entity Beta's Control Center across one of two links that originate from either Entity Alpha's primary or backup Control Center using ICCP.

With an identified scope of communication links the applicable data traverses, Entity Alpha now considers the five required elements of its communication links between Control Centers for its plan.

Identification of Security Protection

Entity Alpha must ensure that protection is applied where identified in its CIP-012 plan. The protection must also meet the security objectives of mitigating the risks posed by unauthorized disclosure and unauthorized modification of applicable data while in transit between Control Centers.

In a simple case where the security protection is applied at a point within the Control Center, such as within the Physical Security Perimeter of the Control Center, Entity Alpha may use a single security protection method to meet the security objective. For this case, shown in Figure 2, Entity Alpha implements a Virtual Private Network (VPN) connection across a communication circuit for each of its three in-scope communication links along with data source failover capability. To meet the security objective, Entity Alpha documents that its VPN uses Internet Protocol security (IPsec) with encryption and when failing over to the backup control center, the data traverses an alternate path.

For more complex scenarios, Entity Alpha may need to use a combination of security controls. For instance, in Figure 3, Entity Alpha uses a combination of physical security controls (physical access control) and logical security controls (encrypted communications consistent with the first scenario above) to meet the security objective. In Figure 3, the encryption endpoint is located on transport equipment (WAN router) located outside the Control Center PSP. Entity Alpha then physically protects the cabling and connections over which the data travels until it is within the Control Center PSP (CIP-006 R1.10). The SDT notes that the same technical architecture could exist where the responsibilities of the registered entities are different. Therefore, as shown in Figure 2 & 3, in the scenario where entity Alpha owns and operationally manages the communication link and endpoint equipment, Entity Beta is responsible for ensuring the communication endpoint of the communication link is protected. Entity Beta ensures Entity Alpha's communication link endpoint equipment is protected by including the communication endpoint within a Control Center PSP or where other physical protection is applied. The physical controls for the PSP are described in CIP-006 documentation and do not need to be repeated for this requirement. This satisfies Entity Beta's obligation for Part 1.1.

While these scenarios are all specific to communication links, it is possible that Entity Alpha and Entity Beta achieve the security objective by applying protections to the data rather than directly to the communication links. In this scenario, the application enabling the data exchange between Control Centers may be capable of applying security controls directly to the data. These security controls mitigate the risks posed by unauthorized disclosure and unauthorized modification of applicable data rather than relying on lower-level network services to provide this security. For instance, Entity Alpha and Entity Beta may apply security protection at the application layer by using SSL/TLS or other application layer encryption methods to exchange applicable data.

Mitigating the Risk Posed by Loss of Ability to Communicate Data

In Figure 2, Entity Alpha must also ensure that this protection accounts for a need to ensure appropriate availability of the data. Entity Alpha has two circuits going into the communications carrier cloud through which it communicates with its back up control center and Entity Beta. Entity Beta has two communication links going into the communications carrier cloud through which it communicates with Entity Alpha's primary and secondary Control Centers. This gives each entity at least two paths to each of the Control Centers with which they need to communicate. This could be demonstrated by a network diagram similar to that shown in Figure 2 or Figure 3 that identifies one or more communication segments between Control Centers and the protections implemented per segment.

Methods Used to Initiate Recovery of Communication Links

Entity Alpha has a comprehensive CIP-009 plan for disaster recovery. Within its recovery plan, Entity Alpha has the information needed to not only restore the BES Cyber Systems covered by CIP-009, but also the key network infrastructure needed for Control Center to Control Center communications. To meet the security objective of measures used for the recovery of communications links used for Control Center to Control Center communication, Entity Alpha has referred to the CIP-009 recovery plan within the CIP-012 plan, referencing the applicable area within the plan that describes restoration of the necessary communications paths.

Identification of Where Security and Availability Protection is Applied by the Responsible Entity

Similar to the identification of security protection above, the identification of where security protection is applied can also be demonstrated by a network diagram similar to those found in Figures 2 and 3.

- Figure 2 shows the identification where CIP-012 security protection is applied for the Entity Alpha reference model when a single encrypted tunnel is used to implement the required protection. Entity Alpha has identified that security protection is applied at each of its Control Centers on the external Ethernet interface on the WAN router. Entity Beta, in this example, has redundant communications through communications carriers to both Entity Alpha's primary and secondary Control Centers. While the diagram depicts where Entity Beta has applied security protection for illustrative purposes, Entity Alpha is not responsible for identifying where Entity Beta has applied security protection.
- In order to understand the application of security protection in context of who controls the communication link, it may be helpful to identify both where CIP-012 security protection is applied and the location of the telecommunications carrier (telco) demarcation point. Figure 3 provides such an example where the telco demarcation point may not be within the Control Center PSP and based the facts and circumstances surrounding this scenario, Entity Alpha has implemented a combination of security controls to comply with CIP-012. In this scenario, Entity Alpha identifies that it has applied physical security protection for its WAN router and that it has applied logical security protection (encryption) at the WAN router. Entity Alpha has also identified the telco demarcation point at a point in the telecommunications cabling connecting to Entity Alpha's WAN router, perhaps at a punch down block, for example. In Figure 3, the telco demarcation point is inside the same room as the WAN router. The telco demarcation points are referenced in the drawing for clarity.
- Figures 2 & 3 provide an example of where the operational obligations of an entire communications link, including both endpoints, belong to Entity Alpha. In this case, Entity Beta may be responsible for ensuring the communications endpoint of the communications link is within their Control Center. Entity Beta ensures Entity Alpha's communication link endpoint equipment is within a Control Center by including the communication endpoint within a PSP or where other physical protection is applied. The documentation provided for Part 1.1 by Entity Beta fulfills this obligation.
- The data-centric scenario described above is less intuitive for identifying where security protection is applied by Entity Alpha. If security protection is applied at the application layer, Entity Alpha could reasonably identify the application or service applying the security as the location of where security protection is applied.

- Mitigating the risk of the loss of data transmission capability can be shown with network diagrams showing multiple circuits, redundant systems, application details or other documentation describing the protections used.

Identification of Responsibilities when the Control Centers are Owned or Operated by Different Responsible Entities

Entity Alpha and Entity Beta may determine they each are responsible for one end of the VPN configuration on their respective WAN routers. Entity Alpha and Entity Beta have agreed to a 30-character pre-shared key for IPsec authentication.

Rather than use a pre-shared key, Entity Alpha and Entity Beta may decide to use digital certificates for the IPsec authentication using a trusted certificate authority. In that scenario, Entity Alpha and Entity Beta would agree on who is the party responsible for managing the certificate authority.

In the example where the communication link and endpoint equipment are owned by Entity Alpha, both entities should include ownership responsibilities in their plans satisfying requirement 1.5. Examples include, but are not limited to, a letter indicating ownership or responsibility, a copy of a contract indicating ownership or responsibilities, an excerpt from an operational agreement or manual indicating ownership or responsibility. This documentation should also include information regarding roles or responsibilities for maintaining the availability of the circuits, systems, or flow of data.

Reference Model

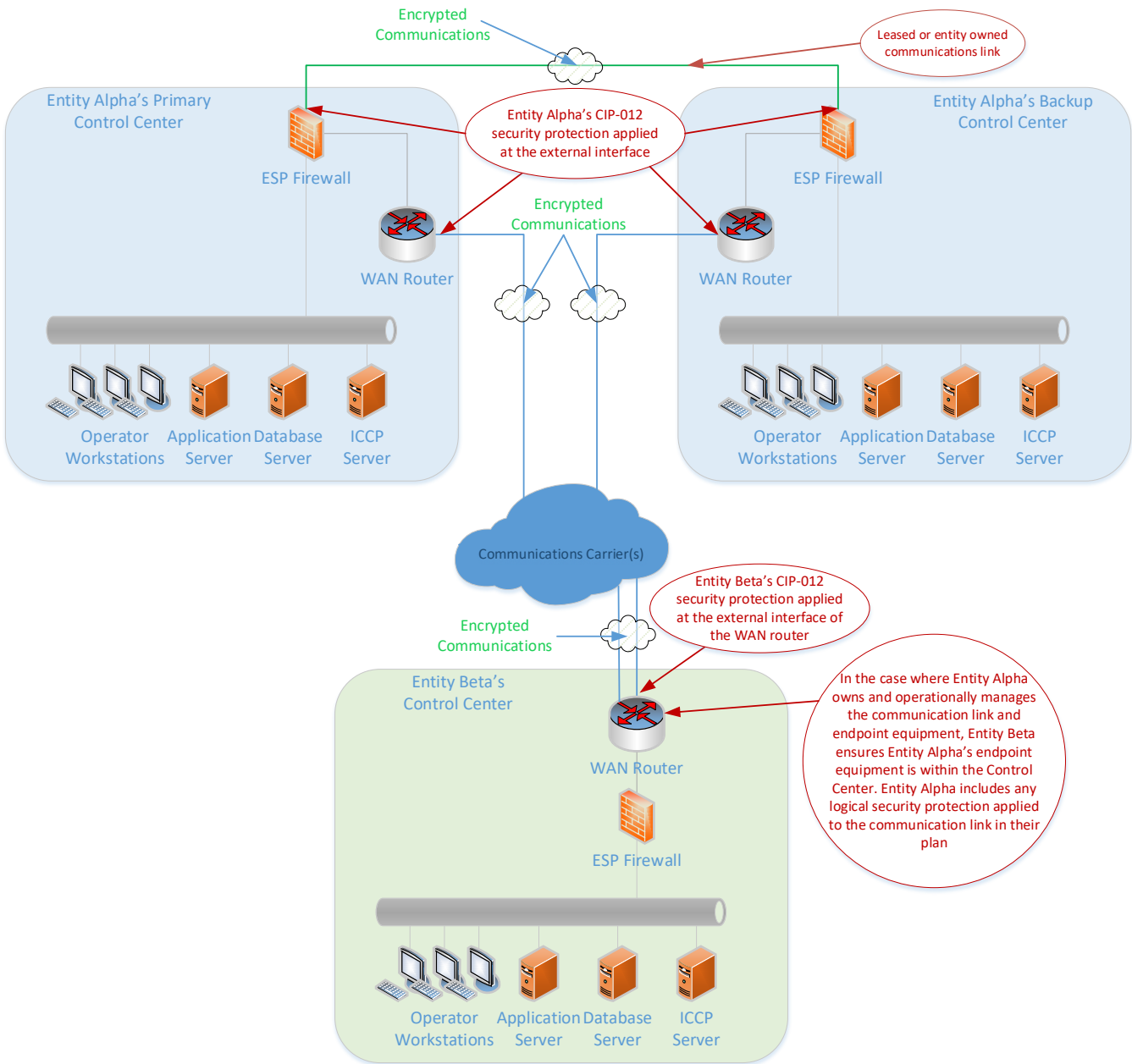


Figure 2: Network diagram and identification of where logical protection is applied

Reference Model

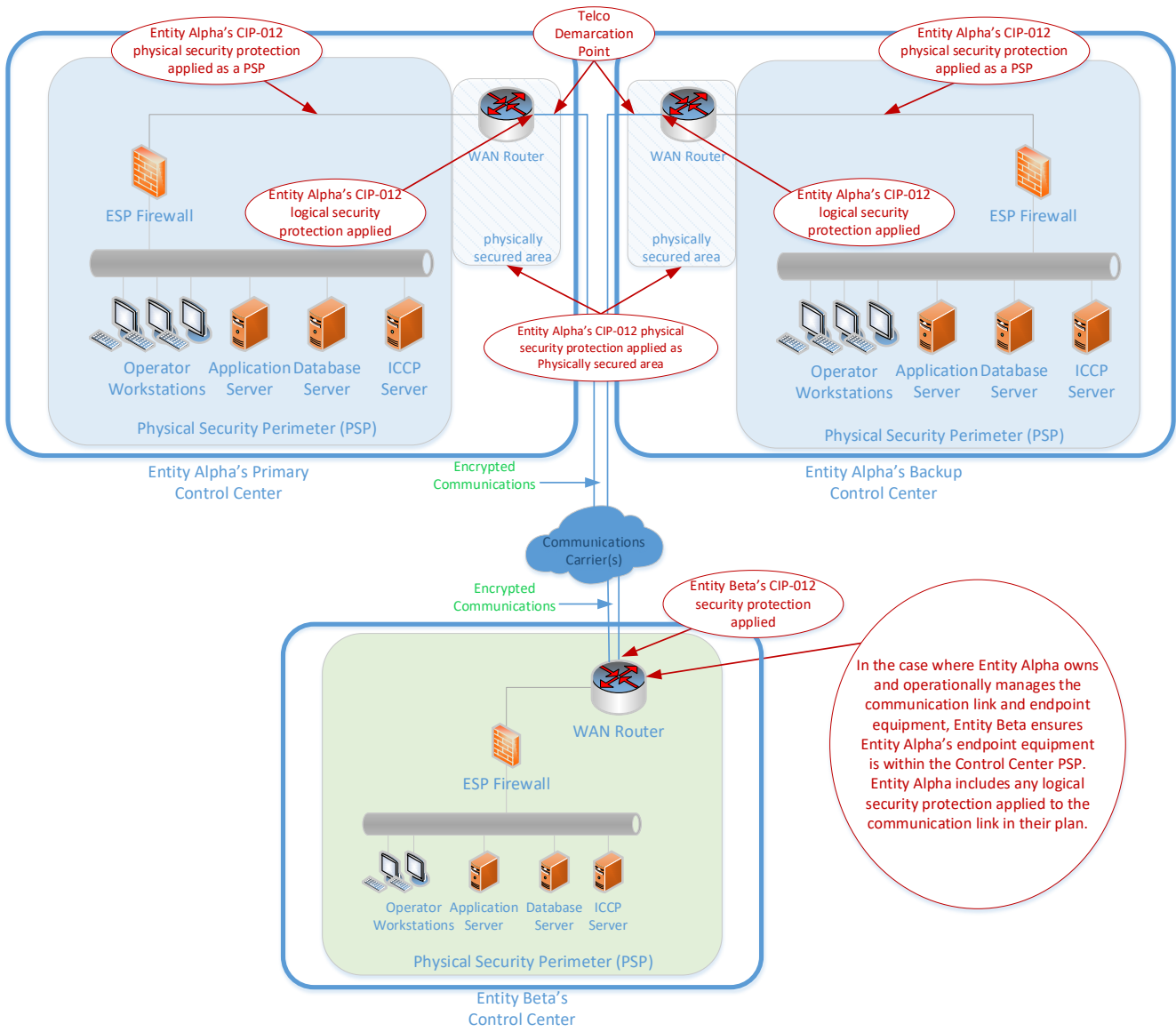


Figure 3: Network diagram using a combination of controls for CIP-012

References

Mitre Common Weakness Enumeration (CWE™) list of software weakness types

<https://cwe.mitre.org/data/definitions/327.html>

Cryptographic Standards and Guidelines

<https://csrc.nist.gov/Projects/Cryptographic-Standards-and-Guidelines>

NIST Special Publication 800-175B

Guideline for Using Cryptographic Standards in the Federal Government: Cryptographic Mechanisms

<http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-175B.pdf>

Guide to Cryptography

https://www.owasp.org/index.php/Guide_to_Cryptography#Symmetric_Cryptography

Standards Announcement

Project 2020-04 Modifications to CIP-012

Final Ballots Open through December 7, 2023

[Now Available](#)

Final ballots for **Project 2020-04 Modifications to CIP-012** are open through **8 p.m. Eastern, Thursday, December 7, 2023** for the following standard and implementation plan:

- CIP-012-2 – Cyber Security – Communications between Control Centers
- Implementation Plan

Balloting

In the final ballot, votes are counted by exception. Votes from the previous ballot are automatically carried over in the final ballot. Only members of the applicable ballot pools can cast a vote. Ballot pool members who previously voted have the option to change their vote in the final ballot. Ballot pool members who did not cast a vote during the previous ballot can vote in the final ballot.

Members of the ballot pool(s) associated with this project can log into the Standards Balloting and Commenting System (SBS) and submit votes [here](#).

- *Contact NERC IT support directly at <https://support.nerc.net/> (Monday – Friday, 8 a.m. - 5 p.m. Eastern) for problems regarding accessing the SBS due to a forgotten password, incorrect credential error messages, or system lock-out.*
- *Passwords expire every **6 months** and must be reset.*
- *The SBS **is not** supported for use on mobile devices.*
- *Please be mindful of ballot and comment period closing dates. We ask to **allow at least 48 hours** for NERC support staff to assist with inquiries. Therefore, it is recommended that users try logging into their SBS accounts **prior to the last day** of a comment/ballot period.*

Next Steps

The voting results will be posted and announced after the ballots close. If approved, the standard will be submitted to the Board of Trustees for adoption and then filed with the appropriate regulatory authorities.

For information on the Standards Development Process, refer to the [Standard Processes Manual](#).

For more information or assistance, contact Senior Standards Developer, [Ben Wu](#) (via email) or at 470-542-6882

North American Electric Reliability Corporation
3353 Peachtree Rd, NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

BALLOT RESULTS

Ballot Name: 2020-04 Modifications to CIP-012 CIP-012-2 FN 5 ST**Voting Start Date:** 11/28/2023 8:53:03 AM**Voting End Date:** 12/7/2023 8:00:00 PM**Ballot Type:** ST**Ballot Activity:** FN**Ballot Series:** 5**Total # Votes:** 257**Total Ballot Pool:** 290**Quorum:** 88.62**Quorum Established Date:** 11/28/2023 11:07:32 AM**Weighted Segment Value:** 88.36

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 82 | 1 | 54 | 0.818 | 12 | 0.182 | 0 | 10 | 6 |
| Segment: 2 | 7 | 0.6 | 5 | 0.5 | 1 | 0.1 | 0 | 0 | 1 |
| Segment: 3 | 67 | 1 | 49 | 0.925 | 4 | 0.075 | 0 | 4 | 10 |
| Segment: 4 | 16 | 1 | 11 | 0.917 | 1 | 0.083 | 0 | 1 | 3 |
| Segment: 5 | 66 | 1 | 45 | 0.833 | 9 | 0.167 | 0 | 6 | 6 |
| Segment: 6 | 44 | 1 | 31 | 0.886 | 4 | 0.114 | 0 | 3 | 6 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 1 | 0 |
| Totals: | 290 | 6.2 | 201 | 5.478 | 31 | 0.722 | 0 | 25 | 33 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|--------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|-------------------|-------------|-----------|
| 1 | Allete - Minnesota Power, Inc. | Hillary Creurer | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | Affirmative | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Negative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Affirmative | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Colorado Springs Utilities | Corey Walker | | None | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | N/A |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | Abstain | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Affirmative | N/A |
| 1 | Dairyland Power Cooperative | Karrie Schuldt | | Abstain | N/A |
| 1 | Dominion - Dominion Virginia Power | Elizabeth Weber | | Affirmative | N/A |
| 1 | Duke Energy | Katherine Street | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Negative | N/A |
| 1 | Eversource Energy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Theresa Ciano | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | LaKenya Vannorman | Affirmative | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Alain Mukama | | Affirmative | N/A |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | Negative | N/A |
| 1 | Idaho Power Company | Sean Steffensen | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|-----------|
| 1 | Imperial Irrigation District | Jesus Sammy Alcaraz | Denise Sanchez | Abstain | N/A |
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Abstain | N/A |
| 1 | Lower Colorado River Authority | Matt Lewis | James Baldwin | Affirmative | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Affirmative | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | N/A |
| 1 | NB Power Corporation | Jeffrey Streifling | | Abstain | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | N/A |
| 1 | New York Power Authority | Daniel Valle | | Negative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Negative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Abstain | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Abstain | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Affirmative | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | None | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|-------------------|------------------|-------------|-----------|
| 1 | Southwestern Power Administration | Angela Wheat | | Abstain | N/A |
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | David Plumb | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | Negative | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | None | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Negative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | None | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Matthew Harward | Shannon Mickens | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Lovita Griffin | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | Negative | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ron Sporseen | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | City Utilities of Springfield, Missouri | Jessica Morrissey | | Affirmative | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | None | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | N/A |
| 3 | Dominion - Dominion Virginia Power | Bill Garvey | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Marvin Johnson | | Affirmative | N/A |
| 3 | Duke Energy - Florida Power Corporation | Marcelo Pesantez | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------|-------------------|-------------|-----------|
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |
| 3 | Evergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | George Kirschner | Denise Sanchez | Abstain | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Affirmative | N/A |
| 3 | Lincoln Electric System | Sam Christensen | | None | N/A |
| 3 | Los Angeles Department of Water and Power | Fausto Serratos | | None | N/A |
| 3 | M and A Electric Power Cooperative | Gary Dollins | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Benjamin Widder | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | None | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Affirmative | N/A |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Abstain | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Christopher Murphy | | Abstain | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | N/A |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Affirmative | N/A |
| 3 | Santee Cooper | Vicky Budreau | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |
| 3 | Sho-Me Power Electric Cooperative | Jarrold Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Nicholas Friebe | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Affirmative | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | None | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | N/A |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beifuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | None | N/A |
| 5 | APS - Arizona Public Service Co. | Andrew Smith | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | Negative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | N/A |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|-----------|
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | N/A |
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Abstain | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Anna Salmon | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhuseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Matthew Augustin | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | Negative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Abstain | N/A |
| 5 | Lakeland Electric | Carmen Rodriguez | | Affirmative | N/A |
| 5 | Lincoln Electric System | Brittany Millard | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Abstain | N/A |
| 5 | Manitoba Hydro | Kristy-Lee Young | | Affirmative | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Robin Berry | | Negative | N/A |
| 5 | NB Power Corporation - New Brunswick Power Transmission Corporation | Fon Hiew | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | N/A |
| 5 | NextEra Energy | Richard Vendetti | | Negative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Affirmative | N/A |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Abstain | N/A |
| 5 | Omaha Public Power District | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Abstain | N/A |
| 5 | Platte River Power Authority | Jon Osell | | Affirmative | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | None | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | Abstain | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Rebecca Zahler | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | N/A |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Affirmative | N/A |
| 5 | Santee Cooper | Don Cribb | | Affirmative | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Leslie Burke | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Mathew Miller | | None | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | None | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | N/A |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Tiffany Lake | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | Affirmative | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Abstain | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Abstain | N/A |
| 6 | Manitoba Hydro | Kelly Bertholet | | Affirmative | N/A |
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Affirmative | N/A |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | Powerex Corporation | Raj Hundal | | Negative | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Laura Wu | | Abstain | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Anne Kronshage | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | N/A |
| 6 | Santee Cooper | Marty Watson | | Affirmative | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Steve Szablya | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | None | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Affirmative | N/A |

Showing 1 to 290 of 290 entries

Previous 1 Next

BALLOT RESULTS

Ballot Name: 2020-04 Modifications to CIP-012 Implementation Plan FN 5 OT**Voting Start Date:** 11/28/2023 8:53:17 AM**Voting End Date:** 12/7/2023 8:00:00 PM**Ballot Type:** OT**Ballot Activity:** FN**Ballot Series:** 5**Total # Votes:** 251**Total Ballot Pool:** 285**Quorum:** 88.07**Quorum Established Date:** 11/28/2023 11:07:50 AM**Weighted Segment Value:** 90.19

| Segment | Ballot Pool | Segment Weight | Affirmative Votes | Affirmative Fraction | Negative Votes w/ Comment | Negative Fraction w/ Comment | Negative Votes w/o Comment | Abstain | No Vote |
|-------------|-------------|----------------|-------------------|----------------------|---------------------------|------------------------------|----------------------------|---------|---------|
| Segment: 1 | 80 | 1 | 52 | 0.813 | 12 | 0.188 | 0 | 9 | 7 |
| Segment: 2 | 7 | 0.6 | 6 | 0.6 | 0 | 0 | 0 | 0 | 1 |
| Segment: 3 | 66 | 1 | 49 | 0.925 | 4 | 0.075 | 0 | 3 | 10 |
| Segment: 4 | 16 | 1 | 11 | 0.917 | 1 | 0.083 | 0 | 1 | 3 |
| Segment: 5 | 65 | 1 | 45 | 0.833 | 9 | 0.167 | 0 | 5 | 6 |
| Segment: 6 | 43 | 1 | 32 | 0.914 | 3 | 0.086 | 0 | 2 | 6 |
| Segment: 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Segment: 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Segment: 10 | 7 | 0.5 | 5 | 0.5 | 0 | 0 | 0 | 2 | 0 |
| Totals: | 285 | 6.1 | 200 | 5.501 | 29 | 0.599 | 0 | 22 | 34 |

BALLOT POOL MEMBERS

Show entriesSearch:

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|-------------------------------|----------------|------------------|--------|-----------|
| 1 | AEP - AEP Service Corporation | Dennis Sauriol | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|------------------------|-------------------|-------------|-----------|
| 1 | Allete - Minnesota Power, Inc. | Hillary Creurer | | Affirmative | N/A |
| 1 | Ameren - Ameren Services | Tamara Evey | | Affirmative | N/A |
| 1 | APS - Arizona Public Service Co. | Daniela Atanasovski | | Affirmative | N/A |
| 1 | Arizona Electric Power Cooperative, Inc. | Jennifer Bray | | Affirmative | N/A |
| 1 | Associated Electric Cooperative, Inc. | Mark Riley | | Affirmative | N/A |
| 1 | Austin Energy | Thomas Standifur | | Affirmative | N/A |
| 1 | Avista - Avista Corporation | Mike Magruder | | Affirmative | N/A |
| 1 | Balancing Authority of Northern California | Kevin Smith | Tim Kelley | Negative | N/A |
| 1 | Basin Electric Power Cooperative | David Rudolph | | Affirmative | N/A |
| 1 | BC Hydro and Power Authority | Adrian Andreoiu | | Negative | N/A |
| 1 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Terry Harbour | | Affirmative | N/A |
| 1 | Bonneville Power Administration | Kamala Rogers-Holliday | | Affirmative | N/A |
| 1 | CenterPoint Energy Houston Electric, LLC | Daniela Hammons | | Affirmative | N/A |
| 1 | Central Electric Power Cooperative (Missouri) | Michael Bax | | None | N/A |
| 1 | Central Hudson Gas & Electric Corp. | Michael Ridolfino | | Negative | N/A |
| 1 | City Utilities of Springfield, Missouri | Michael Bowman | | Affirmative | N/A |
| 1 | Cleco Corporation | John Lindsey | Clay Walker | Affirmative | N/A |
| 1 | Con Ed - Consolidated Edison Co. of New York | Dermot Smyth | | Negative | N/A |
| 1 | Corn Belt Power Cooperative | Larry brusseau | | Abstain | N/A |
| 1 | CPS Energy | Gladys DeLaO | | Affirmative | N/A |
| 1 | Dairyland Power Cooperative | Karrie Schuldt | | Abstain | N/A |
| 1 | Dominion - Dominion Virginia Power | Elizabeth Weber | | Affirmative | N/A |
| 1 | Duke Energy | Katherine Street | | Affirmative | N/A |
| 1 | East Kentucky Power Cooperative | Amber Skillern | | Affirmative | N/A |
| 1 | Entergy | Brian Lindsey | | Negative | N/A |
| 1 | Evergy | Kevin Frick | Alan Kloster | Affirmative | N/A |
| 1 | Eversource Energy | Joshua London | | Affirmative | N/A |
| 1 | Exelon | Daniel Gacek | | Affirmative | N/A |
| 1 | FirstEnergy - FirstEnergy Corporation | Theresa Ciancio | | Affirmative | N/A |
| 1 | Gainesville Regional Utilities | David Owens | LaKenya Vannorman | None | N/A |
| 1 | Georgia Transmission Corporation | Greg Davis | | Affirmative | N/A |
| 1 | Glencoe Light and Power Commission | Terry Volkmann | | Negative | N/A |
| 1 | Great River Energy | Gordon Pietsch | | Affirmative | N/A |
| 1 | Hydro One Networks, Inc. | Alain Mukama | | Affirmative | N/A |
| 1 | Hydro-Quebec (HQ) | Nicolas Turcotte | | Negative | N/A |
| 1 | IDACORP - Idaho Power Company | Sean Steffensen | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|--------------------------|-------------------|-------------|-----------|
| 1 | International Transmission Company Holdings Corporation | Michael Moltane | Gail Elliott | Affirmative | N/A |
| 1 | Lakeland Electric | Larry Watt | | Affirmative | N/A |
| 1 | Lincoln Electric System | Josh Johnson | | Affirmative | N/A |
| 1 | Los Angeles Department of Water and Power | faranak sarbaz | | Abstain | N/A |
| 1 | Lower Colorado River Authority | Matt Lewis | James Baldwin | Affirmative | N/A |
| 1 | M and A Electric Power Cooperative | William Price | | Affirmative | N/A |
| 1 | Manitoba Hydro | Nazra Gladu | | Affirmative | N/A |
| 1 | Muscatine Power and Water | Andrew Kurriger | | Affirmative | N/A |
| 1 | N.W. Electric Power Cooperative, Inc. | Mark Ramsey | | Affirmative | N/A |
| 1 | National Grid USA | Michael Jones | | Negative | N/A |
| 1 | NB Power Corporation | Jeffrey Streifling | | Abstain | N/A |
| 1 | Network and Security Technologies | Nick Lauriat | Roger Fradenburgh | Negative | N/A |
| 1 | New York Power Authority | Daniel Valle | | Negative | N/A |
| 1 | NextEra Energy - Florida Power and Light Co. | Silvia Mitchell | | Negative | N/A |
| 1 | NiSource - Northern Indiana Public Service Co. | Steve Toosevich | | Affirmative | N/A |
| 1 | Northeast Missouri Electric Power Cooperative | Kevin White | Todd Bennett | None | N/A |
| 1 | OGE Energy - Oklahoma Gas and Electric Co. | Terri Pyle | | Affirmative | N/A |
| 1 | Ohio Valley Electric Corporation | Nick Privette | | Abstain | N/A |
| 1 | Omaha Public Power District | Doug Peterchuck | | Affirmative | N/A |
| 1 | Oncor Electric Delivery | Byron Booker | | Affirmative | N/A |
| 1 | Orlando Utilities Commission | Aaron Staley | | Abstain | N/A |
| 1 | Pacific Gas and Electric Company | Marco Rios | Michael Johnson | Abstain | N/A |
| 1 | Platte River Power Authority | Marissa Archie | | Affirmative | N/A |
| 1 | PNM Resources - Public Service Company of New Mexico | Lynn Goldstein | | Affirmative | N/A |
| 1 | Portland General Electric Co. | Brooke Jockin | | None | N/A |
| 1 | PPL Electric Utilities Corporation | Michelle McCartney Longo | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Chelan County | Diane E Landry | | Affirmative | N/A |
| 1 | Public Utility District No. 1 of Snohomish County | Alyssia Rhoads | | Affirmative | N/A |
| 1 | Salt River Project | Sarah Blankenship | Israel Perez | Affirmative | N/A |
| 1 | Santee Cooper | Chris Wagner | | Affirmative | N/A |
| 1 | SaskPower | Wayne Guttormson | | Affirmative | N/A |
| 1 | Sempra - San Diego Gas and Electric | Mohamed Derbas | | Affirmative | N/A |
| 1 | Sho-Me Power Electric Cooperative | Olivia Olson | | Affirmative | N/A |
| 1 | Southern Company - Southern Company Services, Inc. | Matt Carden | | Affirmative | N/A |
| 1 | Southwestern Power Administration | Angela Wheat | | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 1 | Tacoma Public Utilities (Tacoma, WA) | John Merrell | Jennie Wike | Affirmative | N/A |
| 1 | Tallahassee Electric (City of Tallahassee, FL) | Scott Langston | | Abstain | N/A |
| 1 | Tennessee Valley Authority | David Plumb | | Affirmative | N/A |
| 1 | Tri-State G and T Association, Inc. | Donna Wood | | Affirmative | N/A |
| 1 | U.S. Bureau of Reclamation | Richard Jackson | | Affirmative | N/A |
| 1 | Western Area Power Administration | Ben Hammer | | Negative | N/A |
| 1 | Wind Energy Transmission Texas, LLC | Douglas Whitworth | | None | N/A |
| 1 | Xcel Energy, Inc. | Dean Schiro | Amy Casuscelli | Affirmative | N/A |
| 2 | Electric Reliability Council of Texas, Inc. | Kennedy Meier | | Affirmative | N/A |
| 2 | Independent Electricity System Operator | Helen Lainis | | Affirmative | N/A |
| 2 | ISO New England, Inc. | John Pearson | John Galloway | Affirmative | N/A |
| 2 | Midcontinent ISO, Inc. | Bobbi Welch | | Affirmative | N/A |
| 2 | New York Independent System Operator | Gregory Campoli | | None | N/A |
| 2 | PJM Interconnection, L.L.C. | Thomas Foster | Elizabeth Davis | Affirmative | N/A |
| 2 | Southwest Power Pool, Inc. (RTO) | Matthew Harward | Shannon Mickens | Affirmative | N/A |
| 3 | AEP | Kent Feliks | | Affirmative | N/A |
| 3 | Ameren - Ameren Services | David Jendras Sr | | Affirmative | N/A |
| 3 | APS - Arizona Public Service Co. | Jessica Lopez | | Affirmative | N/A |
| 3 | Associated Electric Cooperative, Inc. | Todd Bennett | | Affirmative | N/A |
| 3 | Austin Energy | Lovita Griffin | | Affirmative | N/A |
| 3 | Avista - Avista Corporation | Robert Follini | | Affirmative | N/A |
| 3 | Basin Electric Power Cooperative | Derik Youngs | | None | N/A |
| 3 | BC Hydro and Power Authority | Ming Jiang | | Negative | N/A |
| 3 | Berkshire Hathaway Energy - MidAmerican Energy Co. | Joseph Amato | | Affirmative | N/A |
| 3 | Black Hills Corporation | Josh Combs | | Affirmative | N/A |
| 3 | Bonneville Power Administration | Ron Sporseen | | Affirmative | N/A |
| 3 | Central Electric Power Cooperative (Missouri) | Adam Weber | | Affirmative | N/A |
| 3 | Cleco Corporation | Maurice Paulk | Clay Walker | Affirmative | N/A |
| 3 | CMS Energy - Consumers Energy Company | Karl Blaszkowski | | None | N/A |
| 3 | Colorado Springs Utilities | Hillary Dobson | | Affirmative | N/A |
| 3 | Con Ed - Consolidated Edison Co. of New York | Peter Yost | | Negative | N/A |
| 3 | Dominion - Dominion Virginia Power | Bill Garvey | | Affirmative | N/A |
| 3 | DTE Energy - Detroit Edison Company | Marvin Johnson | | Affirmative | N/A |
| 3 | Duke Energy - Florida Power Corporation | Marcelo Pesantez | | Affirmative | N/A |
| 3 | East Kentucky Power Cooperative | Chris Adams | | Affirmative | N/A |
| 3 | Edison International - Southern California Edison Company | Romel Aquino | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|--|--------------------|-------------------|-------------|-----------|
| 3 | Eergy | Marcus Moor | Alan Kloster | Affirmative | N/A |
| 3 | Eversource Energy | Vicki O'Leary | | Affirmative | N/A |
| 3 | Exelon | Kinte Whitehead | | Affirmative | N/A |
| 3 | FirstEnergy - FirstEnergy Corporation | Aaron Ghodooshim | | Affirmative | N/A |
| 3 | Great River Energy | Michael Brytowski | | Affirmative | N/A |
| 3 | Imperial Irrigation District | George Kirschner | Denise Sanchez | Abstain | N/A |
| 3 | KAMO Electric Cooperative | Tony Gott | | Affirmative | N/A |
| 3 | Lakeland Electric | Steven Marshall | | Affirmative | N/A |
| 3 | Lincoln Electric System | Sam Christensen | | None | N/A |
| 3 | Los Angeles Department of Water and Power | Fausto Serratos | | None | N/A |
| 3 | M and A Electric Power Cooperative | Gary Dollins | | Affirmative | N/A |
| 3 | Manitoba Hydro | Mike Smith | | Affirmative | N/A |
| 3 | MGE Energy - Madison Gas and Electric Co. | Benjamin Widder | | Affirmative | N/A |
| 3 | Muscatine Power and Water | Seth Shoemaker | | Affirmative | N/A |
| 3 | National Grid USA | Brian Shanahan | | None | N/A |
| 3 | Nebraska Public Power District | Tony Eddleman | | Affirmative | N/A |
| 3 | New York Power Authority | David Rivera | | Negative | N/A |
| 3 | NiSource - Northern Indiana Public Service Co. | Steven Taddeucci | | Affirmative | N/A |
| 3 | Northern California Power Agency | Michael Whitney | Chris Carnesi | Affirmative | N/A |
| 3 | NW Electric Power Cooperative, Inc. | Heath Henry | | Affirmative | N/A |
| 3 | Ocala Utility Services | Neville Bowen | LaKenya Vannorman | None | N/A |
| 3 | OGE Energy - Oklahoma Gas and Electric Co. | Donald Hargrove | | Affirmative | N/A |
| 3 | Omaha Public Power District | David Heins | | Affirmative | N/A |
| 3 | Orlando Utilities Commission | Ballard Mutters | | None | N/A |
| 3 | Owensboro Municipal Utilities | William Berry | | Abstain | N/A |
| 3 | Pacific Gas and Electric Company | Sandra Ellis | Michael Johnson | Abstain | N/A |
| 3 | Platte River Power Authority | Richard Kiess | | Affirmative | N/A |
| 3 | Portland General Electric Co. | Mayra Franco | | None | N/A |
| 3 | PPL - Louisville Gas and Electric Co. | James Frank | | Affirmative | N/A |
| 3 | PSEG - Public Service Electric and Gas Co. | Christopher Murphy | | Affirmative | N/A |
| 3 | Public Utility District No. 1 of Chelan County | Joyce Gundry | | Affirmative | N/A |
| 3 | Puget Sound Energy, Inc. | Justin Rathburn | | None | N/A |
| 3 | Sacramento Municipal Utility District | Nicole Looney | Tim Kelley | Negative | N/A |
| 3 | Salt River Project | Mathew Weber | Israel Perez | Affirmative | N/A |
| 3 | Santee Cooper | Vicky Budreau | | Affirmative | N/A |
| 3 | Seminole Electric Cooperative, Inc. | Marc Sedor | | None | N/A |
| 3 | Sempra - San Diego Gas and Electric | Bryan Bennett | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------------|------------------|-------------|-----------|
| 3 | Sho-Me Power Electric Cooperative | Jarrod Murdaugh | | Affirmative | N/A |
| 3 | Snohomish County PUD No. 1 | Holly Chaney | | Affirmative | N/A |
| 3 | Southern Company - Alabama Power Company | Joel Dembowski | | Affirmative | N/A |
| 3 | Tacoma Public Utilities (Tacoma, WA) | John Nierenberg | Jennie Wike | Affirmative | N/A |
| 3 | Tri-State G and T Association, Inc. | Ryan Walter | | Affirmative | N/A |
| 3 | Wabash Valley Power Association | Scott Berry | | Affirmative | N/A |
| 3 | WEC Energy Group, Inc. | Christine Kane | | Affirmative | N/A |
| 3 | Xcel Energy, Inc. | Nicholas Friebel | | Affirmative | N/A |
| 4 | Alliant Energy Corporation Services, Inc. | Larry Heckert | | Affirmative | N/A |
| 4 | Arkansas Electric Cooperative Corporation | Jenni Sudduth | | None | N/A |
| 4 | Austin Energy | Tony Hua | | Affirmative | N/A |
| 4 | City Utilities of Springfield, Missouri | Jerry Bradshaw | | Affirmative | N/A |
| 4 | CMS Energy - Consumers Energy Company | Aric Root | | None | N/A |
| 4 | FirstEnergy - FirstEnergy Corporation | Mark Garza | | Affirmative | N/A |
| 4 | LaGen | Wayne Messina | Clay Walker | Affirmative | N/A |
| 4 | MGE Energy - Madison Gas and Electric Co. | Adam Lee | | Affirmative | N/A |
| 4 | North Carolina Electric Membership Corporation | Richard McCall | Scott Brame | Affirmative | N/A |
| 4 | Northern California Power Agency | Marty Hostler | Chris Carnesi | Affirmative | N/A |
| 4 | Public Utility District No. 1 of Snohomish County | John D. Martinsen | | Affirmative | N/A |
| 4 | Sacramento Municipal Utility District | Foung Mua | Tim Kelley | Negative | N/A |
| 4 | Seattle City Light | Hao Li | | None | N/A |
| 4 | Tacoma Public Utilities (Tacoma, WA) | Hien Ho | Jennie Wike | Affirmative | N/A |
| 4 | Utility Services, Inc. | Tracy MacNicoll | | Abstain | N/A |
| 4 | WEC Energy Group, Inc. | Matthew Beilfuss | | Affirmative | N/A |
| 5 | Acciona Energy North America | Truong Le | | None | N/A |
| 5 | AEP | Thomas Foltz | | Affirmative | N/A |
| 5 | Ameren - Ameren Missouri | Sam Dwyer | | None | N/A |
| 5 | APS - Arizona Public Service Co. | Andrew Smith | | Affirmative | N/A |
| 5 | Associated Electric Cooperative, Inc. | Chuck Booth | | Affirmative | N/A |
| 5 | Austin Energy | Michael Dillard | | Affirmative | N/A |
| 5 | Avista - Avista Corporation | Glen Farmer | | Affirmative | N/A |
| 5 | Basin Electric Power Cooperative | Amanda Wangler | | Negative | N/A |
| 5 | BC Hydro and Power Authority | Helen Hamilton Harding | | Negative | N/A |
| 5 | Berkshire Hathaway - NV Energy | Dwanique Spiller | | Affirmative | N/A |
| 5 | Black Hills Corporation | Sheila Suurmeier | | Affirmative | N/A |
| 5 | Bonneville Power Administration | Christopher Siewert | | Affirmative | N/A |
| 5 | Choctaw Generation Limited Partnership, LLLP | Rob Watson | | None | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|---------------------|------------------|-------------|-----------|
| 5 | Cleco Corporation | Stephanie Huffman | Clay Walker | Affirmative | N/A |
| 5 | CMS Energy - Consumers Energy Company | David Greyerbiehl | | Affirmative | N/A |
| 5 | Colorado Springs Utilities | Jeffrey Icke | | Affirmative | N/A |
| 5 | Con Ed - Consolidated Edison Co. of New York | Helen Wang | | Negative | N/A |
| 5 | Constellation | Alison MacKellar | | Affirmative | N/A |
| 5 | Cowlitz County PUD | Deanna Carlson | | Affirmative | N/A |
| 5 | Dairyland Power Cooperative | Tommy Drea | | Abstain | N/A |
| 5 | Dominion - Dominion Resources, Inc. | Anna Salmon | | Affirmative | N/A |
| 5 | DTE Energy - Detroit Edison Company | Mohamad Elhousseini | | None | N/A |
| 5 | Duke Energy | Dale Goodwine | | Affirmative | N/A |
| 5 | East Kentucky Power Cooperative | Davidw Meade | | Affirmative | N/A |
| 5 | Evergy | Jeremy Harris | Alan Kloster | Affirmative | N/A |
| 5 | FirstEnergy - FirstEnergy Corporation | Matthew Augustin | | Affirmative | N/A |
| 5 | Great River Energy | Jacalynn Bentz | | Affirmative | N/A |
| 5 | Hydro-Quebec (HQ) | Junji Yamaguchi | | Negative | N/A |
| 5 | Imperial Irrigation District | Tino Zaragoza | Denise Sanchez | Abstain | N/A |
| 5 | Lakeland Electric | Carmen Rodriguez | | Affirmative | N/A |
| 5 | Lincoln Electric System | Brittany Millard | | Affirmative | N/A |
| 5 | Los Angeles Department of Water and Power | Glenn Barry | | Abstain | N/A |
| 5 | Massachusetts Municipal Wholesale Electric Company | Michael Russell | | None | N/A |
| 5 | Muscatine Power and Water | Neal Nelson | | Affirmative | N/A |
| 5 | National Grid USA | Robin Berry | | Negative | N/A |
| 5 | NB Power Corporation - New Brunswick Power Transmission Corporation | Fon Hiew | | Affirmative | N/A |
| 5 | Nebraska Public Power District | Ronald Bender | | Affirmative | N/A |
| 5 | New York Power Authority | Zahid Qayyum | | Negative | N/A |
| 5 | NextEra Energy | Richard Vendetti | | Negative | N/A |
| 5 | NiSource - Northern Indiana Public Service Co. | Kathryn Tackett | | Affirmative | N/A |
| 5 | North Carolina Electric Membership Corporation | John Cook | Scott Brame | Affirmative | N/A |
| 5 | Northern California Power Agency | Jeremy Lawson | Chris Carnesi | Affirmative | N/A |
| 5 | NRG - NRG Energy, Inc. | Patricia Lynch | | Affirmative | N/A |
| 5 | OGE Energy - Oklahoma Gas and Electric Co. | Patrick Wells | | Affirmative | N/A |
| 5 | Oglethorpe Power Corporation | Donna Johnson | | Abstain | N/A |
| 5 | Omaha Public Power District | Kayleigh Wilkerson | | Affirmative | N/A |
| 5 | Ontario Power Generation Inc. | Constantin Chitescu | | Negative | N/A |
| 5 | Orlando Utilities Commission | Dania Colon | | Affirmative | N/A |
| 5 | Pacific Gas and Electric Company | Frank Lee | Michael Johnson | Abstain | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|------------------|------------------|-------------|-----------|
| 5 | Platte River Power Authority | Jon Osell | | Affirmative | N/A |
| 5 | Portland General Electric Co. | Ryan Olson | | None | N/A |
| 5 | PPL - Louisville Gas and Electric Co. | JULIE HOSTRANDER | | Affirmative | N/A |
| 5 | PSEG Nuclear LLC | Tim Kucey | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Chelan County | Rebecca Zahler | | Affirmative | N/A |
| 5 | Public Utility District No. 1 of Snohomish County | Becky Burden | | Affirmative | N/A |
| 5 | Sacramento Municipal Utility District | Nicole Goi | Tim Kelley | Negative | N/A |
| 5 | Salt River Project | Jennifer Bennett | Israel Perez | Affirmative | N/A |
| 5 | Santee Cooper | Don Cribb | | Affirmative | N/A |
| 5 | Sempra - San Diego Gas and Electric | Jennifer Wright | | Affirmative | N/A |
| 5 | Southern Company - Southern Company Generation | Leslie Burke | | Affirmative | N/A |
| 5 | Tacoma Public Utilities (Tacoma, WA) | Ozan Ferrin | Jennie Wike | Affirmative | N/A |
| 5 | Tri-State G and T Association, Inc. | Sergio Banuelos | | Affirmative | N/A |
| 5 | U.S. Bureau of Reclamation | Wendy Kalidass | | Affirmative | N/A |
| 5 | WEC Energy Group, Inc. | Clarice Zellmer | | Affirmative | N/A |
| 5 | Xcel Energy, Inc. | Gerry Huitt | | Affirmative | N/A |
| 6 | AEP | Mathew Miller | | None | N/A |
| 6 | Ameren - Ameren Services | Robert Quinlivan | | Affirmative | N/A |
| 6 | APS - Arizona Public Service Co. | Marcus Bortman | | Affirmative | N/A |
| 6 | Associated Electric Cooperative, Inc. | Brian Ackermann | | None | N/A |
| 6 | Austin Energy | Imane Mrini | | Affirmative | N/A |
| 6 | Basin Electric Power Cooperative | Eve G Stromer | | None | N/A |
| 6 | Berkshire Hathaway - PacifiCorp | Lindsay Wickizer | | Affirmative | N/A |
| 6 | Bonneville Power Administration | Tanner Brier | | Affirmative | N/A |
| 6 | Cleco Corporation | Robert Hirschak | Clay Walker | Affirmative | N/A |
| 6 | Con Ed - Consolidated Edison Co. of New York | Michael Foley | | Negative | N/A |
| 6 | Constellation | Kimberly Turco | | Affirmative | N/A |
| 6 | Dominion - Dominion Resources, Inc. | Sean Bodkin | | Affirmative | N/A |
| 6 | Duke Energy | John Sturgeon | | Affirmative | N/A |
| 6 | Evergy | Tiffany Lake | Alan Kloster | Affirmative | N/A |
| 6 | FirstEnergy - FirstEnergy Corporation | Stacey Sheehan | | Affirmative | N/A |
| 6 | Great River Energy | Brian Meloy | | Affirmative | N/A |
| 6 | Imperial Irrigation District | Diana Torres | Denise Sanchez | Abstain | N/A |
| 6 | Lakeland Electric | Paul Shipps | | Affirmative | N/A |
| 6 | Lincoln Electric System | Eric Ruskamp | | None | N/A |
| 6 | Los Angeles Department of Water and Power | Anton Vu | | Abstain | N/A |
| 6 | Manitoba Hydro | Kelly Bertholet | | Affirmative | N/A |

| Segment | Organization | Voter | Designated Proxy | Ballot | NERC Memo |
|---------|---|-------------------|------------------|-------------|-----------|
| 6 | Muscatine Power and Water | Nicholas Burns | | Affirmative | N/A |
| 6 | New York Power Authority | Shelly Dineen | | Negative | N/A |
| 6 | NiSource - Northern Indiana Public Service Co. | Joseph OBrien | | Affirmative | N/A |
| 6 | Northern California Power Agency | Dennis Sismaet | Chris Carnesi | Affirmative | N/A |
| 6 | NRG - NRG Energy, Inc. | Martin Sidor | | Affirmative | N/A |
| 6 | OGE Energy - Oklahoma Gas and Electric Co. | Ashley F Stringer | | Affirmative | N/A |
| 6 | Omaha Public Power District | Shonda McCain | | Affirmative | N/A |
| 6 | Platte River Power Authority | Sabrina Martz | | Affirmative | N/A |
| 6 | Portland General Electric Co. | Stefanie Burke | | None | N/A |
| 6 | PPL - Louisville Gas and Electric Co. | Linn Oelker | | Affirmative | N/A |
| 6 | PSEG - PSEG Energy Resources and Trade LLC | Laura Wu | | Affirmative | N/A |
| 6 | Public Utility District No. 1 of Chelan County | Anne Kronshage | | Affirmative | N/A |
| 6 | Public Utility District No. 2 of Grant County, Washington | Mike Stussy | | Affirmative | N/A |
| 6 | Sacramento Municipal Utility District | Charles Norton | Tim Kelley | Negative | N/A |
| 6 | Santee Cooper | Marty Watson | | Affirmative | N/A |
| 6 | Snohomish County PUD No. 1 | John Liang | | Affirmative | N/A |
| 6 | Southern Company - Southern Company Generation | Ron Carlsen | | Affirmative | N/A |
| 6 | Southern Indiana Gas and Electric Co. | Kati Barr | | Affirmative | N/A |
| 6 | Tacoma Public Utilities (Tacoma, WA) | Terry Gifford | Jennie Wike | Affirmative | N/A |
| 6 | TECO - Tampa Electric Co. | Benjamin Smith | | None | N/A |
| 6 | WEC Energy Group, Inc. | David Boeshaar | | Affirmative | N/A |
| 6 | Xcel Energy, Inc. | Steve Szablya | | Affirmative | N/A |
| 8 | Florida Reliability Coordinating Council – Member Services Division | Vince Ordax | | None | N/A |
| 10 | Midwest Reliability Organization | Mark Flanary | | Affirmative | N/A |
| 10 | New York State Reliability Council | Wesley Yeomans | | Affirmative | N/A |
| 10 | Northeast Power Coordinating Council | Gerry Dunbar | | Abstain | N/A |
| 10 | ReliabilityFirst | Lindsey Mannion | | Affirmative | N/A |
| 10 | SERC Reliability Corporation | Dave Krueger | | Affirmative | N/A |
| 10 | Texas Reliability Entity, Inc. | Rachel Coyne | | Affirmative | N/A |
| 10 | Western Electricity Coordinating Council | Steven Rueckert | | Abstain | N/A |

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Exhibit H

Standard Drafting Team Roster

Standard Drafting Team (SDT) Roster

Project 2020-04 Modifications to CIP-012

| | Name | Entity |
|---------------------|-------------------------------------|---|
| Chair | Joseph Gatten | Xcel Energy |
| Vice Chair | Pete Rembusch | Duke Energy |
| Members | Robert Melis | CAISO |
| | Nicholas Morton | AEP |
| | Matthew Hartung | EDP |
| | Gianfranco Cataudella | Orange & Rockland Utilities, Inc. |
| | David Pacheco | SRP Net |
| PMOS Liaison | Sarah Habriga | ATC LLC |
| | Jennifer Richardson | LS Power |
| NERC Staff | Ben Wu – Senior Standards Developer | North American Electric Reliability Corporation |
| | Caelyn Palmer – Legal | North American Electric Reliability Corporation |
| | Lauren Perotti – Legal | North American Electric Reliability Corporation |