

## Standards Authorization Request Form

When completed, email this form to:  
[sarcomm@nerc.com](mailto:sarcomm@nerc.com)

NERC welcomes suggestions to improve the reliability of the bulk power system through improved reliability standards. Please use this form to submit your request to propose a new or a revision to a NERC's Reliability Standard.

### Request to propose a new or a revision to a Reliability Standard

Title of Proposed Standard(s):	Modifications to CIP Standards		
Date Submitted:	March 9, 2016		
SAR Requester Information			
Name:	Stephen Crutchfield		
Organization:	NERC		
Telephone:	609-651-9455	E-mail:	Stephen.Crutchfield@nerc.net
SAR Type (Check as many as applicable)			
<input checked="" type="checkbox"/> New Standard	<input checked="" type="checkbox"/> Withdrawal of existing Standard		
<input checked="" type="checkbox"/> Revision to existing Standard	<input type="checkbox"/> Urgent Action		

### SAR Information

Purpose (Describe what the standard action will achieve in support of Bulk Electric System reliability.):

The purpose of this project is to (1) consider the Version 5 Transition Advisory Group (V5TAG) issues identified in the *CIP V5 Issues for Standard Drafting Team Consideration* (V5TAG Transfer Document) and (2) address the Federal Energy Regulatory Commission (Commission) directives contained in Order 822. These revisions will increase reliability and security to the Bulk-Power System (BPS) by enhancing cyber protection of BPS facilities.

Industry Need (What is the industry problem this request is trying to solve?):

The V5TAG, which consists of representatives from NERC, Regional Entities, and industry stakeholders, was formed to issue guidance regarding possible methods to achieve compliance with the CIP version 5 standards and to support industry's implementation activities. During the course of the V5TAG's activities, the V5TAG identified certain issues with the CIP Reliability Standards that were more appropriately addressed by the existing standard drafting team (SDT) for the CIP Reliability Standards.

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The V5 TAG developed the V5TAG Transfer Document to explain the issues and recommend that the SDT consider them in future development activity.

On January 21, 2016, the Commission issued Order No. 822 approving revisions to the CIP version 5 standards and also directing NERC to develop modifications to address:

- Protection of transient electronic devices used at low-impact BES Cyber Systems;
- Protections for communication network components between control centers; and
- Refinement of the Low Impact External Routable Connectivity (LERC) definition.

The Commission did not provide a date by which the modifications for transient devices or communication networks must be completed. For the LERC definition, however, the Commission directed that NERC submit the modification within one year of the effective date of Order No. 822 (March 31, 2017).

Brief Description (Provide a paragraph that describes the scope of this standard action.)

The proposed project will consider the issues raised by the V5TAG in the V5TAG Transfer Document and will address the Commission directives in Order No. 822 through modifications to the CIP standards. The work will include development of Violation Risk Factors, Violation Severity Levels, and an Implementation Plan for the modified standards and will meet the deadlines established by the Commission in Order No. 822.

Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

As stated above, the purpose of this project is to consider the V5TAG issues in the initial transfer document V5TAG Transfer Document and address the Commission directives contained in Order 822. For the directive on the LERC definition, the project is to respond within the deadline required in the order.

As noted above, the V5TAG identified specific issues with the CIP V5 standards. The V5TAG drafted the V5TAG Transfer Document to formally recommend that the SDT address these issues during standards development to consider whether modifications can be made to the standard language. As outlined in the V5TAG Transfer Document, the specific issues are as follows:

- Cyber Asset and BES Cyber Asset (BCA) Definitions – as foundational definitions within the CIP V5 standards, the understanding of Cyber Asset and BCA terms impacts the scope of the applicable requirements. The V5TAG recommends the following enhancements:
  - Clarify the intent of “programmable” in Cyber Asset.
  - Clarify and focus the definition of “BES Cyber Asset” including:

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- Focusing the definition so that it does not subsume all other cyber asset types.
  - Considering a lower bound to the term ‘adverse’ in “adverse impact”.
  - Clarifying the double impact criteria (cyber asset affects a facility and that facility affects the reliable operation of the BES) such that “N-1 contingency” is not a valid methodology that can eliminate an entire site and all of its Cyber Assets from scope.
- Network and Externally Accessible Devices – V5TAG recommends improving clarity within the concepts and requirements concerning Electronic Security Perimeters (ESP), External Routable Connectivity (ERC), and Interactive Remote Access (IRA) including:
  - The 4.2.3.2 exemption phrase “between discrete Electronic Security Perimeters”
  - The meaning of the word ‘associated’ in the ERC definition.
  - The applicability of ERC including the concept of the term “directly” used in the phrase “cannot be directly accessed through External Routable Connectivity” within the Applicability section.
  - The IRA definition placement of the phrase “using a routable protocol” in the definition and with respect to Dial-up Connectivity.
  - The Guidelines and Technical Basis sentence, “If dial-up connectivity is used for Interactive Remote Access, then Requirement R2 also applies.”
- Transmission Owner (TO) Control Centers Performing Transmission Operator (TOP) Obligations – V5TAG is aware of multiple interpretations of the language “used to perform the functional obligation of” in CIP-002-5.1 Attachment 1, section 2.12 and recommends clarification of:
  - The applicability of requirements on a TO Control Center that performs the functional obligations of a TOP, particularly if the TO has the ability to operate switches, breakers and relays in the BES.
  - The definition of Control Center.
  - The language scope of “perform the functional obligations of” throughout the Attachment 1 criteria.
- Virtualization – The CIP V5 standards do not specifically address virtualization. Because of the increasing use of virtualization in industrial control system environments, V5TAG asked that the SDT consider CIP-005 and the definitions of Cyber Asset and Electronic Access Point regarding permitted architecture and the security risks of network, server and storage virtualization technologies.

The SDT shall also address the Order No. 822 directives by developing modifications to requirements in CIP standards and the definition of LERC. The Commission directed the following:

- *Per paragraph 32, “...we direct that NERC, pursuant to section 215(d)(5) of the FPA, develop modifications to the CIP Reliability Standards to provide mandatory protection for transient devices used at Low Impact BES Cyber Systems based on the risk posed to bulk electric system reliability. While NERC has flexibility in the manner in which it addresses the Commission’s concerns, the proposed modifications should be designed to effectively address the risks posed by*

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*transient devices to Low Impact BES Cyber Systems in a manner that is consistent with the risk-based approach reflected in the CIP version 5 Standards.”*

- *Per paragraph 53, “...the Commission concludes that modifications to CIP-006-6 to provide controls to protect, at a minimum, communication links and data communicated between bulk electric system Control Centers are necessary in light of the critical role Control Center communications play in maintaining bulk electric system reliability. Therefore, we adopt the NOPR proposal and direct that NERC, pursuant to section 215(d)(5) of the FPA, 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).”*
- *Per paragraph 73, “...the Commission concludes that a modification to the Low Impact External Routable Connectivity definition to reflect the commentary in the Guidelines and Technical Basis section of CIP-003-6 is necessary to provide needed clarity to the definition and eliminate ambiguity surrounding the term “direct” as it is used in the proposed definition. Therefore, pursuant to section 215(d)(5) of the FPA, we direct NERC to develop a modification to provide the needed clarity, within one year of the effective date of this Final Rule....”*

Reliability Functions

The Standard will Apply to the Following Functions (Check each one that applies.)

<input type="checkbox"/> Regional Reliability Organization	Conducts the regional activities related to planning and operations, and coordinates activities of Responsible Entities to secure the reliability of the Bulk Electric System within the region and adjacent regions.
<input checked="" type="checkbox"/> Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator’s wide area view.
<input checked="" type="checkbox"/> Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.

Reliability Functions	
<input checked="" type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input checked="" type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input checked="" type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.
<input checked="" type="checkbox"/> Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
<input type="checkbox"/> Distribution Provider	Delivers electrical energy to the End-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and Reactive Power.
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all 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.

Reliability and Market Interface Principles

<input 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 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.

Does the proposed Standard 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

Related Standards

Standard No.	Explanation

Related SARs	
SAR ID	Explanation

Regional Variances	
Region	Explanation
FRCC	
MRO	
NPCC	
RF	
SERC	
SPP RE	
Texas RE	
WECC	