NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda
Board of Trustees

November 16, 2022 | 9:30 a.m.-1:00 p.m. Central
In-Person Meeting

In-Person
JW Marriott
614 Canal Street
New Orleans, LA 70130

Conference Room: Ile de France Ballroom - 3rd Floor

Virtual Attendees
Webcast Link

Call to Order

NERC Antitrust Compliance Guidelines*

Introduction and Chair's Remarks

Consent Agenda – Approve

1. **Minutes***
   a. October 26, 2022 Meeting
   b. August 18, 2022 Meeting
2. **Committee Membership**
   a. Compliance and Certification Committee Membership
   b. Personnel Certification Governance Committee Membership
3. **Governance Documents Amendments***
   a. Compliance and Certification Committee Program for Monitoring Stakeholder Perceptions
   b. Compliance and Certification Committee Criteria for Regional Entity Program Evaluation

Regular Agenda

4. **Remarks and Reports**
   a. Welcome Remarks by Drew Marsh, CEO, Entergy
   b. Remarks by James Danly, Commissioner, FERC
   c. Remarks by Puesh Kumar, Director, CESER, DOE
   d. Remarks by David Morton, Chair, CAMPUT

e. President's Report
f. Report on the November 15, 2022 Closed Meeting

5. **Board Committee Reports**
   a. Corporate Governance and Human Resources
   b. Compliance
   c. Finance and Audit*
      i. Third Quarter Statement of Activities – **Accept**
   d. Enterprise-wide Risk
   e. Technology and Security
   f. Nominating
   g. Report by Roy Thilly on RSTC Quarterly Activities
   h. Report by Sue Kelly on Standards Quarterly Activities
6. **Standards Quarterly Report and Actions***
   a. 2020-03 Supply Chain Low Impact Revisions - **Adopt**
   b. Reliability Standards Development Plan – **Approve**
   c. Low Impact Criteria Review Team recommendations – **Accept**
   d. Standards Process Improvement Opportunities – **Information**

BREAK – 15 MINS

7. **Other Matters and Reports**
   a. Policy Input and Member Representatives Committee Meeting – **Review**
   b. 2023 NERC Work Plan Priorities* – **Approve**
   c. Generating Availability Data System (GADS) Data Request for Utility-Scale Solar Plants and Updates for GADS Wind and Conventional GADS* – **Approve**
   d. 2022 Long-Term Reliability Assessment Preview* – **Information**
   e. 2022-2023 Winter Reliability Assessment Preview* – **Information**
   f. Credential Maintenance Research Project (CMRP)* – **Update**
   g. ERO Enterprise Reliability Indicators* – **Update**
8. **Committee Reports**
   a. Member Representatives Committee
   b. Personnel Certification Governance Committee*
   c. Standards Committee*
   d. Compliance and Certification Committee*
   e. Reliability and Security Technical Committee*
   f. Reliability Issues Steering Committee*
   g. Electricity Subsector Coordinating Council*
9. **Forum and Group Reports**

a. North American Energy Standards Board
b. North American Transmission Forum*
c. North American Generator Forum*

10. Other Matters and Adjournment

*Background materials included.

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NERC Antitrust Compliance Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a

legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC Reliability Standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising Reliability Standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of Reliability Standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Draft Minutes
Board of Trustees

October 26, 2022 11:00 a.m.–12:00 p.m. Eastern

Virtual Meeting

Call to Order

Mr. Kenneth W. DeFontes, Jr., Chair, called to order the duly noticed open meeting of the Board of Trustees (the Board) of the North American Electric Reliability Corporation (NERC or the Corporation) on October 26, 2022, at 11:00 a.m. Eastern, and a quorum was declared present. The agenda is attached as **Exhibit A**.

Present at the meeting were:

Board Members
Kenneth W. DeFontes, Jr., Chair
George S. Hawkins, Vice Chair
Jane Allen
Robert G. Clarke
Larry Irving
Suzanne Keenan
Susan Kelly
Jim Piro
James B. Robb, NERC President and Chief Executive Officer
Colleen Sidford
Roy Thilly

NERC Staff
Tina Buzzard, Assistant Corporate Secretary
Howard Gugel, Vice President, Engineering and Standards
Kelly Hanson, Senior Vice President and Chief Administrative Officer
Mark G. Lauby, Senior Vice President and Chief Engineer
Sônia Mendonça, Senior Vice President, General Counsel, and Corporate Secretary
Lauren Perotti, Senior Counsel
Janet Sena, Senior Vice President, External Affairs

NERC Antitrust Compliance Guidelines

Ms. Buzzard noted the public nature of the meeting and directed the participants' attention to the NERC Antitrust Compliance Guidelines included in the advance meeting materials. She stated that any additional questions regarding these guidelines should be directed to Ms. Mendonça.

Introduction and Chair's Remarks

Mr. DeFontes welcomed all of the attendees to the meeting and introduced Mr. Robb to provide opening remarks. Mr. Robb noted the purpose of the meeting is to adopt the proposed cold weather Reliability Standards developed in response to the Federal Energy Regulatory Commission (FERC), NERC, and Regional Entity Joint Inquiry into the causes of the February 2021 cold weather event affecting Texas and the south central United States ("Joint Inquiry

Report"). He recalled the significant impacts of the February 2021 cold weather event, and he remarked that the proposed standards are a timely and important step forward in addressing the risks to reliability posed by extreme cold weather.

Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination

Mr. Gugel presented the proposed Reliability Standards, noting that they were developed to address the first phase recommendations for standards development from the Joint Inquiry Report in accordance with the timeline directed by the Board at its November 2021 meeting.

Mr. Gugel highlighted the reliability benefits provided by the proposed standards, including new and revised requirements for improved generator cold weather preparedness and improved requirements relating to how Transmission Operators consider manual load shed in their emergency operating plans. He also provided an overview of the standards development process for this project, discussed minority issues raised during the first phase of development, and noted that work is continuing to address the second phase standards recommendations from the Joint Inquiry Report.

Mr. DeFontes thanked the standard drafting team and NERC's stakeholders for their work on this important project. The Trustees discussed how the proposed Reliability standards represent an important step forward in assuring generator cold weather reliability, but that work remains to be done to address the remaining recommendations from the Joint Inquiry Report. The Trustees also discussed the need to closely monitor the implementation of the proposed Reliability Standards to ensure they are having the intended effect, and that NERC must continue to think about how Reliability Standards for cold weather fit within the context of the broader regulatory environment.

After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

Proposed Reliability Standard EOP-011-3

RESOLVED, that the Board hereby adopts the proposed Reliability Standard EOP-011-3, as presented to the Board at this meeting.

FURTHER RESOLVED, that the Board hereby approves the Violation Risk Factors and Violation Severity Levels for the proposed Reliability Standard, as presented to the Board at this meeting.

FURTHER RESOLVED, that the Board hereby approves the proposed retirement of Reliability Standard EOP-011-2, as presented to the Board at this meeting.

Proposed Reliability Standard EOP-012-1

RESOLVED, that the Board hereby adopts the proposed Reliability Standard EOP-012-1, as presented to the Board at this meeting.

FURTHER RESOLVED, that the Board hereby approves the Violation Risk Factors and Violation Severity Levels for the proposed Reliability Standard, as presented to the Board at this meeting.

Definitions for Inclusion in the Glossary of Terms used in NERC Reliability Standards

RESOLVED, that the Board hereby adopts the definition of Generator Cold Weather Critical Component, as presented to the Board at this meeting.

FURTHER RESOLVED, that the Board hereby adopts the definition of Extreme Cold Weather Temperature, as presented to the Board at this meeting.

FURTHER RESOLVED, that the Board hereby adopts the definition of Geneartor Cold Weather Reliability Event, as presented to the Board at this meeting.

Implementation Plan for Project 2020-05

FURTHER RESOLVED, that the Board hereby approves the associated implementation plan for the above-listed Reliability Standards and definitions, as presented to the Board at this meeting.

Authorization

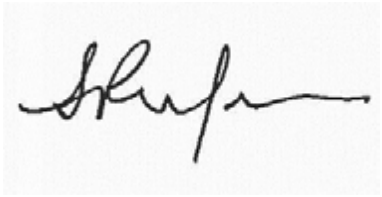
FURTHER RESOLVED, that NERC management is hereby authorized to make the appropriate filings with ERO governmental authorities and take such further actions and make such further filings as are necessary and appropriate to effectuate the intent of the foregoing resolutions.

The Board requsted that Mr. Gugel provide an update on the status of the standard drafting team's work to address the second phase recommendations from the Joint Inquiry Report at the Board's February 2023 meeting.

Other Matters and Adjournment

There being no further business, and upon motion duly made and seconded, the meeting was adjourned.

Submitted by,



Sônia Mendonça
Corporate Secretary

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Draft Minutes
Board of Trustees

August 18, 2022 | 8:30 a.m.–12:00 p.m. Pacific

Hyatt Regency Vancouver
655 Burrard St.
Vancouver, BC V6C 2R7, Canada

Call to Order

Mr. Kenneth W. DeFontes, Jr., Chair, called to order the duly noticed open meeting of the Board of Trustees (the Board) of the North American Electric Reliability Corporation (NERC or the Corporation) on August 18, 2022, at 8:30 a.m. Pacific, and a quorum was declared present.

Present at the meeting were:

Board Members
Kenneth W. DeFontes, Jr., Chair
George S. Hawkins, Vice Chair
Jane Allen
Robert G. Clarke
Suzanne Keenan
Susan Kelly
Robin E. Manning
Jim Piro
Colleen Sidford
Roy Thilly

NERC Staff
Tina Buzzard, Assistant Corporate Secretary
Manny Cancel, Senior Vice President and Chief Executive Officer of the E-ISAC
Howard Gugel, Vice President, Engineering and Standards
Kelly Hanson, Senior Vice President and Chief Administrative Officer
Stan Hoptroff, Vice President, Business Technology
Mark G. Lauby, Senior Vice President and Chief Engineer
Sônia Mendonça, Senior Vice President, General Counsel, and Corporate Secretary
John Moura, Director, Reliability Assessment and Performance Analysis
Bryan Preston, Vice President, People and Culture
Janet Sena, Senior Vice President, External Affairs
Andy Sharp, Vice President and Chief Financial Officer

NERC Antitrust Compliance Guidelines

Ms. Buzzard noted the public nature of the meeting and directed the participants' attention to the NERC Antitrust Compliance Guidelines included in the advance meeting materials. He stated that any additional questions regarding these guidelines should be directed to Ms. Mendonça.

Introduction and Chair's Remarks

Mr. DeFontes welcomed all of the attendees to the meeting, including Mr. Doug Allen, Chair, BC Hydro Board of Directors; Mr. Francis Bradley, President and CEO, Electricity Canada; Ms. Patricia Hoffman, Acting Assistant Secretary, Office of Electricity, DOE; and Mr. David Morton, Chair, CAMPUT. Mr. DeFontes remarked on the engaged discussion at the Member Representatives Committee (MRC) meeting the day prior and how beneficial it was to be together and engage one-on-one at various points during the week.

Consent Agenda

Upon motion duly made and seconded, the Board approved the consent agenda as follows:

Minutes

The draft minutes for the July 7, 2022 and May 12, 2022 meetings were approved as presented to the Board at this meeting.

Committee Membership and Charter Amendments

Reliability and Security Technical Committee Membership

RESOLVED, that the Board hereby appoints the following individuals to the Reliability and Security Technical Committee ("RSTC") as follows:

- Sector 6: Mark Spencer, LS Power Development, for a term ending January 31, 2023; and
- At-Large: Chad Thompson, Electric Reliability Council of Texas, for a term ending January 31, 2024.

Regular Agenda

Remarks by Doug Allen, Chair, BC Hydro Board of Directors

Mr. DeFontes introduced Mr. Allen of the BC Hydro Board of Directors. Mr. Allen began his remarks by acknowledging being on the land of First Nation people. He remarked on how BC Hydro takes direction from NERC on reliability and resilience. Mr. Allen noted BC Hydro's focus on reducing greenhouse gases across the organization and how Site C on the Peace River was essential in the fight again climate change. He also remarked on the efforts BC Hydro has taken to rebuild trust with the First Nations, specifically noting the need to listen to First Nation concerns, limit impacts on the land, and provide training and employment opportunities and upgrades to local infrastructure.

Remarks by Francis Bradley, President and CEO, Electricity Canada

Mr. DeFontes introduced Mr. Bradley of Electricity Canada. Mr. Bradley remarked that it had been three years since the last meeting in Canada and noted that despite inflation and supply chain challenges, there was a continued and growing commitment to ensuring reliability, resilience, and affordable energy in North America. He noted that the United States and Canada have been partners for years, working together on new emerging threats and with utilities on both sides of the border providing mutual assistance after extreme weather. Mr. Bradley noted the close collaboration with the E-ISAC and the need to build upon it further. He remarked on the importance of ensuring transparency, financial prudence and value for NERC expenditures, and noted that NERC must continue to move forward, collaborate, and innovate.

Remarks by Patricia Hoffman, Acting Assistant Secretary, Office of Electricity, DOE

Mr. DeFontes introduced Ms. Hoffman of DOE. Ms. Hoffman remarked on DOE priorities, including transmission planning, integrating clean energy resources, and improving the resiliency of the electric grid. She noted the need to work together to develop alternative plans to address some of the supply chain concerns facing the industry. Ms.

Hoffman also noted the importance of NERC sharing information with states and localities as resilience decisions will be placed on the states, which have limited resources, and providing data can help with their decision-making.

Remarks by David Morton, CAMPUT Representative to NERC
Mr. DeFontes introduced Mr. Morton of CAMPUT. Mr. Morton remarked on the strengthening ties between NERC and the Canadian regulators and the improved working relationship between the E-ISAC and Canadian regulators. He expressed concern that extreme weather is a difficult problem to plan for in terms of designing facilities to survive climate change, noting that we may not be able to rely on current assumptions because climate change increases variability in extreme weather events.

President's Report
Mr. Cancel provided the president's report on behalf of Mr. Robb. He remarked on the challenges and opportunities presented to industry and the need for collaboration given cross-border connections. He noted that the relationship between the United States and Canada is in good shape but there is more to do.

Mr. Cancel stated his appreciation for the thoughtful and helpful policy input as it helps NERC think about the changing risk environment. He noted that the three-year budget is a significant request and the need to talk about the value of these requests. Mr. Cancel remarked that the budget is an effort to get ahead of challenges NERC sees coming and that NERC and its Board took the comments seriously and had productive conversations about them. He noted that NERC wants to be transparent and show value.

Mr. Cancel remarked that NERC has been working on the strategic plan since May and engaged over 100 leaders from NERC, E-ISAC, and the Regional Entities to make sure it meets the needs of a diverse group of stakeholders. He also noted that the leadership conference in Charlotte highlighted the need to reach out to policymakers in the states and provinces, US and Canadian partners, and use their insights to improve our programs. Mr. Cancel noted that the ERO Enterprise would take a hard look at the roles of NERC, E-ISAC, and the Regional Entities to reduce duplication, make them more efficient, and ensure all the corporations work well together.

Report on the August 12 and August 18, 2022 Closed Meetings
Mr. DeFontes reported that on August 12, 2022 and August 18, 2022 (as is its custom), the Board met in closed session with NERC management to review NERC management activities. On August 12, the Board discussed the draft 2023 Work Plan Priorities and received an update on recent U.S. Federal Energy Regulatory Commission orders. On August 18, the Board discussed Reliability Standards items presented at this meeting, the Board's resolutions for this meeting, and feedback on policy input and the MRC meeting.

Board Committee Reports

Corporate Governance and Human Resources
Ms. Keenan, Committee Chair, reported on recent Committee meetings. At the August 12, 2022 closed meeting, the Committee received an update on the NERC People Strategy and reviewed mid-year officer and CEO performance.

Compliance
Mr. Manning, Committee Chair, reported on the August 16, 2022 closed meeting of the Committee, where the Committee received updates on Compliance Monitoring and Enforcement Program (CMEP) trends, a significant CMEP matter, and Canadian Standards and CMEP activities.

Finance and Audit
Mr. Piro, Committee Chair, reported on recent meetings of the Committee. At the August 16, 2022 closed meeting, the Committee reviewed the line of credit renewal, the NERC investment policy, and reviewed items on the August

17, 2022 open meeting agenda. The Committee also received an update on internal audit matters and approved the 2023 budget and resource plan.

Mr. Piro reported that, at its August 17, 2022 open meeting, the Committee took action on several items. First, the Committee reviewed and recommended for Board acceptance the Second Quarter Statement of Activities. Upon motion duly made and seconded, the Board approved the following resolutions:

> **RESOLVED**, that the Board, upon recommendation of the FAC, hereby accepts the Second Quarter 2022 NERC, Combined ERO Enterprise, and Regional Entity Unaudited Statement of Activities, as presented to the Board at this meeting.

Second, the Committee reviewed and recommended for Board approval the NERC and Regional Entity Proposed 2023 Business Plans and Budgets and Associated Assessments. After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

> **RESOLVED**, that the Board hereby approves the following, substantially in the form presented to the Board at this meeting:
>
> 1. The proposed 2023 NERC Business Plan and Budget;
> 2. The proposed 2023 Business Plans and Budgets of the Regional Entities and the Western Interconnection Regional Advisory Board; and
> 3. The proposed 2023 assessments to recover the costs of the approved 2023 budgets, subject to adjustments to reflect final Net Energy for Load numbers, together with such other adjustments as may be necessary.
>
> **FURTHER RESOLVED**, that NERC management is hereby authorized to make the appropriate filings with ERO governmental authorities and take such further actions and make such further filings as are necessary and appropriate to effectuate the intent of the foregoing resolution.

Third, the Committee approved and recommended for Board approval the renewal of the line of credit. After discussion, and upon motion duly made and seconded, the Board approved the following resolutions:

> **RESOLVED**, that the Board, upon recommendation of the Finance and Audit Committee, hereby approves the renewal of the line of credit with the material change to the interest rate index.
>
> **FURTHER RESOLVED**, that NERC management is hereby authorized to take such actions as are necessary to finalize and execute the line of credit renewal documentation, consistent with the foregoing resolution.
>
> **FURTHER RESOLVED**, that the Board continues to authorizes NERC management to proceed to take such actions as are necessary to execute the line of credit renewal documentation on an annual basis, so long as the material terms of the renewal remain substantially the same.

Enterprise-wide Risk

Ms. Sidford, Committee Chair, reported on the Committee's closed meeting on August 16, 2022. At its meeting, the Committee heard from Mr. Scott Tomashefsky, Chair of the Compliance and Certification Committee (CCC), Mr. Jason

Blake, President and CEO of SERC, and NERC staff. She noted that the Committee was pleased with the progress on development of robust enterprise risk management (ERM) programs.

Technology and Security
Ms. Allen, Committee Chair, reported on the Committee's open meeting on August 17, 2022. At the meeting, the Committee received updates on E-ISAC operations, including the persistently challenging threat landscape and work with government partners on both sides of the border, growing Canadian engagement, and collaboration with the natural gas industry.

Nominating
Mr. Clarke, Committee Chair, reported on the Committee's closed meeting on June 10 and August 16, 2022. He reported that three Trustees' terms expire in 2023. The Committee has decided to renominate Ms. Keenan and Mr. Piro and a search team is engaged in efforts to find a new Trustee to replace Mr. Thilly, who is term limited. Mr. Clarke reported that the Committee will conduct candidate interviews in November and meet in December to recommend a final candidate for election by the MRC at the February 2023 meeting.

Report by Roy Thilly on RSTC Quarterly Activities
Mr. Thilly, Liaison to the RSTC, reported on the recent activities of the RSTC. Mr. Thilly reported that the Committee continues to discuss key reliability issues, including those posed by inverter-based resources, and has endorsed several Standard Authorization Requests to initiate standards projects to address these issues.

Report by Susan Kelly on Standards Quarterly Activities
Ms. Kelly, Liaison to the Standards Committee, reported on actions taken at recent meetings, including action to authorize postings, accept Standard Authorization Requests, and appoint drafting teams. She noted industry concern that the volume of pending Standards projects could overwhelm subject matter experts. She also noted that new technologies are driving standards development, especially around inverter-based resources.

Standards Quarterly Report and Actions

Cold Weather Standard Development Update
Mr. Gugel provided an update on standard development activities to address the recommendations of the FERC/ERO Enterprise joint inquiry into February 2021 cold weather outages in Texas and the south central United States. He reported that the second draft of standards to address the first phase recommendations are currently posted for comment.

Standard Process Improvement Opportunities
Mr. Gugel provided an update regarding NERC staff's efforts to examine the body of rules regarding Reliability Standards development and recommend changes to improve NERC's ability to address urgent reliability needs with appropriate agility, consistent with the resolution adopted by the Board at its February 10, 2022 meeting. He reported that a stakeholder panel has been convened to provide feedback on the Staff recommendations presented at the May 2022 open meeting.

Critical Infrastructure Protection Board Resolution Updates
Mr. Gugel provided an update on activities in support of resolutions approved by the Board regarding the Critical Infrastructure Protection (CIP) Reliability Standards, referencing the material provided in the advance agenda package.

Other Matters and Reports

Policy Input and Member Representatives Committee Meeting
Mr. DeFontes referred to the discussion of policy input items and technical updates at the August 17, 2022 Member Representatives Committee meeting. Mr. DeFontes expressed his appreciation for the policy input and feedback.

Semi-annual Review of the Achievements of the ERO Enterprise Work Plan Priorities.
Mr. DeFontes referred attendees to the semi-annual update on the 2022 Work Plan Priorities, referencing the materials included in the advance agenda package.

Risk Registry Update
Mr. DeFontes referred attendees to the update on the risk registry, referencing the materials in the advance agenda package.

Committee Reports

Member Representatives Committee
Mr. Roy Jones, Committee Chair, provided a summary of the Committee meeting held on August 17, 2022, highlighting discussion of policy input, emerging issues for the 2022 Long-Term Reliability Assessment, and the strategy for strengthening industry action to address emerging risks.

Personnel Certification Governance Committee
Mr. Cory Danson, Committee Chair, provided an update on the activities of the Committee, referencing the materials in the advance agenda package.

Standards Committee
Ms. Amy Casuscelli, Committee Chair, provided an update on the activities of the Committee, referencing the materials provided in the advance agenda package.

Compliance and Certification Committee
Mr. Scott Tomashefsky, Committee Chair, provided an update on the activities of the Committee, referencing the materials provided in the advance agenda package.

Reliability and Security Technical Committee
Mr. Greg Ford, Committee Chair, provided an update on the activities of the Committee, referencing the materials provided in the advance agenda package. He highlighted the endorsement of several Standard Authorization Requests (SARs), approval of white papers involving Distributed Energy Resources, and votes to endorse the 2022 Summer Reliability Assessment and 2022 State of Reliability Report.

Reliability Issues Steering Committee
Mr. Brian Slocum, Committee Chair, provided an update on the activities of the Committee, highlighting work to consider further enhancements to the ERO Enterprise Reliability Indicators and the adoption of the risk prioritization framework across the ERO Enterprise.

Electricity Subsector Coordinating Council
Mr. Cancel reported on recent Electricity Subsector Coordinating Council activities. He also highlighted the upcoming grid security conference, GridSecCon.

Forum and Group Reports

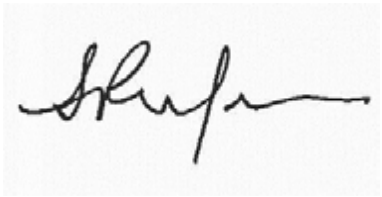
North American Energy Standards Board
Mr. Michael Desselle, Chair of the NAESB Board of Directors, provided an update on NAESB activities in areas of mutual interest, including natural gas-electric coordination.

North American Transmission Forum
Mr. DeFontes noted the absence of Mr. Tom Galloway and referred to the report contained in the advance agenda package.

North American Generator Forum
Mr. DeFontes noted that due to the retirement of Mr. Allen Schriver the NAGF is transitioning the representation and were unable to have someone attend the meeting or submit a quarterly report but look forward to the NAGF report in November.

Other Matters and Adjournment
There being no further business, and upon motion duly made and seconded, the meeting was adjourned.

Submitted by,



Sônia Mendonça
Corporate Secretary

Compliance and Certification Committee Membership

Action
Approve

Background
The CCC recommends that the Board of Trustees approve the following membership appointments for a three-year term from January 1, 2023 – December 31, 2025.

- James C. Crawford III, Burns & McDonnell, At-large
- Marcus Freeman, ElectriCities of North Carolina, Inc., Transmission-Dependent Utility
- Mark Hegerle, Federal Energy Regulatory Commission, U.S. Federal
- Justin MacDonald, Midwest Energy, Cooperative Utility
- Steven H. McElhaney, Cooperative Energy, At-large
- Silvia Parada Mitchell, NextEra Energy Resources, LLC, Merchant Electricity Generator
- Ashley Stringer, Oklahoma Gas and Electric Company, At-large
- Devon Tremont, Taunton Municipal Lighting Plant, State/Municipal Utility

The CCC recommends that the Board of Trustees approve the following membership appointment for a term from February 1, 2023 – December 31, 2024, to fill a seat that will be vacated by a member retirement.

- Robert Hirchak, Cleco Corporation, Electricity Marketer

Personnel Certification Governance Committee Membership Approval

Action
Approve

Summary
Personnel Certification Governance Committee (PCGC) presents to the Board of Trustees the following membership updates for approval:

- Requesting renewal with two year terms ending December 31, 2024.
  - Cory Danson, Power Operations Advisor, WAPA
  - Mark Thomas, Manager, NERC/CIP Compliance, Entergy
  - Marty Sas, Senior Lead Engineer, RAPA & Technical Services, SERC
  - Steve Rainwater, Senior Training Specialist, ERCOT

Compliance and Certification Committee Program for Monitoring Stakeholders' Perceptions and Criteria for Annual Regional Entity Program Evaluation

Action

Approve

Summary

The Compliance and Certification Committee (CCC) presents to the Board of Trustees for approval two of its procedures. The CCC periodically reviews its procedures and revises them, as needed, in collaboration with NERC staff.

The first procedure is a revised version of the CCC's Program for Monitoring Stakeholders' Perceptions. This procedure details the CCC's various means of gathering information on stakeholders' perceptions of ERO Enterprise activities. Among other revisions, the revised procedure:

- Removes the NERC Compliance Hotline as a tool for stakeholder feedback, as the Hotline is dedicated to reporting violations of Reliability Standards;
- Removes references to the CCC's Alignment Working Group, which was retired; and
- Removes inapplicable retention and confidentiality provisions

The CCC seeks approval of this procedure to describe more effectively the CCC's responsibilities to collect information on stakeholders' perceptions and share that information, as appropriate, with the Board of Trustees, applicable Board committees, and NERC management.

The second procedure is a revised version of the CCC's Criteria for Annual Regional Entity Program Evaluation. Pursuant to Section 402.1 of the NERC Rules of Procedure, the CCC develops criteria for NERC to use in its annual evaluation of the effectiveness of each Regional Entity Compliance Monitoring and Enforcement Program (CMEP). Among other revisions, the revised procedure:

- Clarifies the interactions between NERC and the CCC on annual use of the criteria;
- Emphasizes Regional Entity development and use of Compliance Oversight Plans for all registered entities;
- Enhances expectations for Regional Entity assessment of internal controls during CMEP activities;
- Adds elements of the Self-Logging Program for specific evaluation; and
- Highlights the expectation of consistency in treatment of similar noncompliance

The CCC seeks approval of this procedure to enhance the relevance of the criteria to the evolving risk-based CMEP.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Program for Monitoring Stakeholder~~-~~'s' Perceptions

CCC Monitoring Program – CCCPP-008-2

~~August 20~~October 12, ~~2020~~2022

RELIABILITY | RESILIENCE | SECURITY




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Table of Contents

Introduction

As a North American Electric Reliability Corporation (NERC) Board of Trustees (Board)-appointed stakeholder Committee serving and reporting directly to the NERC Board, the Compliance and Certification Committee (Committee or CCC) will engage with, support, and advise the NERC Board and NERC regarding the NERC Compliance Monitoring and Enforcement Program (CMEP), Organization Registration program (Registration program), Organization Certification program (Certification program), and the Reliability Standards development program in accordance with the NERC Rules of Procedure (ROP).

Included in the duties of the CCC, as described in the CCC Charter, is the responsibility to provide comments and recommendations to the NERC Board and its committees, principally the Compliance Committee (BOTCC~~,~~) and the Enterprise-wide Risk Committee (EWRC), and NERC staff with respect to stakeholders' perceptions of the policies, programs, practices, and effectiveness of the CMEP, Registration program, and Certification program. This document describes the program and associated processes ~~utilized~~used by the CCC to carry out this responsibility.

As noted in the NERC board-approved CCC Charter, monitoring stakeholder~~'s~~' perceptions by the CCC is ongoing and does not preclude, interfere with, or replace, in whole or in part, the Board's responsibility to conduct and provide such reviews of these programs as required by FERC regulations, 18 C.F.R. § 39.3(c): "The Electric Reliability Organization shall submit an assessment of its performance three years from the date of certification by the Commission, and every five years thereafter."

~~In the capacity of a NERC board appointed stakeholder committee serving and reporting directly to the Board of Trustees (Board) under a NERC board-approved charter[1], as approved by FERC[2], and as set forth in the ROP, the CCC will engage with, support, and advise the NERC Board of Trustees and its Compliance Committee (BOTCC) regarding all facets of the NERC Compliance Monitoring Enforcement Program (CMEP), Registration program, and Certification program.~~

~~Included in the duties of the CCC, as described in the CCC Charter, is the responsibility to provide comments and recommendations to the NERC Board and its BOTCC, the BOT's Enterprise-wide Risk Committee (EWRC), and NERC staff with respect to stakeholders' perceptions of the policies, programs, practices, and effectiveness of the CMEP, Registration program, and Certification program. This document describes the program and associated processes utilized by the CCC to carry out this responsibility.~~

~~As noted in the NERC board-approved CCC Charter, monitoring by the CCC is ongoing and does not preclude, interfere with, or replace, in whole or in part, the Board's responsibility to conduct and provide such reviews of these programs as required by FERC regulations, 18 C.F.R. § 39.3(c): "The Electric Reliability Organization shall submit an assessment of its performance three years from the date of certification by the Commission, and every five years thereafter."~~

Chapter 1: Monitoring Processes

The CCC will provide to NERC an assessment of stakeholders' perceptions regarding the policies, programs, practices, and effectiveness of the NERC CMEP, Registration program, and Certification program using the processes described below. Information received from these monitoring processes will be vetted by the CCC and shared with NERC Management, the EWRC, the Board, the EWRC, and the BOTCC.

Generally, the CCC and NERC Staff will work in collaborationcollaborate to assess stakeholders' perceptions on initiatives and/or issues related to policies, programs, practices, and effectiveness. This process may be included as part of the CCC's annual work plan, which is prepared by CCC leadership and approved by theNERC's Board.

Initiatives and/or issues on which to gauge stakeholder perceptions may include, but may not be limited to, new standards development and rollout, outreach and education, CMEP tools, and/or initiatives linked to internal audit recommendations.

It is anticipated that any enhancements to a program, process, and/or policy stemming from a stakeholder perception process will be shared with the broader ERO, Regional Entities Enterprise, registered entities, and/or other relevant industry stakeholders.

Tools used to gauge stakeholders' perceptions may include one or, in combination, any of the following:

Stakeholder Feedback

Surveys on Specific Areas or Initiatives

The CCC will partner with NERC and any outside consultant, if necessary, to develop and administer a survey related to a specific focus area or initiative on content related to the CMEP, Organization Registration & Certification Program (ORCP), Reliability Standards Development, and or ERO Enterprise Program Alignment.

- In collaboration with NERC, the ERO Monitoring Subcommittee (EROMS) may utilize use a survey to gauge stakeholders' perceptions related to a specific focus area or initiative, the scope and related questions of which may be developed in partnership with NERC.
- The survey will be designed to measure the effectiveness of a specific focus area or initiative.
- A consultant may be engaged by NERC to manage and administer the logistics of conducting the survey, assembling the results, and providing the responses to the questions related to the CMEP, ORCP, Reliability Standards Development Program, and or ERO Enterprise Program Alignment.
- EROMS will analyze the stakeholder comments and ratings related to the CMEP, ORCP, Reliability Standards Development Program, and ERO Enterprise Program Alignment, compile the results in a stakeholder feedback report, and provide it to EROMS and the CCC for review and endorsement.
- Based on the survey results and related observations, EROMS, as a consensus, may recommend follow-up initiatives to NERC Staff and include those recommendations in the stakeholder feedback report to the CCC.
- The CCC will finalize and endorse the EROMS stakeholder feedback report, and the CCC Chair will submit it to the EWRC as an informational item, along with any follow-up actions or initiatives discussed and adopted by the CCC and NERC Management.
- Follow-up initiatives may be added to the CCC work plan, as necessary, to ensure that any CCC activities and deliverables identified in the report are visible and completed.

- EROMS, the CCC, and NERC Management will maintain confidentiality of ~~all~~ sensitive information and will maintain the anonymity of ~~all~~ survey feedback received from participating stakeholders.

Focus Group Discussions

From time to time, EROMS may recommend ~~that~~ a focus group ~~be formed~~ to assess stakeholders' perceptions on specific area(s) or topic(s) and will make recommendations to the broader CCC and NERC Staff on the scope, the specific area(s) or topic(s) to address, the format, the participants or target group, and the timing.

Regional Entity Feedback

As appropriate, the CCC may coordinate with one or more~~a~~ Regional Entities~~y~~ to solicit input related to a specific focus area or initiative on content related to the CMEP, ORCP, Reliability Standards development, ~~and~~ or ERO Enterprise Program Alignment:

- Topics of interest and/or concern will be developed in collaboration with the CCC, NERC Staff, and members representing ~~each~~ Regional ~~Entity~~ Entities under the leadership of a CCC member (or assignee).
- Input provided by stakeholders will be forwarded to the CCC by the Regional Entity, with EROMS assigned to analyze the input and provide recommendations to the CCC and NERC staff.
- Tools to solicit stakeholder feedback will be provided to the Regional Entity, as required.

Industry Organizations

As appropriate, the CCC may coordinate with industry organizations, such as Pre-Qualified Organizations (defined in CCCPP-011), to solicit feedback:

- Stakeholder feedback gathered by Industry Organizations will be communicated to the CCC, NERC Staff, and members representing the Industry Organization(s).
- Input provided by stakeholders will be forwarded to the CCC by the Industry Organization, with EROMS assigned to analyze the input and provide recommendations to the CCC and NERC Staff.
- Tools to provide stakeholder feedback will be provided to the Pre-Qualified Organization(s), as required.

Direct Stakeholder Input

Stakeholder feedback may be provided directly to the CCC through the following:

- Respective sector CCC member representatives
- The **"Complaints to the CCC"** link on the CCC ~~Web~~page on NERC's Website.
  - This allows stakeholders to file a confidential concern directly to the CCC. Concerns received through this webpage are forwarded directly to the CCC Chair and NERC's Director of Internal Audit for review and action.
- ~~The **"NERC Compliance Hotline Form"** available on each Regional Entity website.~~

CCC Representative ~~or Alignment Working Group Input~~

CCC representatives ~~and/or the Alignment Working Group (AWG)~~ may provide stakeholder feedback to other members of the CCC and NERC staff. CCC ~~members and/or AWG~~ members may also solicit or receive comments and opinions from constituents represented by that member and convey those comments and opinions to the CCC and NERC Staff.

Chapter 2: NERC Collaboration

NERC Requests

NERC Management may request that the CCC solicit feedback from stakeholders on issues or initiatives related to the policies, programs, practices, and effectiveness of the NERC CMEP, Registration program, and Certification program. In addition, once feedback is received, NERC Management may request additional feedback or action items of the CCC in response to the stakeholder feedback. Feedback, as discussed here, may include, but is not limited to:

- The effectiveness on the rollout of new or updated standards and associated processes under Reliability Standards development;
- Key initiatives related to ERO Program development;
- Program administration to support the success of the ERO Enterprise;
- Determining the consistent implementation of the NERC CMEP, Registration program, and Certification program.
- Feedback on an emerging risk area that may impact ERO Enterprise activities.

NERC Board of Trustees Direction

The NERC Board, ~~NERC~~ BOTCC, and/or the ~~NERC~~ EWRC may request that the CCC solicit feedback on stakeholders' perception~~(s) related to~~of issues or initiatives related to the policies, programs, practices, and effectiveness of the NERC CMEP, Registration program, and Certification program. In addition, once feedback is received, the Board may request additional feedback or action items of the CCC in response to stakeholder feedback received. Feedback, as discussed here, may include, but is not limited to:

- The effectiveness on the rollout of new or updated standards and associated processes under Reliability Standards development;
- Key initiatives related to ERO Program development;
- Program administration to support the success of the ERO Enterprise;
- Reviewing consistent implementation of the NERC CMEP, Registration program, and/or Certification program;
- Feedback on an emerging risk area that may impact ERO Enterprise activities.

Chapter 3: Reporting and Disclosure

The CCC will report to NERC Management, the EWRC, the BOTCC, and the Board, as appropriate, on results on stakeholder perceptions and feedback gathered. In addition, in collaboration with NERC Management, the CCC may develop initiatives and will provide updates on those initiatives, if necessary, to address stakeholder questions or concerns applicable to the ERO Enterprise.

EROMS will provide an update on stakeholder perception activities to the CCC, as needed. In addition, the CCC will communicate any findings to CCC membership and will ~~provide recommendations~~recommend, in partnership with NERC, ~~on~~ any follow-up steps or activities to improve or enhance stakeholder~~'~~s' perception~~s~~.

Upon completion of a report, the CCC will summarize any findings, recommendations on any follow-up activities, and the status of those steps to ~~the~~ NERC Management, the NERC Board, the BOTCC, and ~~-~~/~~-~~or the EWRC.

For any stakeholder perception process conducted at the request of NERC Management, a final report will be provided and recommendations on follow-up initiatives discussed with NERC Management, if applicable. For any stakeholder process conducted at the request of the NERC Board, a final report will be provided and recommendations on follow-up initiatives discussed with Board members, if applicable. The CCC will report the results of all stakeholder perception processes to the Board and the EWRC, and a version of a final report may be prepared for public release and posted on the CCC's webpage.

Chapter 4: Data Retention and Confidentiality

Records Management

All records associated with this program will be maintained by NERC. The associated records management policy will provide for a routine and orderly process for the retention and disposal of electronic and paper records related to this program, and ensure verification of compliance with appropriate business, regulatory, and legal requirements. The policy will allow for the maintenance of records as required to implement the CCC's work on soliciting stakeholder~~'~~s' perceptions ~~on~~ of the policies, practices, and effectiveness of the CMEP, Registration program, and Certification program.

Retention Management

NERC's records management policy will require that information and data generated or received pursuant to activities associated with this program be retained for a minimum of five (5) years. ~~If the information or data is material to the resolution of a controversy, the retention period for such data will not commence until after the controversy is resolved.~~

Confidentiality Management

NERC and the CCC will maintain confidentiality of all Confidential Information in accordance with Section 1500 of the ROP. ~~Information deemed to be critical energy infrastructure information will be redacted and will not be released publicly.~~

Chapter 5: Revision History

Date	Version Number	Comments
January 1, 2011	1.0	Approved by the Compliance and Certification Committee
June 17, 2020	2.0	Approved by the Compliance and Certification Committee
August 20, 2020		Approved by the Board of Trustees

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NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Criteria for Annual Regional Entity Program Evaluation

CCC Monitoring Program – CCCPP-010-7

Effective Month XX, 2022 Version 7~~September 2019~~

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Table of Contents

~~Executive Summary~~

~~The Compliance and Certification Committee (CCC) is a NERC Board of Trustees (Board) appointed stakeholder committee serving and reporting directly to the Board and is responsible for engaging with, supporting, and advising the Board and NERC regarding all facets of the NERC Compliance Monitoring and Enforcement Program (CMEP), Organization Registration Program (Registration program), and Organization Certification Program (Certification program). In accordance with Section 402.1.2 of the NERC Rules of Procedure (ROP), the CCC is responsible for establishing criteria for NERC to use to annually evaluate the goals, tools, and procedures of each RE CMEP to determine the effectiveness of each RE CMEP. For ease of reference and implementation, the Criteria is organized along the lines of Risk Based CMEP activities: Risk Elements, Inherent Risk Assessment (IRA), Internal Control Evaluation (ICE), Compliance Oversight Plan, Enforcement, and Coordinated Oversight Program for Multi-Regional Registered Entities (MRREs). It is expected that NERC will present the results of the evaluation to the CCC as an input in the annual review, and if appropriate, update of these criteria.~~

Introduction

~~The Compliance and Certification Committee (CCC) is a NERC Board of Trustees (Board) appointed stakeholder committee serving and reporting directly to the Board and is responsible for engaging with, supporting, and advising the Board and NERC regarding all facets of the NERC Compliance Monitoring and Enforcement Program (CMEP), Organization Registration Program (Registration program), and Organization Certification Program (Certification program).~~

As a North American Electric Reliability Corporation (NERC) Board of Trustees (Board)-appointed stakeholder committee serving and reporting directly to the NERC Board, the Compliance and Certification Committee (Committee or CCC) will engage with, support, and advise the NERC Board and NERC regarding the NERC Compliance Monitoring and Enforcement program (CMEP), Organization Registration program (Registration program), Organization Certification program (Certification program), and the Reliability Standards development program in accordance with the NERC Rules of Procedure (ROP).

~~In the capacity of a NERC board appointed~~Board of Trustees (Board) ~~stakeholder committee serving and reporting directly to the Board under a NERC board approved charter[1], and as approved by FERC,[2], and as set forth in the ROP, the CCC will engage with, support, and advise the Board and NERC Board of Trustees Compliance Committee (BOTCC) regarding all facets of the NERC CMEP, Registration program, and Certification program.~~

The CCC is ~~commissioned~~ responsible for establishing~~with creating a set of~~ criteria for use by NERC to determine ~~in measuring~~ the effectiveness ~~and adherence~~ of each Regional Entity ~~(RE) to the~~ CMEP. In accordance with Section 402.1.2 of the NERC ROP, the CCC presents the following criteria for use by NERC in evaluating the goals, tools, and procedures employed by the ~~compliance programs~~CMEP of each RE.[3]

~~In accordance with Section 402.1.2 of the NERC Rules of Procedure (ROP), the CCC is responsible for establishing criteria for NERC to use to annually evaluate the goals, tools, and procedures of each Regional Entity (RE) CMEP to determine the effectiveness of each RE CMEP. For ease of reference and implementation, the Criteria is organized along the lines of Risk Based CMEP activities: Risk Elements, Inherent Risk Assessment (IRA), Internal Control Evaluation (ICE), Compliance Oversight Plan, Enforcement, and Coordinated Oversight Program for Multi-Regional Registered Entities (MRREs). It is expected that NERC will present the results of the evaluation to the CCC as an input in the annual review, and, if appropriate, update of these criteria.~~

Terms

Unless otherwise defined herein, capitalized terms have the meaning as prescribed in the ROP.

~~[1] Monitoring by the CCC is ongoing and does not preclude, interfere with or replace, in whole or in part, the NERC Board's responsibility to conduct and provide such reviews of these programs as required by Federal Energy Regulatory Commission (the Commission) regulations, 18 C.F.R. § 39.3.c: "The Electric Reliability Organization shall submit an assessment of its performance three years from the date of certification by the Commission, and every five years thereafter."~~

~~[2] North American Electric Reliability Corporation, Order on Compliance Filing, RR06-1-007 (2007)~~

[3] Rule of Procedure 402.1.2 Regional Entity Program Evaluation — NERC shall annually evaluate the goals, tools, and procedures of each Regional Entity Compliance Monitoring and Enforcement Program to determine the effectiveness of each Regional Entity Compliance Monitoring and Enforcement Program, using criteria developed by the NERC Compliance and Certification Committee.~~NERC shall annually evaluate the goals, tools, and procedures of each RE compliance enforcement program to determine the effectiveness of each RE program, using criteria developed by the NERC Compliance and Certification Committee~~

~~Table of Contents~~

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~~Chapter 2:~~Chapter 1: Scope

The criteria contained in this program document address the goals, tools, and procedures of each Regional Entity's~~RE's~~ CMEP. In general, EROMS has endeavored to align criteria for evaluating each Regional Entity~~RE~~ with the oversight plan designed by NERC management for evaluating the CMEP implementation year for risk-based compliance monitoring and will consult with NERC Management. Criteria associated with goals may focus on whether Regional Entity ~~RE~~ goals for respective CMEPs are aligned with the goals established by NERC, communicated widely, and are properly integrated with management and staff performance.

Criteria associated with tools may focus on issues pertaining to the use of information systems supporting handling of Regional Entity ~~RE~~ data, regular compliance activities such as self-certifications, analytical tools used to evaluate data submittals, and overall information technology capabilities. Criteria associated with procedures may focus on steps Regional Entities ~~REs~~ have established to effectuate the goals of risk-based compliance monitoring and enforcement.

~~Chapter 3:~~Chapter 2: Use

The CCC's objective in establishing evaluation criteria is to assist NERC in determining the effectiveness of each Regional Entity's ~~E's~~ CMEP. NERC need not conduct audits of the Regional Entities~~REs~~ to administer this program. In addition, Regional Entities' ~~REs'~~ responses should not necessarily be considered "right" or "wrong", but rather descriptive of goals, tools, and procedures currently employed by each Regional Entity.~~RE.~~ The criteria contained in this document are for use in NERC's annual assessment of each Regional Entity~~RE.~~

NERC will decide the exact form and ~~usage~~ use of questions to assess the Regional Entity's~~RE's~~ implementation of the CMEP under each Criteria. ~~REs CMEP goals, tools and procedures and~~ NERC evaluates the Regional Entity's ~~REs'~~ CMEP goals, tools, and procedures ~~them~~ to ensure consistency and fairness in accordance with ROP 402.1.2. To support the ongoing development of criteria, EROMS will schedule at least one meeting a year with NERC ~~to receive a report on the implementation of the criteria, how NERC posed questions to evaluate REs per the criteria, and~~ to receive recommendations and collaborate on how to update, modify, or delete criteria based on NERC's implementation of the criteria.

~~Chapter 4:~~Chapter 3: Criteria

For ease of reference and implementation, the criteria are organized based on key processes supporting risk-based ~~compliance monitoring and enforcement activities~~CMEP activities.

Criteria A. Risk Elements

The Regional Entity ~~RE~~ considers ERO Enterprise and Regional Bulk Electric System (BES) risks to inform and prioritize compliance monitoring activities. Specific criteria for assessing effectiveness include:

~~1. The RE defines and accounts for ERO Enterprise and Regional BES risks in its CMEP Implementation Plan (IP).~~

~~2.~~1. The Regional Entity ~~RE~~ has processes in place to consider ERO Enterprise and Regional Risk Elements during compliance monitoring activities, such as ~~Inherent Risk Assessment (IRA) and~~ Compliance Oversight Plan (COP) development.

Criteria B. Inherent Risk Assessment (IRA)/Compliance Oversight Plan (COP)

~~The ERO Enterprise Guide for Compliance Monitoring outlines that the REs should facilitate a collaborative dialogue with the registered entity throughout the IRA process.~~ The Regional Entity~~E~~ develops and maintains entity specific COPs, using IRA results, Risk Elements, internal controls, and additional considerations, such as entity performance prior to compliance monitoring activities or mitigating activities. ~~t~~The Regional Entities~~REs~~ should facilitate a collaborative dialogue with the registered entity throughout the IRA process. The IRA process is one of many factors that guide the Regional Entity's~~Es'~~ development of IRAs/COPs and the identification of risks for a registered entity. Specific criteria for assessing effectiveness includes~~:~~

1. The Regional Entity~~E~~ maintains a documented process for developing and maintaining IRAs/COPs for registered entities.

2. The Regional Entity~~E~~ maintains sufficient and appropriate documentation to justify IRA/COP decisions. During IRA/COP development and revisions, the Regional Entity~~E~~ uses already available ~~IRA~~ information about the registered entity, includes discussion with the registered entity in the event of the need to clarify or correct information, and incorporates registered entity feedback to the Regional Entity~~E~~ such that the registered entity understands the ~~IRA~~ process and the results of the IRA/COP.

3. The Regional Entity~~E~~ conducts IRA/COP activities (e.g., initial IRAs and revisions) in a timely manner in order to help ensure the IRA/COP can inform compliance monitoring determinations and allow for registered entity feedback and appropriate adjustments to COPs.

4. The Regional Entity~~E~~ makes progress on publishing IRAs/COPs for registered entities within its footprint.

Criteria C. Internal Controls

The Regional Entity~~E~~ evaluates internal controls to fulfil! the ERO Enterprise's obligation to establish risk profiles for registered ~~–~~entities that inform the Regional Entity's~~E's~~ development of COPs. Specific criteria for assessing effectiveness includes~~:~~

1. The Regional Entity~~E~~ maintains and implements a documented process to assess internal controls for registered entities that aligns with ERO Enterprise Guide for Internal Controls.

~~2. The RE performs the assessment, provides feedback to the registered entity on internal controls, and how RE determinations impact the registered entities' compliance monitoring.~~

~~3.~~2. The Regional Entity~~E~~ documents decisions around the effectiveness of internal controls ~~, whether during an ICE activity~~ during CMEP activities ~~or a compliance monitoring activity (e.g., an Audit or Spot Check).~~ Regional Entity~~E~~ documentation is sufficient and appropriate to support:

a. Determinations around design and implementation of internal controls.

~~a.~~b. Conclusions around internal controls, including any control deficiencies and how the internal controls mitigate risks.

~~b.~~c. Evaluation outcomes impacting CMEP~~Decisions impacting compliance monitoring~~ activities and the registered entity's COP~~s~~.

~~Criteria D. Compliance Oversight Plans (COPs)~~

~~The RE develops and maintains entity specific COPs, using IRA results, Risk Elements, internal controls, and additional considerations such as entity performance, prior compliance monitoring activities or mitigating activities. Specific criteria for assessing COP effectiveness includes:~~

1. ~~The RE maintains a documented process, which aligns with ERO Enterprise Guide for Compliance Monitoring, for developing and maintaining COPs for registered entities within its regional footprint.~~
2. ~~The RE maintains sufficient and appropriate documentation to support decisions related to COPs, including how the RE made decision around considerations that impact COPs.~~
3. ~~The RE conducts activities (e.g., initial IRAs and revisions) in a timely manner in order to help ensure the IRA can inform compliance monitoring determinations and allow for registered entity feedback and appropriate adjustments to COPs~~

Criteria D~~E~~. Assessment of ~~Enforcement (~~Internal Compliance Programs & Self-Logging~~)~~

Internal Compliance Programs (ICPs) not only facilitate reliable and secure operations, but an effective ICP can also be considered a mitigating factor in determining a penalty under the NERC Sanction Guidelines. Registered entities with demonstrated internal controls to self-monitor, detect, assess, and correct their own noncompliance may be eligible to participate in the Self-Logging Program. Under the Self-Logging Program, participating entities' self-logged minimal risk noncompliance receives the presumption of Compliance Exception treatment when the log is submitted to the Regional Entity.~~E on a quarterly basis~~. Specific criteria for assessing ICP and self-logging effectiveness include:

1. The Regional Entity~~E~~ follows a documented process to evaluate registered entities' internal compliance programs (ICPs) and the implementation of those ICPs. The Regional Entity~~E~~ performs the assessment and provides feedback to the registered entity on the ICP.
2. The Regional Entity~~E~~ includes justification in an enforcement action for the ICP's being treated as a mitigating or neutral factor in determination of a penalty.
3. The Regional Entity~~E~~ consistently applies a documented methodology to evaluate registered entity requests for self-logging privileges.
4. The Regional Entity~~E~~ promotes the self-logging program by encouraging registered entities with positive indicators regarding ICP/risk profile to enter the self-logging program.
5. The Regional Entity~~E~~ evaluates applications to the self-logging program within the timeframe specified in the Self-Logging Program Guide.

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2.6. The Regional EntityE administers the self-logging program using a risk-based approach by distinguishes distinguishing the documentation, and Evidence production requirements for self-logged matters and other types of noncompliance, as appropriate.

7. For comparative purposes, review the percentage of registered entities in the RegionalEntityE footprint enrolled in the self-logging program.

Criteria EF. Enforcement

Consistent application of enforcement actions according to similar types of violations.

Criteria F. Coordinated Oversight Program for Multi-Region Registered Entities

The ERO Enterprise developed the Multi-Region Registered Entity (MRRE) Coordinated Oversight Program to increase efficiencies in resource allocation for registered entities while maintaining the reliability of the BPS. The Program is designed to eliminate unnecessary duplication of compliance monitoring and enforcement activities. Specific criteria for assessing effectiveness includes:

1. Lead Regional Entities (LREs) and Affected Regional Entities (AREs) perform CMEP activities according to the existing ERO Enterprise guidance on the Coordinated Oversight Program for MRREs, which outlines each Regional Entity'sE's specific roles and responsibilities.

2. RegionalEntitiesEs follow documented processes that allow for consistent and collaborative implementation of the Coordinated Oversight Program.
   a. Lead Regional Entities REs coordinate with Affected Regional EntitiesAREs in all aspects of CMEP activities.
   b. RegionalEntitiesEs use tools and templates that facilitate the process in conducting CMEP activities.

~~Chapter 5:~~Chapter 4: Revision History

Date	Version Number	Comments
July 24, 2009 November 4, 2009	1.0	Approved by the Compliance and Certification Committee Approved by the Board of Trustees
June 23, 2011	2.0	Revised to reflect prior NERC Assessments conducted in accordance with Agreed-Upon Principles and changes to NERC ROP
April 13, 2015 May 7, 2015	3.0	Rewritten to reflect Risk-Based Compliance Monitoring Principles and approved by the Compliance and Certification Committee. Approved by the Board of Trustees
October 2016	4.0	Rewritten to reflect Risk-Based Compliance Monitoring Principles and approved by the Compliance and Certification Committee
September 2018 November 2018	5.0	Updated criteria to reflect current ERO Enterprise guidance and processes. Approved by the Enterprise-wide Risk Committee
2019	6.0	Revised criteria to reflect current ERO Enterprise guidance and processes.
Month XX, ~~April x,~~ 2022 Month XX, 2022	7.0	Approved by the Compliance and Certification Committee Approved by the Board of Trustees

Project 2020-03 Supply Chain Low Impact Revisions

Action

Adopt the following standards documents and authorize staff to file with applicable regulatory authorities:

- Reliability Standard - CIP-003-9 – Cyber Security – Security Management Controls

  [CIP-003-9 Standard] [Redline to last approved]
- Implementation Plan

  [Implementation Plan]
- Violation Risk Factors (VRFs) and Violation Severity Levels (VSLs)

  [VRF/VSL Justification]
- Retirements

  CIP-003-8 – Cyber Security – Security Management Controls

Background

In its final report accepted by the NERC Board in May 2019, NERC documented the results of the evaluation of supply chain risks associated with certain categories of assets not currently subject to the Supply Chain Standards and recommended actions to address those risks. NERC staff recommended further study to determine whether new information supports modifying the standards to include low impact BES Cyber Systems with external connectivity by issuing a request for data or information pursuant to Section 1600 of the NERC Rules of Procedure.

The Board approved the formal issuance of this data request on August 15, 2019. NERC collected the data from August 19 through October 3, 2019. A final report, Supply Chain Risk Assessment, was published in December 2019. The report recommended the modification of the Supply Chain Standards to include low impact BES Cyber Systems with remote electronic access connectivity. Further, MRC Policy Input provided industry feedback regarding this recommendation at the February 2020 NERC Board meeting.

After considering policy input, the NERC Board adopted a resolution to initiate a project to modify Reliability Standard CIP-003-8 to include policies for low impact BES Cyber Systems to: (1) detect known or suspected malicious communications for both inbound and outbound communications; (2) determine when active vendor remote access sessions are initiated; and (3) disable active vendor remote access when necessary.

Summary

To address the NERC Board resolution, the drafting team revised Reliability CIP-003-8 by adding Requirement R1 Part 1.2.6 and the associated section 6 in attachment 1 to address security controls for vendor electronic remote access. The section 6 language requires assets containing low impact BES Cyber Systems to have methods for determining and disabling vendor electronic remote access as well as one or more methods for detecting malicious communication for only vendor electronic remote access.

Standards Development Process

The proposed CIP-003-9 standard was posted for initial ballot and two additional ballots. The initial 45-day formal comment and ballot was from August 27, 2021 – October 11, 2021. The initial ballot received 29.09 percent approval and 82.99 percent quorum. The standard drafting team conducted an additional 45-day formal comment and ballot from February 25, 2022 – April 15, 2022, which received 52.81 percent approval and 81.51 percent quorum. The standard drafting team the conducted a second additional 45-day formal comment and ballot from July 6, 2022 – August 19, 2022, which received 66.81 percent approval and 84.93 percent quorum. The standard drafting team conducted a final ballot from October 26, 2022 – November 4, 2022. The results of the final ballot will be reviewed with the Board at the meeting.

Minority Issues

None

Pertinent FERC Directives

None

Cost Effectiveness

The standard drafting team sought stakeholder input on the cost effectiveness of the proposed standard during the formal comment periods. The majority of stakeholders stated the standard will cause an increase in cost for entities to implement the protections.

Additional Information

A link to the project history and files is included here for reference:
[Project 2020-03 Supply Chain Low Impact Revisions]

Agenda Item 6b
Board of Trustees
November 16, 2022

2023-2025 Reliability Standards Development Plan

Action

Approve the 2023-2025 Reliability Standards Development Plan (RSDP) and authorize NERC staff to file with the applicable governmental authorities.

Background

Pursuant to section 310 of the NERC Rules of Procedure, NERC is required to develop and provide an annual RSDP to the applicable governmental authorities. The 2023-2025 RSDP includes time frames and anticipated resources for each project under development or anticipated to begin by the end of the year.

A draft RSDP was posted for a public comment period from July 26, 2022 through August 24, 2022. The Standards Committee endorsed the RSDP at its September 21, 2022 meeting. In the event a Standard Authorization Request or FERC directive is received prior to submitting the RSDP to the applicable governmental authorities, the document will be updated appropriately. NERC and the Standards Committee will continue to work with NERC committees and task forces to bridge any potential reliability gaps and risks.

Additional Information

A link to the proposed RSDP is included for reference: 2023-2025 RSDP

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda Item 4b
Board of Trustees Meeting
November 16, 2022

Reliability Standards Development Plan

2023-2025

September 21, 2022

RELIABILITY | RESILIENCE | SECURITY




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Table of Contents

Background

Pursuant to Section 310 of the NERC Rules of Procedure, NERC is required to develop and provide to applicable governmental authorities an annual Reliability Standards Development Plan (RSDP) for Reliability Standards development. Each annual RSDP must include a progress report comparing results achieved to the prior year's RSDP. NERC is required to consider the comments and priorities of the applicable governmental authorities in developing and updating the annual RSDP. NERC also provides the RSDP to the NERC Standards Committee (SC) for review and posts the RSDP for industry comment.

As described herein, this RSDP for 2023-2025 builds upon the goals of the previous RSDPs.

Executive Summary

The 2023-2025 RSDP provides insight into standards development activities anticipated at the time of publication so that stakeholders may make available resources needed to accomplish the standards development objectives. Additional activities such as Requests for Interpretation and Regional Variance development may impact the plan and are included at this time. In order to help the industry understand resource requirements for each project, the RSDP now shows time frames and anticipated resources for each project under development.

This RSDP contemplates that the work of the Reliability and Security Technical Committee (RSTC) and working groups thereunder may result in more Standard Authorization Requests (SARs) and subsequent standards projects. It is also important to note that projects may be generated through the use of the Electric Reliability Organization risk framework.

Periodic Reviews and initiatives, such as the final recommendations of the Standards Efficiency Review (SER) project, also enable NERC to identify requirements that do little to promote reliability and should therefore be retired. Periodic Reviews will occur at a measured pace compared to the level of activity and pace of standards development during recent years. Additionally, Periodic Reviews will be aligned with the strategic consideration of reviewing standard families that are interrelated.[1] The Standards Grading effort for 2022 has been completed and results are included.

While most of the work in the next three years will focus on new SARs, Periodic Reviews, SER implementation, and Standards Grading, there may be new or emerging risks identified that could generate new standards development projects. NERC will continue to seek input and recommendations from the Reliability Issues Steering Committee (RISC) with regard to emerging or potential risks to Bulk Electric System (BES) reliability that may require revisions to existing standards or new standards development.

To help determine the impact of potential risk to BES reliability, NERC will use a variety of feedback mechanisms, including but not limited to, the Compliance Monitoring and Enforcement Program, RISC profiles, Events Analysis, and Compliance violation statistics, as well as any published "Lessons Learned." The Regional Entities also have feedback mechanisms in place to solicit comments from industry and to help identify approaches to meet concerns and provide input to the standards. Input into standards will also continue to be coordinated with the North American Energy Standards Board as appropriate. In assessing feedback to create new or revised standards, NERC will focus on risk, reliability or security data, and enforcement information to determine whether a standard revision is the best tool to initially address the reliability risk.

[1] The Periodic Review Standing Review Team grades the standards prior to conducting Periodic Reviews. The team includes representatives from NERC, the Regional Entities, and RSTC. If the standard is revised through the standard development process in response to a Periodic Review recommendation(s), the Periodic Review Standing Review Team will re-grade the standard with the revised language.

Progress Report

Pursuant to Section 310 of the NERC Rules of Procedure, NERC offers the following progress report on Reliability Standards development.

FERC Directives

As of June 30, 2022, there are two[2] outstanding directives being resolved through the standards development process. The status of the Standards directives are reported quarterly to the NERC Board of Trustees (Board).

Continuing Projects

All of the other projects from the previous RSDP are complete, or are expected to be complete this year, except the following, which will continue into 2023:

1. Project 2016-02 Modifications to CIP Standards
2. Project 2017-01 Modifications to BAL-003-1.1 (phase 2)
3. Project 2019-04 Modifications to PRC-005-6
4. Project 2020-02 Modifications to PRC-024 (Generator Ride-through)
5. Project 2020-04 Modifications to CIP-012
6. Project 2020-06 Verifications of Models and Data for Generators
7. Project 2021-01 Modifications to MOD-025 and PRC-019
8. Project 2021-02 Modifications to VAR-002
9. Project 2021-03 CIP-002 Transmission Owner Control Centers
10. Project 2021-04 Modifications to PRC-002-2
11. Project 2021-05 Modifications to PRC-023
12. Project 2021-06 Modifications to IRO-010 and TOP-003
13. Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination (Phase 2)
14. Project 2021-08 Modifications to FAC-008
15. Project 2022-01 Reporting ACE Definition and Associated Terms
16. Project 2022-02 Modifications to TPL-001-5.1 and MOD-032-1
17. Project 2022-03 Energy Assurance with Energy–Constrained Resources
18. Project 2022-04 EMT Modeling
19. Project 2022-05 Modification to CIP-008

Additional project information is available on the NERC website on the Standards web page.[3]

[2] The following projects are currently modifying standards to address directives: 2020-04 Modifications to CIP-012 (requirement for protections regarding the availability of communication links and data communicated between bulk electric system Control Centers). The second directive is a requirement to submit project schedules for one ongoing CIP project.

[3] As of the date of publication, the subject web page resides at http://www.nerc.com/pa/Stand/Pages/default.aspx.

The following projects have been, or are planned to be, completed in 2022 (actual and anticipated Board adoption dates are noted):

1. Project 2020-03 Supply Chain Low Impact Revisions (anticipated Board adoption November 2022)
2. Project 2020-05 Modifications to FAC-001-3 and FAC-002-2 (adopted by the Board May 2022)
3. Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination (Phase 1) (anticipated Board adoption October 2022)

2023 Projects

Projects Continuing into 2023

In determining high, medium, or low priority designations for projects as listed in this RSDP, the following factors were taken into consideration:

- Outstanding regulatory directives with filing deadlines (High Priority)
- RISC category rankings of high impact with consideration of probability of occurrence (High or Medium Priority)
- Potential reliability risks from stakeholders provided through feedback mechanisms (High, Medium, or Low Priority, based on the risk)
- Outstanding regulatory directives without regulatory deadlines or "soft directives" such as considerations (High or Medium Priority)
- Outstanding requirements that are known candidates for retirement (Medium or Low Priority)
- Any known adverse content and quality assessments (likely Low Priority, as any reliability gaps identified have already been addressed)

High Priority

- Project 2016-02 Modifications to CIP Standards (drafting estimated to be completed by February 2023 requiring approximately 9 industry subject matter experts for approximately 120 work hours each for the remaining part of this project)
- Project 2020-04 Modifications to CIP-012 (drafting estimated to be completed by February 2023 requiring approximately 8 industry subject matter experts for approximately 100 work hours each for the remaining part of this project)
- Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination (drafting estimated to be completed in two phases over 2022-2023; first phase expected to be completed by September 2022 requiring 15 subject matter experts for approximately 175 work hours each for Phase 1 and Phase 2 of this project)
- Project 2021-03 CIP-002 Transmission Owner Control Centers (drafting estimated to be completed by August 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project). Three additional SARs pertaining to CIP-002 are assigned to this project. Additional subject matter experts are being solicited to address these SARs (drafting estimated to be completed by November 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2022-02 Modifications to TPL-001-5.1 and MOD-032-1 (drafting estimated to be completed by August 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2022-03 Energy Assurance with Energy–Constrained Resources (drafting estimated to be completed by February 2023 requiring approximately 12-15 industry subject matter experts for approximately 120 work hours each for the remaining part of this project)

Medium Priority

- Project 2017-01 Modifications to BAL-003-1.1 (phase 2) (drafting estimated to be completed by February 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)

- Project 2020-02 Modifications to PRC-024 (Generator Ride-through) (drafting estimated to be completed by November 2023 requiring approximately 9 industry subject matter experts for approximately 120 work hours each for the remaining part of this project)
- Project 2020-06 Verifications of Models and Data for Generators (drafting estimated to be completed by February 2023 requiring approximately 12 subject matter experts for approximately 40 work hours each for this project)
- Project 2022-04 EMT Modeling (drafting estimated to be completed by February 2024 requiring approximately 12 subject matter experts for approximately 40 work hours each for this project)

Low Priority

- Project 2019-04 Modifications to PRC-005-6 (drafting estimated to be completed by August 2023 requiring approximately 13 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-01 Modifications to MOD-025 and PRC-019 (drafting estimated to be completed by May 2023 requiring approximately 12 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-02 Modifications to VAR-002 (drafting estimated to be completed by May 2023 requiring approximately 13 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-04 Modifications to PRC-002-2 (drafting estimated to be completed by May 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-05 Modifications to PRC-023 (drafting estimated to be completed by May 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-06 Modifications to IRO-010 and TOP-003 (drafting estimated to be completed by November 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2021-08 Modifications to FAC-008 (drafting estimated to be completed by August 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)
- Project 2022-01 Reporting ACE Definition and Associated Terms (drafting estimated to be completed by August 2023 requiring approximately 10 subject matter experts for approximately 40 work hours each for this project)

Other Projects Continuing into 2023

NERC Reliability Standards Efficiency Review Transition

In 2018, NERC began using both internal ERO Enterprise resources and industry resources to evaluate candidates for potential Reliability Standard retirements. NERC solicited industry participants to evaluate possible candidate requirements that may no longer be necessary to support reliability or address current risks to the Bulk Power System (BPS). Through open and transparent industry participation, the SER teams submitted a SAR to the SC in order to implement recommended changes to the body of Reliability Standards. The SAR was accepted at the August 2018 SC meeting, and the effort retired numerous standards and requirements in 2019.

The Standards Efficiency Review Report and Transition Plan outlines the Phase 1 and Phase 2 work, the additional recommendations, and closes out the SER. The SER recommendations are being implemented, which include Project 2021-06 Modifications to IRO-010 and TOP-003 regarding operational data exchange.

Standards Development Projects Overview

The NERC RSTC subcommittees, working groups, and task forces conduct work plan activities as assigned. Known and emerging risks are reviewed and assessed and may result in a SAR being submitted to initiate a standards development project. Also, as industry works to operate a reliable and secure grid, a SAR may be submitted to address risks.

As a result of the growth in use of inverters as part of the bulk power system, the NERC Inverter-based Resource (IBR) Performance Task Force (IRPTF) undertook an effort to perform a comprehensive review of all NERC Reliability Standards to determine if there were any potential gaps or improvements. The IRPTF identified several issues as part of this effort and documented its findings and recommendations in the "IRPTF Review of NERC Reliability Standards White Paper," which was approved in March 2020 by the Operating Committee and the Planning Committee (now part of the Reliability and Security Technical Committee (RSTC)). This assessment generated a number of projects listed in the RSDP.

The ERO's focus on cyber security is also at the forefront of addressing reliability risks. Standard development projects addressing virtualization and protecting cyber assets and communication links are a result of continued actions to keep the grid secure.

Other Projects Commencing

Currently, no Reliability Standards meet the criteria for periodic review in 2023. SARs, emerging risks to the BPS, and FERC regulatory directives that may occur subsequent to publishing this RSDP may prompt additional projects through 2023.

Standards Grading Metrics

The NERC SC endorsed the initial grading system for standards as a metric on March 9, 2016. The grading activity was directed by the NERC Board and was conducted by the Periodic Review Standing Review Team (PRSRT) as set forth in the Periodic Review process.[4] The PRSRT is comprised of the following:

- SRT Chair: SC Chair or (or SC Chair delegate)
- Representation from the Reliability and Security Technical Committee (RSTC)
- Representation from the Regional Entities
- NERC staff

The grading metrics include possible scores of 0-4 for content and 0-13 for quality. The set of standards chosen each year for grading, according to the criteria in the above section, will be graded to prioritize, and be a factor in determining the sequence they should enter into the Periodic Review process. At least one industry comment period will take place to allow industry to comment on the grading performed by the PRSRT. The grades, based on the PRSRT and any industry input, will be finalized, appended to the RSDP, and used to complete the prioritization each year. Additionally, input from other standards initiatives such as the Standards Efficiency Review (now completed), are being considered and coordinated with the Standards Grading activities.

[4] The process is detailed in the Periodic Review template, which is available at: https://www.nerc.com/pa/Stand/Resources/Documents/Periodic%20Review%20Template%20Feb%202016.pdf.

Attachment 1: Final Grades for Standards Considered in 2022

The PRSRT was tasked with using metrics from the 2013 Independent Experts Review Panel to assign numeric grades to instruct future Periodic Review teams.

While the PRSRT's final standards grades are important data points for the Periodic Reviews to consider, they are intended as one of many inputs to facilitate discussion during the reviews. Detailed analysis and background information on the Standards Grading process and PRSRT recommendations for periodic review project prioritization based on 2022 grades are posted on the project page.

2022 Standards Grades			
Standard	**Requirement**	**Content Average**	**Quality Average**
PER-003-2	R1.	4.00	12.67
PER-003-2	R2.	4.00	12.33
PER-003-2	R3.	4.00	12.67
PER-005-2	R1.	4.00	13.00
PER-005-2	R2.	4.00	13.00
PER-005-2	R3.	4.00	12.67
PER-005-2	R4.	4.00	13.00
PER-005-2	R5.	3.67	13.00
PER-005-2	R6.	3.67	13.00
PER-006-1	R1.	3.67	13.00
TPL-007-4	R1.	4.00	13.00
TPL-007-4	R2.	4.00	13.00
TPL-007-4	R3.	4.00	13.00
TPL-007-4	R4.	3.33	10.67
TPL-007-4	R5.	4.00	12.67
TPL-007-4	R6.	3.67	12.00
TPL-007-4	R7.	4.00	12.00
TPL-007-4	R8.	3.67	12.00
TPL-007-4	R9.	4.00	12.67
TPL-007-4	R10.	3.67	12.00
TPL-007-4	R11.	4.00	12.00
TPL-007-4	R12.	4.00	12.00
TPL-007-4	R13.	4.00	12.67

Low Impact Criteria Review Team Recommendations

Action

Accept the Low Impact Criteria Review Team recommendations.

Background

Communications, information technology, and industrial control systems provide various opportunities for adversaries to initiate a coordinated cyber attack, thereby presenting Bulk Electric System (BES) security risk. NERC is committed to using reliability tools to support industry's efforts to mitigate these coordinated cyber attacks risks.

In 2017, NERC developed new and revised critical infrastructure protection (CIP) Reliability Standards to help mitigate cybersecurity risks associated with the supply chain for high and medium impact BES Cyber Systems. These standards, collectively referred to as Supply Chain Standards, now consist of Reliability Standards CIP-013-2, CIP-010-4, and CIP-005-7. Consistent with the risk-based framework of the NERC CIP Reliability Standards, the Supply Chain Standards are applicable to systems that pose the greatest BES impact. To fully understand these Supply Chain risks, NERC collected registered entity data pursuant to NERC Rules of Procedure Section 1600 request for data or information.

NERC staff's analysis of the data shows that, while an individual compromise to any one low impact BES Cyber System would generally be a localized event, a coordinated cyber attack with control of multiple BES Cyber Asset facility System may result in an interconnection-wide BES event. The vast majority of transmission station and substation low impact BES Cyber Assets are at facilities that have at most only one line greater than 300 kV or two lines greater than 200 kV (but less than 300 kV). Similarly, the vast majority of generation resource low impact BES Cyber Assets are at facilities that have less than 500 MW. In other words, an individual compromise to any one of these locations (transmission substations or generation resources) would generally be a localized event. However, a coordinated cyber attack with control of multiple facilities may result in an interconnection-wide BES event.

On December 13, 2020, FireEye Inc., a cybersecurity solutions and forensics firm, publicly posted details about an attack on the Orion platform developed by SolarWinds. Underscoring the severity of the event, on December 13, 2020, the U.S. Department of Homeland Security's (DHS) Cybersecurity and Infrastructure Security Agency (CISA) issued Emergency Directive 21-01. This Directive required Federal agencies to take action based on the DHS assessment that a successful compromise from the SolarWinds Orion platform attack would have "grave" consequences.

In light of these recent cybersecurity events and the evolving threat landscape, the NERC Board took action at its February 4, 2021 meeting to direct NERC Staff, working with stakeholders, to expeditiously complete its broader review and analysis on facilities that house low impact BES Cyber Assets. Specifically, the degrees of risk presented by various facilities that house the low impact BES Cyber Assets and report on whether the low impact criteria should be modified. To assist in this evaluation, NERC staff assembled a team of cybersecurity experts and compliance

experts representative of a cross section of industry, called the Low Impact Criteria Review Team (LICRT). The LICRT's primary purpose was to discuss the potential threat and risk posed by a coordinated cyber attack on low impact BES Cyber Systems.

The LICRT conclusions regarding low impact BES Cyber Systems are as follows:

- Individually, low impact BES Cyber Systems are truly low impact to BES reliability. This corresponds to the longstanding work of NERC and the stakeholders to design and operate the BES to withstand the loss of any of its individual assets. A medium or high impact BES Cyber System is more than an impact to a typical single BES Element/Facility. Therefore, the team does not recommend changing the CIP-002 impact rating criteria used in identifying and categorizing individual BES Cyber Systems.
- The team recognizes that low impact BES Cyber Systems may introduce BES reliability risks of a higher impact where distributed low impact BES Cyber Systems are used for a coordinated attack. The team recommends enhancing the existing low impact category to further mitigate the coordinated attack risk.

Those recommendations, sorted by category, are as follows:

CIP Standards Revisions

- Requirement(s) for authentication of remote users before access is granted to networks containing low impact BES Cyber Systems at assets containing those systems that have external routable connectivity.
- Requirement(s) for protection of user authentication information in transit for remote access to low impact BES Cyber Systems at assets containing those systems that have external routable connectivity.
- Requirement(s) for detection of malicious communications to/between assets containing low impact BES Cyber Systems with external routable connectivity.

Security Guidelines

- Develop Security Guideline for protection of communications to and between assets containing low impact BES Cyber Systems across publicly accessible networks.
- Develop Security Guideline for procurement risk evaluation for low impact BES Cyber Systems.
- Develop Security Guideline for entities to voluntarily submit an E-ISAC report for unauthorized physical access attempts to low impact BES Cyber Systems.
- Develop Security Guideline for managing unauthorized remote access, including the practice of limiting station-to-station communications except for certain rare circumstances.

Risk Monitoring

- Continuous monitoring of E-ISAC physical access attempt reports to assets containing low impact BES Cyber Systems to determine if the risk increases over time and should be addressed.

Next Steps

Upon Board acceptance of the report, NERC staff will work with the Low Impact Criteria Review Team to create the SAR to address recommended Reliability Standard changes. Additionally, NERC staff will work with the RSTC to include the development of recommended guidance into their work plan.

Additional Information

Low Impact Criteria Review Report

Standards Process Improvement Opportunities

Action
Information

Background
Since 2007, mandatory Reliability Standards have played an integral role in addressing new and emerging risks to the reliability and security of the grid. Given the pace of change taking place on the bulk power system, NERC must continually improve its standard development processes to ensure that they are nimble and agile enough to keep pace with the speed at which novel risks are emerging. With the importance of addressing the challenges of the transforming grid in mind, the Board directed NERC staff at its February 10, 2022, meeting, to examine the body of rules regarding Reliability Standards development and, considering the feedback of stakeholders, recommend such changes that would improve NERC's ability to address urgent reliability needs with appropriate agility, while also maintaining reasonable notice and opportunity for public comment, due process, openness, and balance of interests.

NERC staff developed preliminary recommendations and convened a Standards Process Stakeholder Engagement Group (SPSEG) to provide feedback and develop consensus recommendations for improving agility of the process while maintaining the key role of stakeholders in producing consensus standards. This group included representatives from the Board, NERC staff, MRC, Standards Committee, Compliance and Certification Committee, Reliability and Security Technical Committee, and Reliability Issues Steering Committee with representation from U.S. and Canadian entities.

The SPSEG developed recommendations to propose to the Board that fall into the following categories: revisions to Section 300 of the NERC Rules of Procedure, revisions to the *Standard Processes Manual*, recommendations for standing committees, and a review of the Registered Ballot Body criteria. Stakeholder participation through an open and transparent process is key to the success of the ERO model, and the recommendations are intended to enhance, and not reduce or replace, the role of stakeholder feedback in NERC's standard development processes.

Additional Information
Standards Process Stakeholder Engagement Group page

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Standards Actions

Howard Gugel, Vice President of Engineering and Standards
Board of Trustees Meeting
November 16, 2022

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Project 2020-03 Supply Chain Low Impact Revisions

- Background
  - The purpose of Project 2020-03 was to address the risk of low impact Bulk Electric System (BES) Cyber Systems with remote electronic access connectivity identified in the Supply Chain Risk Assessment Report
  - Additionally, the team was asked to address the NERC Board resolution to:
    - detect known or suspected malicious communications for both inbound and outbound communications;
    - determine when active vendor remote access sessions are initiated; and
    - disable active vendor remote access when necessary.
- Reliability Benefits
- Action
  - Adopt
    - Reliability Standard - CIP-003-9 – Cyber Security – Security Management Controls

Project 2020-03 Supply Chain Low Impact Revisions

- Reliability Benefits
  - Address risk of low impact BES Cyber Systems with remote electronic access connectivity
    - Added R1.2.6 for "vendor electronic remote access security controls" to be included in cyber security policies
    - Added Section 6 in Attachment 1 for required sections of Cyber Security Plan(s) to include vendor electronic remote access security controls that include:
      - *One or more method(s) for determining vendor electronic remote access;*
      - *One or more method(s) for disabling vendor electronic remote access; and*
      - *One or more method(s) for detecting known or suspected inbound and outbound malicious communications.*
- Action
  - Adopt
    - Reliability Standard - CIP-003-9 – Cyber Security – Security Management Controls

2023-2025 Reliability Standards Development Plan

- Status
  - Posted for industry comment from July 26 - August 24, 2022
  - Endorsed by Standards Committee on September 21, 2022
- Action
  - Approve the 2023-2025 Reliability Standards Development Plan

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Low Impact Criteria Review Team Whitepaper

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Overview

- Whitepaper posted for comment through September 12
- Identification of risks and management strategies
- Team is considering comments and finalizing whitepaper
- Present to NERC Board in November

Recommendations

- CIP Standard revisions
  - Authenticate remote users for lows with external routable connectivity
  - Protect user authentication information for lows with external routable connectivity
  - Detect malicious communications to/between lows with external routable connectivity
- Security Guidelines
  - Protection of communications to and between lows across publicly accessible networks
  - Procurement risk evaluation for lows
  - Voluntarily submit E-ISAC report for unauthorized physical access attempts
- Risk Monitoring
  - Continuous monitoring of E-ISAC physical access attempt reports to see if risk increases

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Standards Process Improvement Opportunities

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Overview

- Stakeholder group met to consider NERC staff recommendations
- Post recommendations as modified for policy input
- Recommendations in three areas
  - Rules of Procedure
  - Standard Processes Manual
  - Standing Committees
  - Registered Ballot Body
- Policy input discussed at MRC

Questions and Answers

2023 Work Plan Priorities

Action
Approve

Summary
NERC Management will present to the Board of Trustees for consideration the proposed 2023 Work Plan Priorities which cover the following areas of focus:

- **Energy:** Tackle the challenge of grid transformation; climate change-driven, extreme weather; and inverter performance issues;
- **Security:** Move the needle by focusing on supply chain, Information Technology (IT) and Operational Technology (OT) system monitoring, cyber-informed grid planning and design, and evolution of the Critical Infrastructure Protection (CIP) standards;
- **Agility:** Tool the company to be more nimble in key areas, particularly standards development, internal operational processes, technical deliverables, revisit the FERC settlement restrictions, and explore alternate funding mechanisms; and
- **Sustainability:** Invest in ERO systematic controls, eliminate single points of failure, strengthen succession planning, and ensure robust cyber security protections for all systems.

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2023 Work Plan Priorities

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Areas of Focus

1. **Energy:** Tackle the challenge of grid transformation; climate change-driven, extreme weather; and inverter performance issues

2. **Security:** Move the needle by focusing on supply chain, Information Technology (IT) and Operational Technology (OT) system monitoring, cyber-informed grid planning and design, and evolution of the Critical Infrastructure Protection (CIP) standards

3. **Agility:** Tool the company to be more nimble in key areas, particularly standards development, internal operational processes, technical deliverables, revisit the FERC settlement restrictions, and explore alternate funding mechanisms

4. **Sustainability:** Invest in ERO systematic controls, eliminate single points of failure, strengthen succession planning, and ensure robust cyber security protections for all systems

5. **And … everything else we need to do**

2023 Work Plan Priorities

Reliability Assessments	➢ Reliability assessments incorporate consistent and documented methods to identify and evaluate extreme condition scenarios and energy availability ➢ Perform a special assessment of the potential impacts on the adequacy and operating reliability of the bulk power system (BPS) from new and evolving electricity market practices and state authority resource adequacy assurance/availability mechanisms ➢ Conduct extensive outreach to raise awareness and prompt action to assure reliability for the 2023 summer and 2022/2023 winter seasons
Reliability Standards	➢ Board adopts or endorses, as applicable: ▪ 2023 enhancements to Reliability Standards identified by Cold Weather Inquiry ▪ ERATF Energy Assessment Reliability Standards in operations planning timeframe ▪ Inverter base resource Reliability Standards (performance, modeling, studies, validation) ▪ CIP Reliability Standard modifications to accommodate virtualization ▪ Changes needed based on evaluation of the CIP bright-line risk criteria ➢ Standards Committee accepts Standard Authorize Requests focused on transmission planning energy scenarios* ▪ Normal and extreme events ▪ Gas-Electric interdependencies ▪ Distributed energy resource (DER) events

*Includes extreme events creating common conditions that impact the energy resilience of the BPS, such as extreme long-term, widespread cold and hot temperatures, widespread droughts conditions, solar, wind, and fires

2023 Work Plan Priorities (cont.)

Registration	➢ Review, and update if needed, registration criteria for generation to include Bulk Electric System (BES)-connected Variable Energy Resources (VERs) and DERs
Event Analysis	➢ Include loss of significant amounts of energy-constrained resources and energy deficiencies ➢ BPS awareness daily reports to include new system conditions and expand depth and breadth
Engineering	➢ Develop cyber-informed planning approaches documented in technical reports or other guidance material to study, identify, and reduce the number of critical facilities and attack exposure/impact
E-ISAC	➢ Increase the analysis of IT/OT environments and extract key, actionable insights ➢ Support DOE/CESER's Energy Threat Analysis Center (ETAC) and DHS/CISA's Joint Cyber Defense Collaborative (JCDC) ➢ Strategically expand CRISP participation, including natural gas pipeline companies ➢ Provide support to the natural gas sector for OT analytics and access to E-ISAC Portal ➢ Formally integrate the natural gas sector into GridEx VII planning
BPS Risk Mitigation	➢ Implement a revised and more agile Reliability Standards development process ➢ Establish Level 3 Alert process ➢ Strengthen reliability guidelines (essential actions, measures of effectiveness) ➢ Leverage CMEP tools for early visibility of BPS risk

2023 Work Plan Priorities (cont.)

Corporate Risk Reduction	➢ Provide additional data management, classification, and protection tools and processes ➢ Implement audit management software solution to automate Internal Audit processes
Talent Management	➢ Successfully onboard 14 new employees ➢ Maintain regrettable turnover at <10% and sustain employee engagement score
State/Provincial Outreach	➢ Expand outreach to national associations, including NARUC and CAMPUT, to further educate state and provincial regulators and policymakers on NERC assessments ➢ Build bench strength in NERC's External Affairs team with a focus on state outreach and stakeholder engagement
Process Improvement & Efficiency	➢ Decide on future direction of Finance & Accounting/HR systems and begin execution ➢ Complete Atlanta facility workplace assessment, survey market conditions, and conduct site tours of alternate options

Questions and Answers

Generating Availability Data System (GADS) Data Request for Utility-Scale Solar Plants and Updates for GADS Wind and Conventional GADS

Action

Approve the GADS Section 1600 Data Request to become effective January 1, 2024. Data collection will include:

1. Adding Generator Owners that operate photovoltaic plants of 20 MW or greater to the Generating Availability Data System (herein referred to as "GADS-PV");
2. Expanding GADS Wind ("GADS-W") reporting to include connected energy storage and event reporting; and
3. Collecting relevant design data and enhanced event reporting for GADS conventional generation ("GADS")

Materials

- Data Request Letter
  - Data Reporting Instructions GADS
  - Design Data Field List GADS
  - Data Reporting Instructions GADS PV
  - Data Reporting Instructions GADS Wind
- Public Comments and Responses

Background

NERC has required reporting of conventional generation inventory, performance, and event data since 2012. Reporting of wind generation data became mandatory in 2018 with a phased-in approach; in 2020, the final phase of wind plants began reporting. The increasing penetration of solar generation has prompted the need for NERC to have information about utility-scale solar facilities whose operation may impact the bulk electric system.

In 2018, NERC and the GADS Working Group (now the GADS User Group) began developing data reporting requirements for utility-scale solar facilities and connected energy storage at the plant. During that initiative, gaps in requirements for wind reporting were identified, namely event reporting and information about connected energy storage at the plant. The expansion of data requirements for GADS Wind will improve NERC's ability to evaluate performance of renewable generation and provide comparable reporting requirements for both wind and utility-scale solar generation.

Conventional GADS reporting of design data is currently limited, which impacts NERC's ability to conduct detailed analysis to evaluate whether certain types of unit configurations or key operating components are impacted by operating conditions such as extreme weather. NERC and the GADS User Group propose to modify conventional GADS reporting to include limited design data by unit type and add the Contributing Operating Condition field.

Proposed Section 1600 Data Request

The proposed Section 1600 data request would revise NERC's collection of generator availability data as outlined in the three Action items outlined above. The materials posted for comment and included in the proposed Section 1600 data request detail the information required under Section 1602.2.1 of the NERC Rules of Procedure. This includes the following:

(i) a description of the data or information to be requested, how the data or information will be used, and how the availability of the data or information is necessary for NERC to meet its obligations under applicable laws and agreements;

(ii) a description of how the data or information will be collected and validated;

(iii) a description of the entities (by functional class and jurisdiction) that will be required to provide the data or information ("Reporting Entities");

(iv) the schedule or due date for the data or information;

(v) a description of any restrictions on disseminating the data or information (e.g., "Confidential Information," "Critical Energy Infrastructure Information," "aggregating" or "identity masking"); and

(vi) an estimate of the relative burden imposed on the Reporting Entities to accommodate the data or information request

In accordance with the NERC Rules of Procedure, NERC provided FERC staff with notice of the intended request and subsequently posted the GADS Data Request for a 45-day stakeholder comment period in 2021 (June 15, 2021 – July 31, 2021). After review of the initial public comments, NERC staff and the GADS User Group worked to address the concerns raised. The revised GADS Section 1600 Data Request was provided to FERC staff in May 2022, and posted for a second public comment period this year (June 21, 2022-August 5, 2022). NERC staff and the GADS User Group have reviewed the comments received and made appropriate revisions. The GADS Data Request was endorsed by the Reliability Security and Technical Committee ("RSTC") by electronic vote on October 6, 2022.

NERC staff hereby submits the proposed data request, as revised and endorsed by the RSTC, along with comments received and NERC's evaluation thereof, to the NERC Board of Trustees and requests approval with an effective date of January 1, 2024.

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Section 1600 Data Request

For GADS Conventional, GADS Wind, and GADS Solar

John Moura, Donna Pratt
Board of Trustees Meeting
November 15 - 16, 2022

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Action Requested

- Approve the GADS Section 1600 Data Request to become effective January 1, 2024

GADS Section 1600 Data Request

- NERC is requesting an update to the GADS Section 1600 data to include:
  - Solar (new):
    - Inventory/configuration, event reporting, and performance data
    - Inventory/configuration of connected energy storage and performance data
  - GADS Wind extensions:
    - Event reporting and connected energy storage
    - Changes to configuration data to support event reporting
  - Conventional GADS extensions:
    - Unit design data that is comparable to the types of information being collected for wind and solar
    - Enhanced event reporting (Contributing Operating Condition)

Process

- NERC began development of this proposed Section 1600 data request with industry in 2018
- FERC staff review and public comment periods were provided in 2021 and 2022
  - After reviewing the feedback from the 2021 public comment period, substantial changes and clarifications were provided
    - Revisions focused on information essential to evaluating performance and impact to the BPS
  - In 2022, the second public comment period provided an opportunity for additional feedback
  - Final materials are available for review at: https://www.nerc.com/pa/RAPA/PA/Pages/Section1600DataRequests.aspx
- The Reliability and Security Technical Committee endorsed the GADS Section 1600 Data Request via electronic vote on October 6, 2022

Proposed Effective Dates for Reporting

Who	Reporting Schedule*
Photovoltaic Reporting	• Late 2023: Voluntary reporting* • 2024: Mandatory reporting for photovoltaic facilities with a total installed capacity of 100 MW or greater • 2025: Mandatory reporting for photovoltaic facilities with a total installed capacity of 20 MW or greater
Incremental Wind Event Reporting	Effective beginning January 1, 2024
Incremental Design Data and Event Contributing Operating Condition Field	Effective beginning January 1, 2024

**Estimated dates, subject to organization project priorities*
**Mid-year implementations may not begin until new calendar year*

Summary

- Collecting this data will improve NERC's ability to track the changing resource mix and evaluate the performance of the generating fleet

Discussion

2022 Long-Term Reliability Assessment Preview

Action
Update

Background
The Long-Term Reliability Assessment (LTRA) is developed annually by NERC in accordance with the Electric Reliability Organization's (ERO) Rules of Procedure and Section 215 of the Federal Power Act, which instructs NERC to conduct periodic assessments of the North American Bulk Power system (BPS). The reliability assessment process is a coordinated reliability evaluation between the Reliability Assessment Subcommittee (RAS), the Regional Entities, and NERC staff. The scope of the LTRA includes the following:

- Review, assess, and report on the overall electric generation and transmission reliability (adequacy and operating reliability) of the interconnected BPS, both existing and as planned.
- Assess and report on the key issues, risks, and uncertainties that affect or have the potential to affect the reliability of existing and future electric supply and transmission.
- Review, analyze, and report on self-assessments of electric supply and bulk power transmission reliability, including reliability issues of specific Regional concern.
- Identify, analyze, and project trends in electric customer demand, supply, and transmission and their impacts on BPS reliability.
- Investigate, assess, and report on the potential impacts of new and evolving electricity market practices, new or proposed regulatory procedures, and new or proposed legislation (e.g. environmental requirements) on the adequacy and operating reliability of the BPS.

Summary
The electricity industry provided NERC with resource adequacy projections for the 2023–2032 assessment period. In addition, the LTRA will include an in-depth probabilistic energy assessment which will evaluate hourly energy risks through 2027. NERC independently assessed these projections and has identified key findings and recommendations. The LTRA draft report will be provided to the NERC Board of Trustees (Board) and Member Representatives Committee (MRC) in December, per the schedule below.

2022 Long-Term Reliability Assessment Review Schedule	
Date	**Description**
November 7	Draft sent to NERC Reliability and Security Technical Committee (RSTC)
December 1	Report sent to NERC Board
December 12	Embargoed report sent to MRC
December 14	NERC Board conference call to accept the report
December 15	Report release

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2022 Long-Term Reliability Assessment

John Moura, Director, Reliability Assessments and Performance Analysis

Board of Trustees Meeting

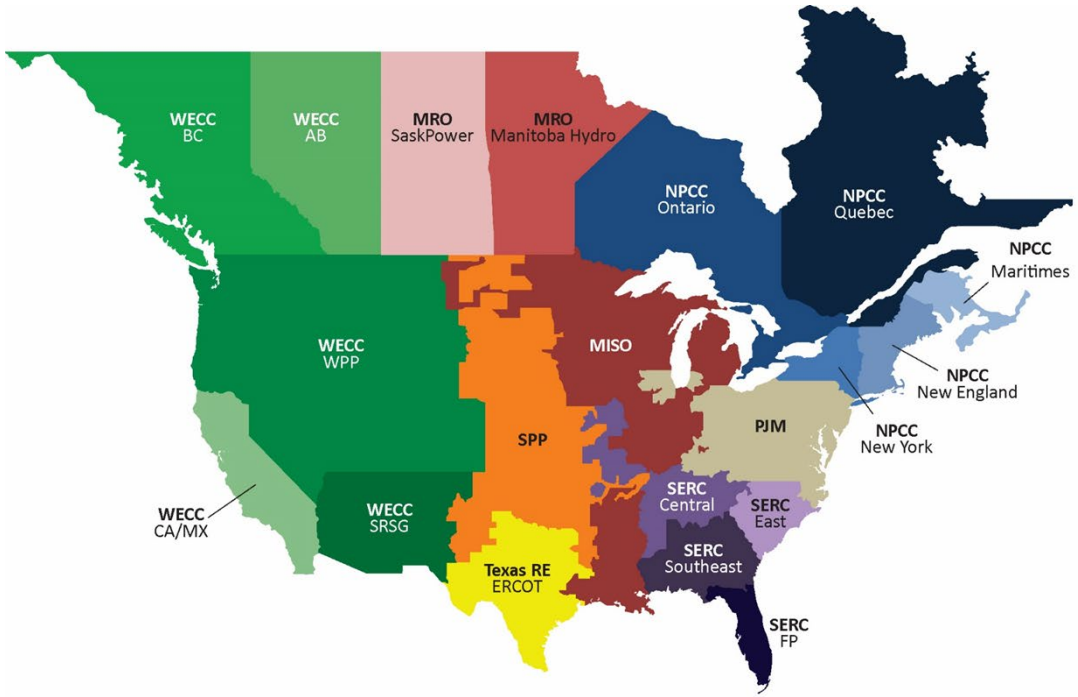
November 16, 2022

RELIABILITY | RESILIENCE | SECURITY




Long-Term Reliability Assessment

- Assessment of resource capacity and energy risks
- Demand, generation, and transmission projections
- Demand-side resources
- Emerging Issues
- Coordination and Review with Regional Entities and Stakeholder Groups



MISO *(Midcontinent Independent System Operator)*
PJM

MRO – Midwest Reliability Organization
- MRO-Manitoba Hydro
- MRO-SaskPower
- SPP

NPCC – Northeast Power Coordinating Council
- NPCC-Maritimes
- NPCC-New England
- NPCC-New York
- NPCC-Ontario
- NPCC-Québec

SERC – SERC Reliability Corporation
- SERC-East
- SERC-Central
- SERC-Southeast
- SERC-Florida Peninsula

Texas RE – Texas Reliability Entity
- Texas RE-ERCOT *(Electric Reliability Council of Texas)*

WECC
- WECC-CA/MX *(California/Mexico)*
- WECC AB *(Alberta)*
- WECC BC *(British Colombia)*
- WECC WPP *(Western Power Pool)*
- WECC-SRSG *(Southwest Reserve Sharing Group)*

Resource Adequacy Finding - Summary

- Parts of North America are at risk of electricity supply shortfall during forecasted or extreme conditions over the next five years
- Contributing factors in affected areas
  - Declining capacity from recent and projected generator fleet retirements without capacity replacement
  - Energy limitations in the resource mix
  - Generator and fuel supply vulnerability to extreme weather

LTRA Risk Assessment Approach

On-Peak Reserve Margins

- **Compares margin between resources and peak demand to a reference margin level (RML)**
- Variable energy resources are rated at expected output
- Demand Response resources are included as reduced peak demand
- RML is set by regulators, ISO/RTO, or other authorities to achieve an accepted level of risk

Probabilistic Assessment

- **Compares calculated load loss and unserved energy metrics from probabilistic study to criteria**
- Demand and resources modeled probabilistically at all hours
- Generator availability, demand variation and resource output can be modeled probabilistically
- Various load loss and energy metrics can be calculated

LTRA Risk Assessment Criteria

Resource capacity and energy risks are assessed for Years 1 – 5* in all assessment areas using the following criteria:

High Risk

- Supply shortfall can occur in **forecast conditions**
  - Historical peak demand and resource performance
- Indicators
  - Reserve margins fall below RML
  - Loss of Load Hours (LOLH) exceed 1-day-in-10 years
- Extreme conditions are also likely to result in shortfall

Elevated Risk

- Supply shortfalls are likely in **extreme conditions** only
  - Extreme high demand or abnormal low resource output
- Indicators
  - LOLH expected but less than 1-day-in-10 years
  - Unserved energy expected
  - Supply risks found in studies of extreme conditions

*Resource adequacy trends are reported for years 6 - 10

Preliminary

Capacity and Energy Risk Assessment

Ontario

- Reserve Margins below RML in 2025
- Planned retirements and nuclear work

MISO

- Reserve Margins below RML in 2023
- 5,700 MW of thermal generation retirements since 2022

California-Mexico

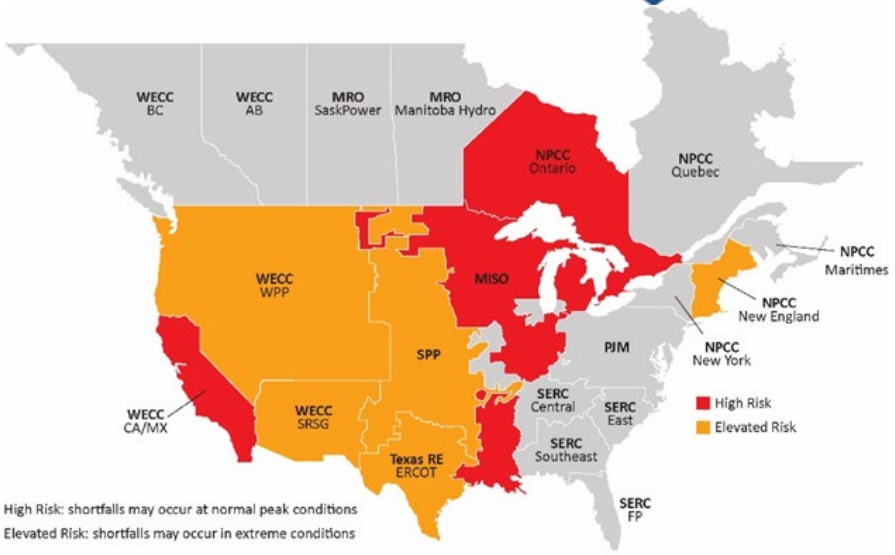
- Load loss hours anticipated due to variable resource mix and demand
- Improving trend in metrics with recent capacity additions

U.S. West

- Unserved energy is increasing in summer months as variability grows

New England

- Fuel risk in extended cold weather



Texas

- Energy risk shifts to winter due to potential impacts of extreme weather

SPP

- Energy shortfalls likely during low-wind and high demand periods

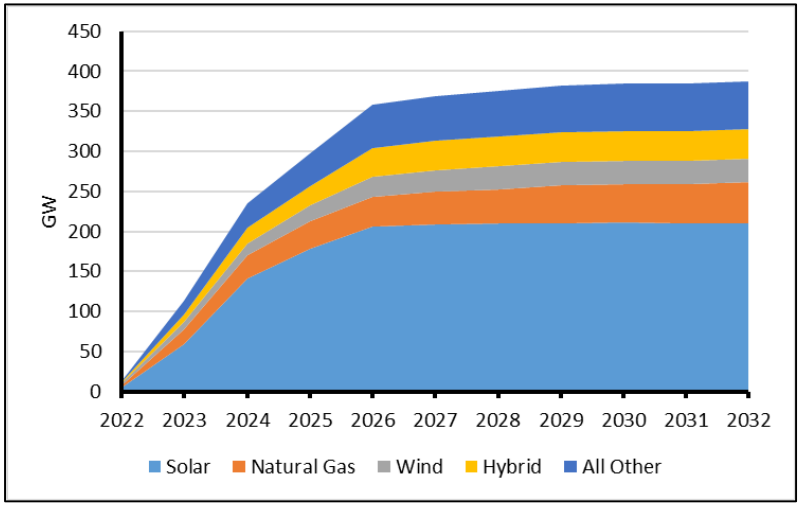
Changing Resource Mix

- Wind, solar, and hybrid generation in interconnection processes enable continued transition as older thermal resources retire
- Implications:
  - Increasing hourly and weather dependent variability
  - New resource characteristics and performance issues
  - Less fuel diversity in dispatchable fleet

Table 1: 2022 Capacity at Peak Demand

Type	Capacity (GW)	Change since 2021 (GW)
Natural Gas	435	**-31.9**
Coal	198	**-22.1**
Nuclear	102	**-5.1**
Solar and Wind	71	**+10.4**
All others	188	**-1.5**

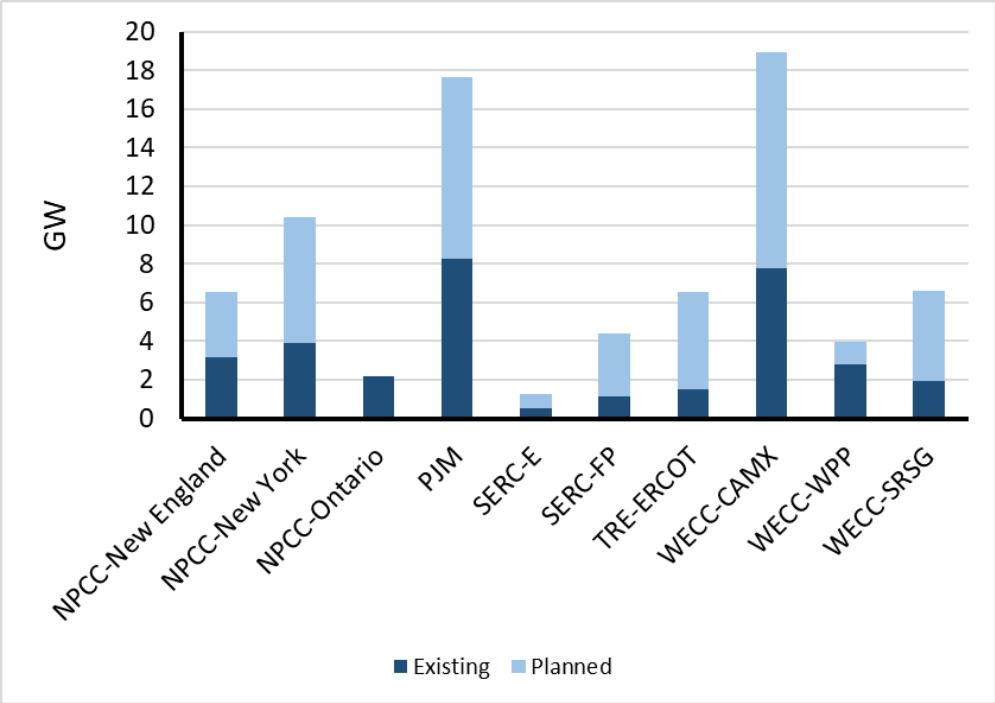
Contributions at hour of peak demand. Variable energy resource (solar, wind, and some hydro) typically count less than installed nameplate capacity.



Resource Capacity in Development (Tier 1 and 2)

Changing Resource Mix - DER

- Cumulative solar PV DER expected to reach over 80,000 MW by the end of the 10-year assessment period (up 25% since 2021)
  - 12 of the 20 assessment areas expect to double their total solar DER footprint by 2032



Solar DER by Assessment Area by 2032 – Select Areas

Generator Retirements

- Retirements factor into risk assessment and resource mix trends
- Generators that are *Confirmed* for retirement by ISO/RTO and Planners are not counted as capacity in the LTRA
- LTRA will evaluate generators that have announced retirements but have not met ISO/RTO or Planner approval (*Unconfirmed*) for impacts on resource adequacy and resource mix

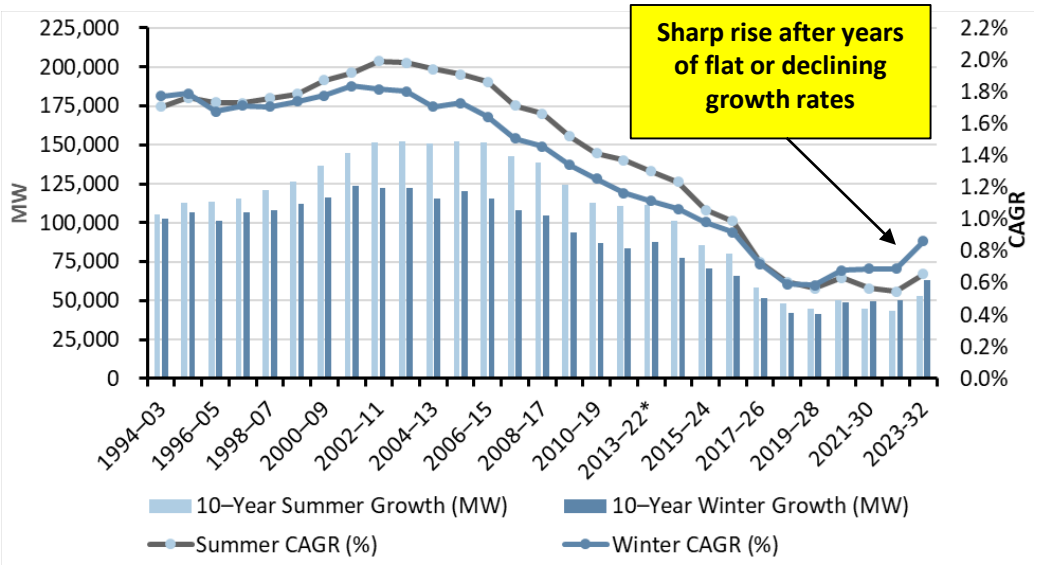
Table 2: Generation Retirement Projections through 2032

Type	Confirmed (MW)	Baseline Case (MW)[1]	High-Retire Scenario (MW)[2]
Natural Gas and Oil	29,639	38,602	41,603
Coal	52,931	89,539	97,439
Nuclear	6,163	15,194	18,594

[1] The baseline case is obtained by combining EIA 2022 Annual Energy Outlook reference case retirement projections for the U.S. with confirmed retirements in Canada.
[2] The high-retirements scenario is obtained by combining EIA 2022 Annual Energy Outlook low-renewable-cost case retirement projections for the U.S. with confirmed retirements in Canada.

Peak Demand: Growth across the BPS

- 10-year Peak Demand growth showing largest increases in recent years
- Electric vehicle growth influences projections
- Demand Response offsets Peak Demand
- Dual-peaking or changing from summer to winter peaking anticipated in some parts of the U.S. Southeast and Northeast



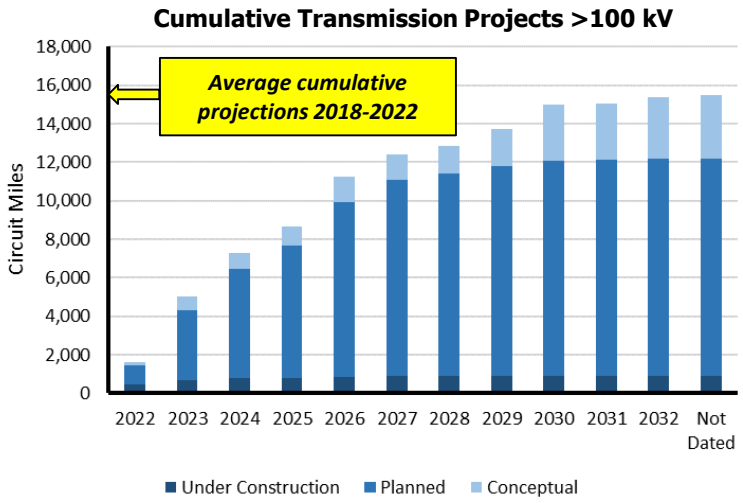
10-year Summer and Winter Peak Demand Growth

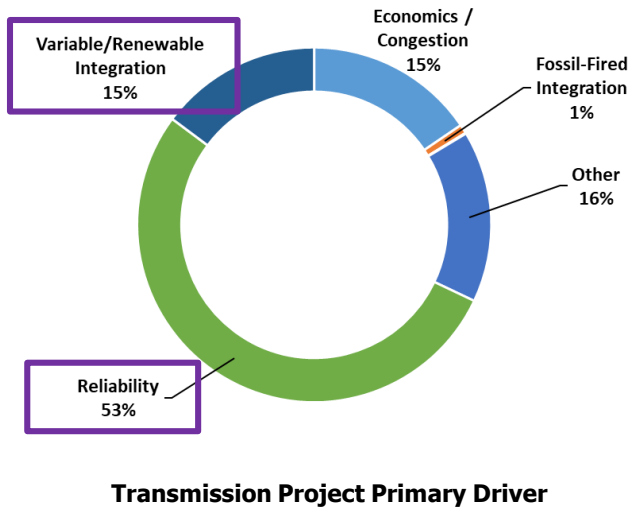
Largest 10-year Winter Peak Demand Growth	
Assessment Area	**Demand Change**
NPCC-New York	2.36%
WECC-SRSG	2.06%
NPCC-New England	1.95%
NPCC-Ontario	1.32%
Texas RE-ERCOT	1.30%

Largest 10-year Summer Peak Demand Growth	
Assessment Area	**Demand Change**
WECC-SRSG	1.69%
NPCC-Ontario	1.27%
WECC-CAMX	1.19%
MRO-SaskPower	1.05%
NPCC-Maritimes	1.03%

Trend in Transmission Projects: Steady

- Little change in transmission miles projections in past five years
- Most projects are initiated to support grid reliability
- Miles of transmission being planned or constructed for renewable integration increased from 1,589 mi to 2,376 mi since 2021 LTRA





Transmission Miles in Planning or Construction through 2032			
Area	**Miles**	**Area**	**Miles**
WECC WPP	3,439	SERC SE	629
NPCC New York	1,635	WECC SRSG	581
PJM	983	NPCC Ontario	570
WECC CAMX	902	NPCC New England	506
WECC BC	775	All other areas	<500 mi each

2022 LTRA Status

- The LTRA report was reviewed by the NERC Reliability and Security Technical Committee (RSTC) in October
- NERC Staff is preparing the report and recommendations for Board acceptance on December 14

Questions and Answers

Agenda Item 7e
Board of Trustees Meeting
November 16, 2022

2022-2023 Winter Reliability Assessment Preview

Action
Information

Background
The NERC 2022-2023 Winter Reliability Assessment (WRA) identifies, assesses, and reports on areas of concern regarding the reliability of the North American bulk power system (BPS) for the upcoming winter season. In addition, the WRA will present peak electricity supply and demand changes, as well as highlight any unique regional challenges or expected conditions that might impact the BPS. The reliability assessment process is a coordinated reliability evaluation between the Reliability Assessment Subcommittee (RAS), the Regional Entities, and NERC staff.

The final report reflects NERC's independent assessment and is aimed at informing industry leaders, planners and operators, as well as regulatory bodies so that they can be better prepared to take necessary actions to ensure BPS reliability. The report also provides an opportunity for the industry to discuss their plans and preparations for ensuring reliability throughout the upcoming winter period.

Pursuant to delegated authority from the Board of Trustees, NERC management expects to issue the 2022-2023 Winter Reliability Assessment on or about November 17, 2022. The review schedule below identifies key milestones for the report.

2022-2023 Winter Reliability Assessment Review Schedule	
Date	**Description**
October 17	Draft sent to NERC Reliability and Security Technical Committee (RSTC)
November 9	Report sent to NERC Executive Management
November 14	Final report sent to NERC Board
November 17	Report release

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2022-2023 Winter Reliability Assessment

Mark Olson, Manager, Reliability Assessments
Board of Trustees Meeting
November 16, 2022

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About the Report

- NERC's Winter Reliability Assessment (WRA) examines potential regional resource deficiencies and operating reliability concerns
  - Describes industry preparations to manage seasonal risks
- Developed with the Reliability Assessment Subcommittee (RAS) and reviewed by the Reliability & Security Technical Committee

Energy Risk Assessment Summary

- A large portion of the North American BPS is at risk of insufficient electricity supplies during peak winter conditions
- Factors contributing to reliability risks in affected areas include:
  - Higher peak-demand projections
  - Generator retirements
  - Generator vulnerability to extreme weather
  - Fuel supply and natural gas infrastructure limitations
- Special attention on generator fuel supplies is warranted by current domestic and global energy markets and supply chains

Risk Assessment Considerations

- Capacity and Energy Risk Assessment based on:
  - On-peak reserve margins compared to Reference Margin Level
  - Operational risk analysis of risk periods (waterfall chart)
  - Probabilistic energy metrics (Calculated loss-of-load hours, unserved energy)
- Generator availability assessed for extreme winter scenarios
- Variable energy resource contribution is rated at expected output
  - Wind resource output is be less than nameplate and determined by historical information
  - Solar resource output at winter peak hour is typically zero

Winter Energy and Capacity Risk Summary

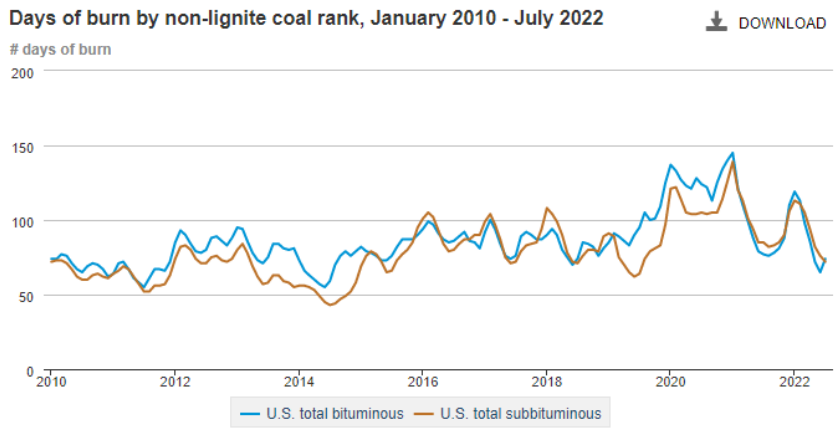
- Texas
  - High generator outages, fuel disruption and volatile demand in extreme cold
- MISO
  - Over 7,800 MW of coal plant retirements since last winter
  - Extreme cold impact to generation and fuel
- Alberta and Maritimes Provinces
  - Peak electricity demand growth strains tight winter reserve margins
- SERC East
  - Shrinking capacity and demand growth cause risk of shortfall in extreme cold

Winter Reliability Risk Map

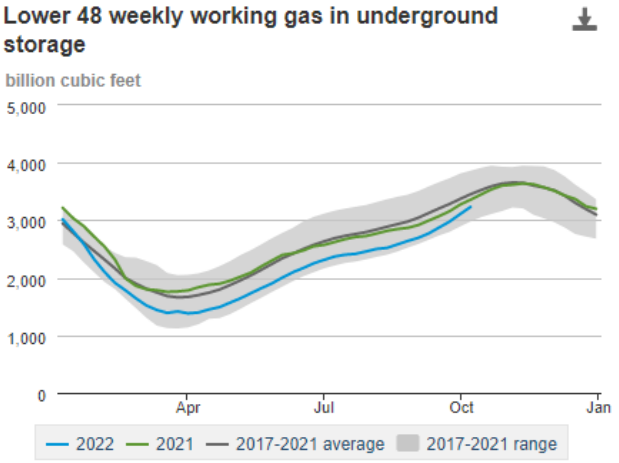
- New England
  - Natural gas supply infrastructure limitations

Fuel Monitoring

- **Coal** fleet inventories down to 74 days of bituminous supply on average in EIA reporting
  - Reliability Coordinators are monitoring coal and consumable inventories
- **Natural Gas** storage inventory rebounding from summer
  - Cold weather production and delivery are ongoing area concerns
- Specific fuel risks in New England
  - Generator on-site stored **liquid fuels** at 37% capacity (October)
  - Record high global demand for **LNG** increases fuel availability risk



As of October



Other Findings

- Inadequate supply of distribution transformers could slow restoration efforts following winter storms
- Steps taken in areas affected by the February 2021 Winter Storm are expected to reduce the likelihood and lessen the severity of similar events
- Responses to Level 2 Alert *Cold Weather Preparations for Extreme Weather Events* show progress in winter readiness

Key Actions

- **Cold Weather Preparations** – Generators should prepare for winter conditions and communicate with grid operators to reduce the risk of supply shortfalls
  - Guidance in NERC's Level 2 Alert - Cold Weather Preparations (Sept 2022)
- **Fuel** – Generators should take early action on assuring fuel and availability. Reliability Coordinators and Balancing Authorities should monitor fuel supply adequacy.
- **State regulators and policy makers** – Preserve critical generation resources at risk of retirement prior to the winter season. Support requests for environmental and transportation waivers when needed for reliability.

Questions and Answers

PCGC Credential Maintenance Research Project Update

Action
Update

Background
The industry and its regulatory authority questioned the validity of credential maintenance Continuing Education Hours (CEH) requirements for recertification for NERC Certified System Operators (NCSO) and the need for four credentials.

To examine the NCSO and Credential Maintenance Program for potential improvements in September 2021the Personnel Certification Governance Committee (PCGC) selected EPRI as the vendor for the Credential Maintenance Research Project (CMRP).

EPRI was tasked with the primary purpose of examining credential maintenance practices against literature and other credentialing bodies/institutions to determine what evidence-based changes and/or enhancements should be made to existing NCSO credential maintenance CEH requirements that fully meet the requirements of *PER-003-2 Operating Personnel Credentials*. The secondary purpose was to determine if there is sufficient evidence to warrant consolidating the existing four NCSO credentials into one credential and if so, determine the appropriate maintenance requirements for the one credential based on evidence.

The Credential Maintenance Research Project Task Force is made up of PCGC and Credential Maintenance Working Group (CMWG) members.

Summary
Since September 2021, NERC and the CMRP Task Force have worked closely with EPRI and Exceed Performance Solutions (EPS). EPS performed historical analysis on data provided from SOCCED, research and analysis comparing other certification programs, conducted industry surveys, and interviews, and reviewed activities weekly with the CMRP Task Force.

1. **Literature Review to assess the current state of the research**
2. **Data Collection and Analysis for historical analysis, benchmarking, and project evaluation**
3. **Report of Findings report detailed data results from the three analyses**
4. **Conclusions to compile the findings by evolution question, draw conclusions and consider implications**
5. **Recommendations make specific suggestions for program enhancements**

The evaluation questions were an important part of the project. Below are several of the key questions:

1. **How should the credential maintenance program align with both the certification exam and with the knowledge and skills required on the job?**
2. **What is the optimum type and number of credentials NERC should offer?**

3. **For each credential, what number, unit, and distribution of hours are required to meet the stated program purpose (per Q1)?**
4. **For each credential, what categories and levels of subject matter must operators complete to meet the stated program purpose (per Q1)?**

In August, 2022, EPRI and their contractor, EPS presented a high-level CMRP overview and provided the final report to the PCGC and the CMWG.

The CMRP Task Force will review, discuss, and report the findings and recommendations for the programs during the second quarter of 2023. The CMRP Task Force will consider the project recommendations in accordance with the functional entities in *PER-003-2 Operating Personnel Credentials*.

NERC and the PCGC will evaluate the CMRP Task Forces recommendation, discuss changes with NERC leadership, the MRC, and FERC; propose changes to the industry, gather stakeholder feedback, and begin implementation planning.

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Credential Maintenance Research Project Update

Personnel Certification Governance Committee

Cory Danson, Chair, WAPA

NERC Board of Trustees Meeting

November 16, 2022 | New Orleans, LA

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Problem Statement

- The industry and its regulatory authority are questioning the validity of credential maintenance Continuing Education Hours (CEHs) requirements for recertification NERC Certified System Operators (NCSO)

Project Purposes

Primary Purpose

- Examine credential maintenance practices against literature and other credentialing bodies/ institutions
- Determine what evidence-based changes and/or enhancements should be made to existing NCSO credential maintenance CEH requirements

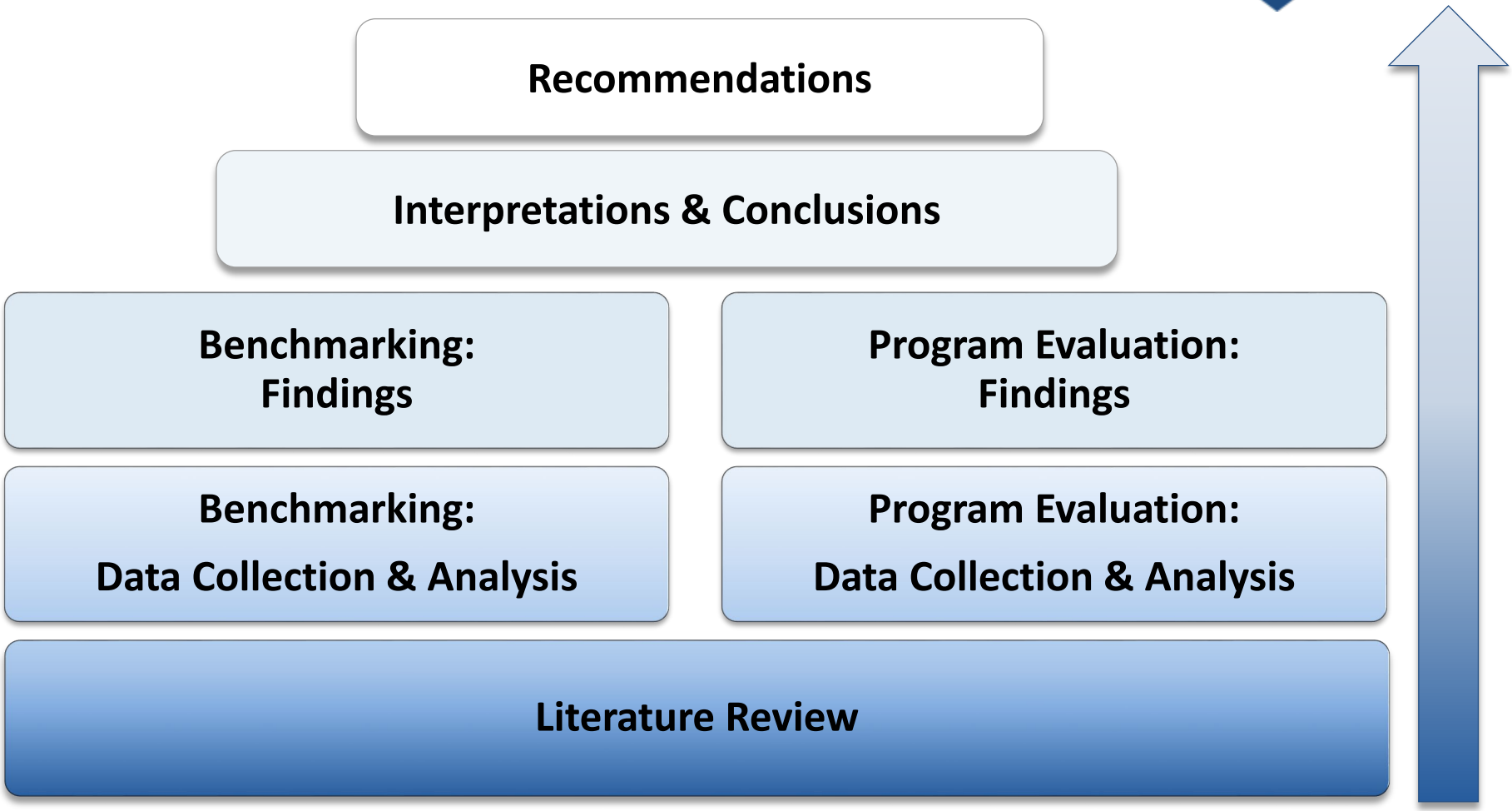
Secondary Purpose

- Determine if there is sufficient evidence to warrant consolidating the existing four NCSO credentials into one credential
- If so, determine the appropriate maintenance requirements for the one credential based on evidence.

Project Approach

- Team Effort
  - EPRI-led project leveraging subject matter experts and contractor strengths
  - NERC Staff
  - Personnel Certification Governance Committee (PCGC) and Credential Maintenance Working Group (CMWG) Task Force
- Fact-Based Approach
  - Literature review, benchmarking, data analysis, surveys, and interviews, etc.

Project Structure



Key Project Phases

Literature Review

- Assess the current state of the research

Data Collection & Analysis

- Historical Analysis
- Benchmarking Study
- Program Evaluation

Reporting of Findings

- Present detailed data resulting from the three analyses

Conclusions

- Compile the findings by evaluation question
- Draw conclusions
- Consider implications

Recommen-dations

- Make specific suggestions for program enhancements

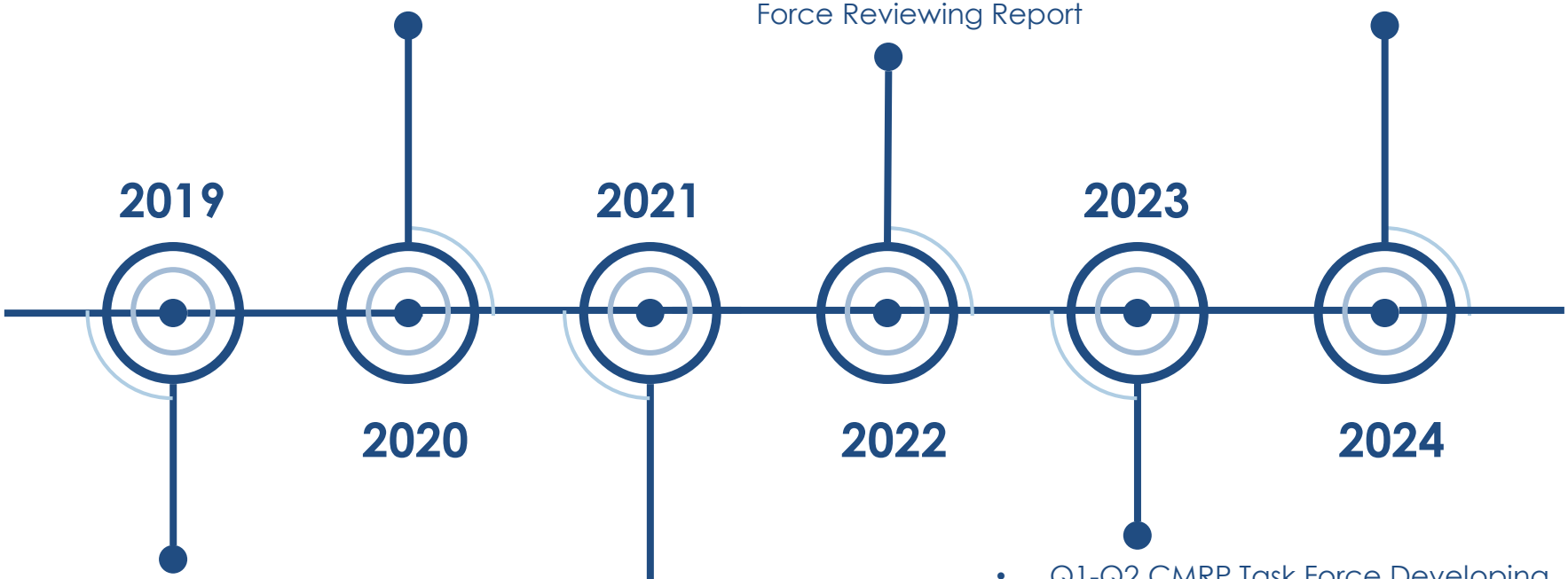
Evaluation Questions

1. How should the credential maintenance program align with both the certification exam and with knowledge and skills required on the job?
2. What is the optimum type and number of credentials NERC should offer?
3. For each credential, what number, unit, and distribution of hours are required to meet the stated program purpose (per Q1)?
4. For each credential, what categories and levels of subject matter must operators complete in order to meet the stated program purpose (per Q1)?

Major Themes for the Findings

- Facts and data support several possible program improvement ideas
- 19 recommendations developed, which may bring:
  - Higher quality and more effective training
  - Increased focus on operator skills, situational awareness, industry changes

Timeline



- Q1 Posted Credential Whitepaper: Move from Four to One Credential and change CEHs to 140 for One Credential

- Q1 NERC, PCGC, & FERC Discussed Justification to Change CEHs

- Q3 Selected EPRI

- Q1-Q3 EPRI Research, Weekly Meetings with NERC & CMRP Task Force
- Q3 CMRP Final Report, Task Force Reviewing Report

- Q1-Q2 CMRP Task Force Developing Recommendation from Final Report
- Q2 PCGC/CMWG Task Force Recommendation
- Q3-Q4 Outreach with FERC, MRC, and Industry

- Q1-Q2 Develop Implementation Plan and Industry Outreach

Moving Forward

- PCGC and CMWG Task Force
  - Evaluate recommendations
  - Update PCGC and CMWG at November meeting
  - Final recommendation Q2 2023
- NERC and PCGC
  - Evaluate Task Force recommendation
  - Discuss changes with NERC leadership, MRC, and FERC
  - Propose changes and gather industry feedback
  - Begin implementation planning

Questions and Answers

2022 ERO Enterprise Reliability Indicators

Action
Update

Background
The 2022 ERO Enterprise Reliability Indicators identify key reliability indicators that provide insight into the performance of the bulk power system (BPS) as well as emerging trends that may indicate potential opportunities or challenges prospectively. The Reliability Issues Steering Committee (RISC) committee reviewed the 2020 ERO Enterprise Reliability Indicators as part of their 2020 Work Plan and recommended several modifications to the indicators for 2021. The RISC committee will review the Reliability Indicators again in 2022 for further enhancements. The current Reliability Indicators more accurately identify potential trends that may pose challenges to the BPS and include several more forward- looking indicators that can illuminate areas that may require further analysis.

Summary
NERC staff will provide an update on the status of the reliability indicators.

NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

2022 Third Quarter Reliability Indicators

Soo Jin Kim, Director of PRISM
Board of Trustees Meeting
November 16, 2022

RELIABILITY | RESILIENCE | SECURITY




Indicator 1: Fewer, Less Severe Events

- **Why is it important?**
  - Provides a quantitative measure and trend of actual impacts on the BPS
- **How is it measured?**
  - Count: Number of Category 3 or above events
  - Trend: Statistical test is performed on the five-year cumulative daily event Severity Risk Index (eSRI) for (Category 1–3) events

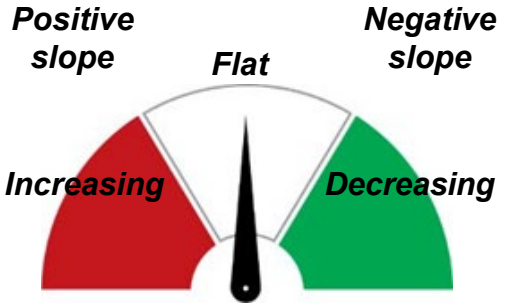
Data (Annual Measurement)

- Threshold: No Category 3 or above events: *Zero is green, else is red*
  - *One Category 3 event in 2022 YTD*

2022 Status

Data (Compared to a 5-year rolling average)

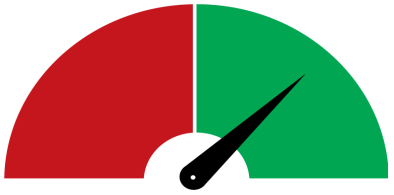
- Slope of eSRI line is flat to decreasing and does not show an increase above zero that is statistically significant (95% Confidence Interval).
- "2022 Status" relates to the slope of the 5 year rolling average (Positive, Flat, or Negative), not just the 2022 performance.



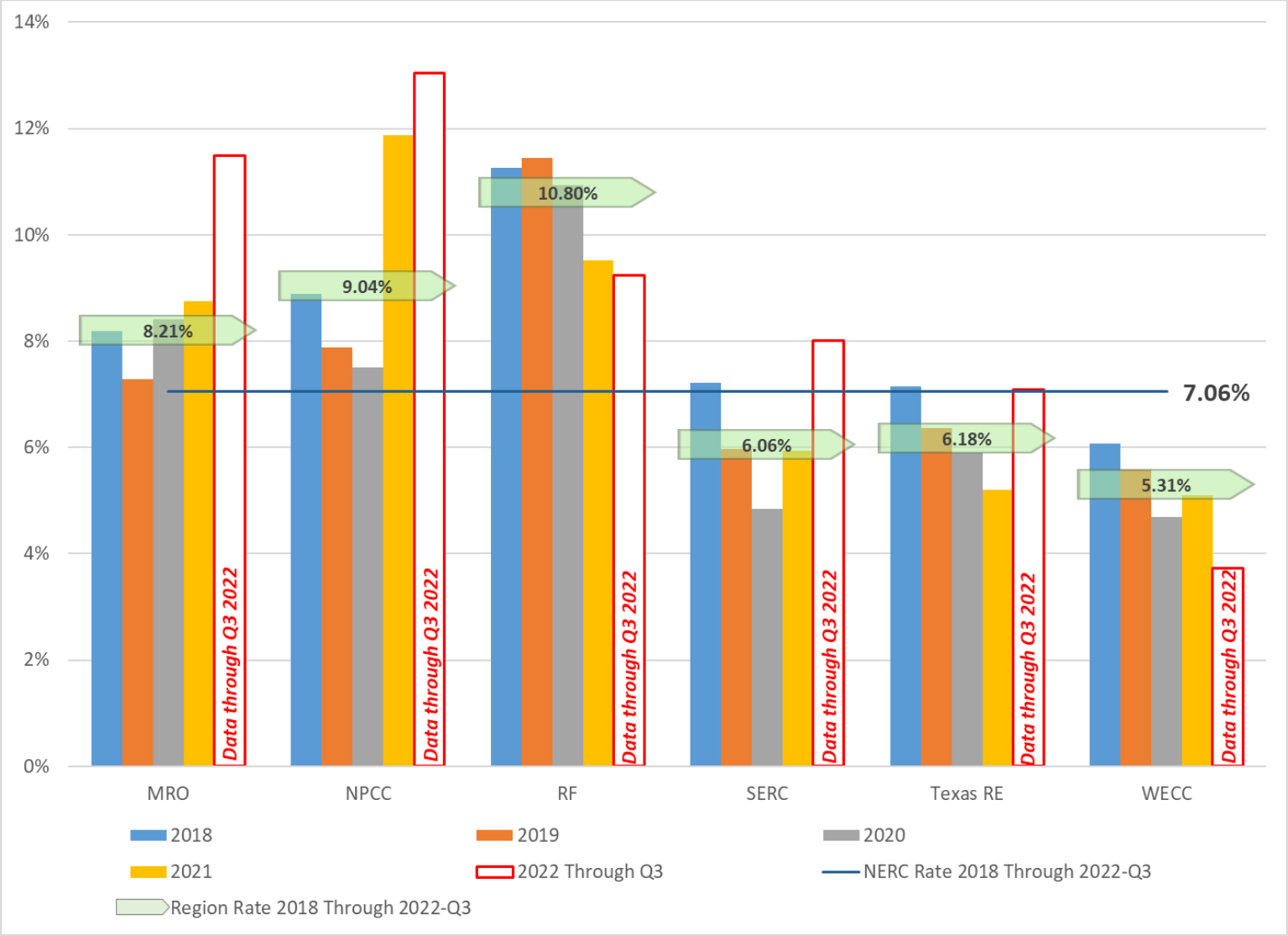
Indicator 2: Compliance Violations

- **Why is it important?**
  - Reduce risk to BPS reliability from Standard violations by registered entities
- **How is it measured?**
  - Moderate and serious risk noncompliance with a relevant history of similar past conduct: 3% of moderate and serious risk violations filed in Q1-Q3 2022 had relevant past conduct.
  - The number of violations discovered through self-reports: 92% of noncompliance submitted in Q1-Q3 2022 were self-reported.
  - Risk to the BPS based on the severity of Standard violations: 9% of the violations filed in Q1-Q3 2022 were assessed as serious risk.
    - *3% of past 5-year filings are assessed as serious risk.*

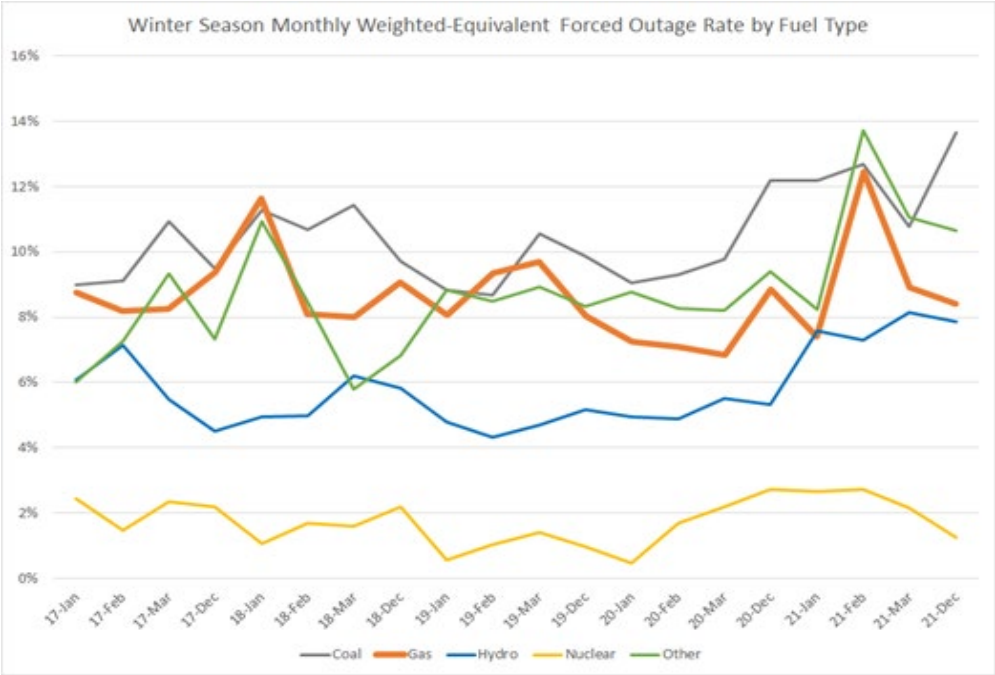
** For additional detail please refer to Q3 2022 CMEP report.*



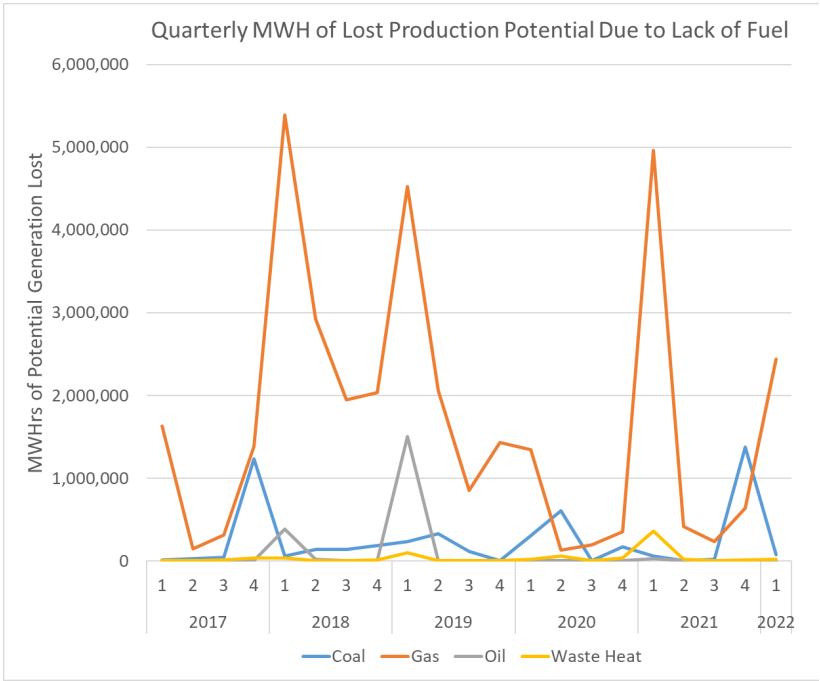
Indicator 3: Protection System Misoperations Rate



Indicator 4: Forced Outage Rate During Cold Weather Months and Potential Production MWH Loss Due to Lack of Fuel

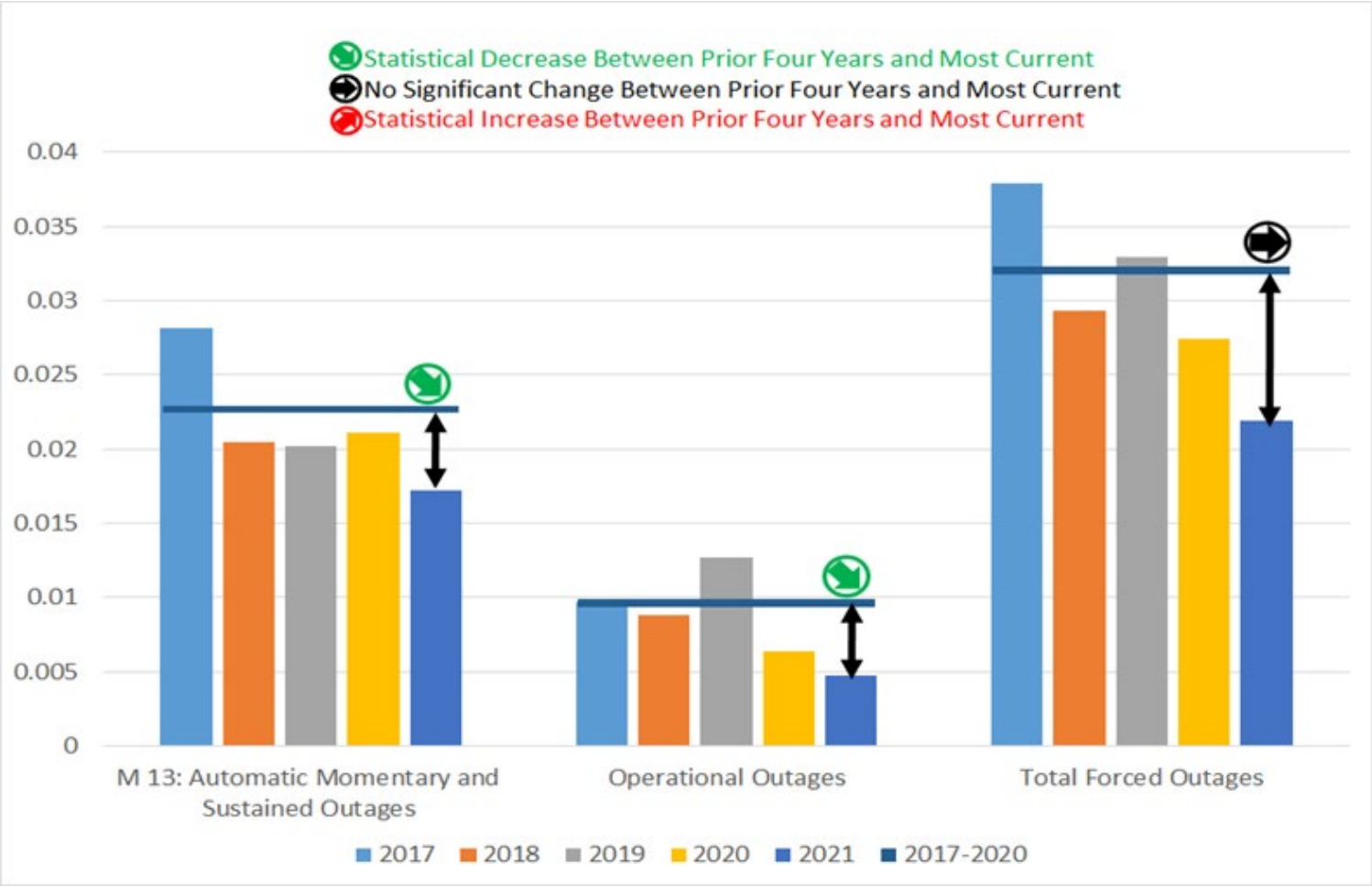


Winter Season Monthly Weighted EFOR by Fuel Type



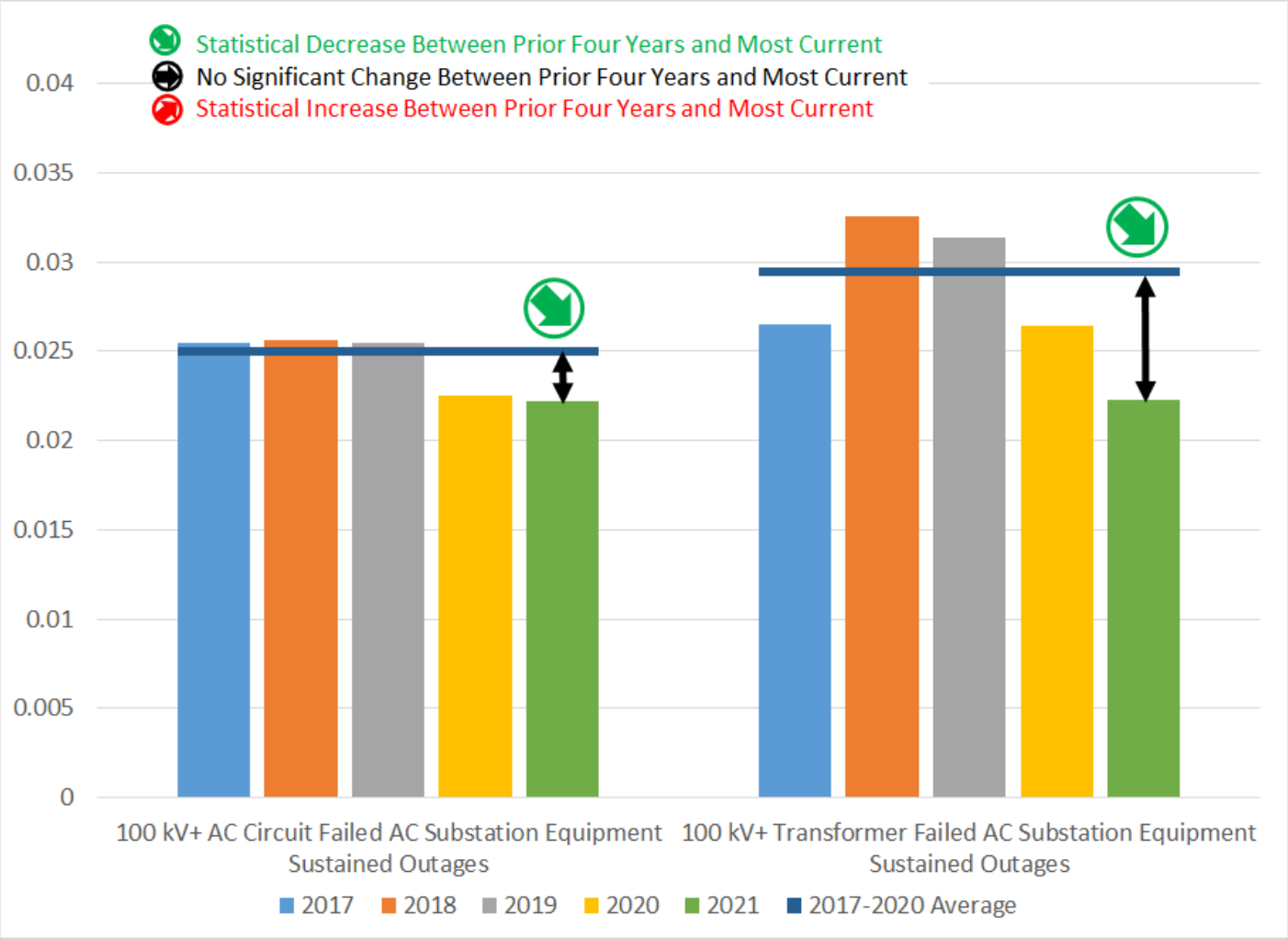
Percent of Potential Production Lost Due to Lack of Fuel

Indicator 5a: Operator or Other Human Performance Issues



Outages Caused by Human Error
AC Circuits

Indicator 5b: Substation Equipment Failures or Failed Circuit Equipment



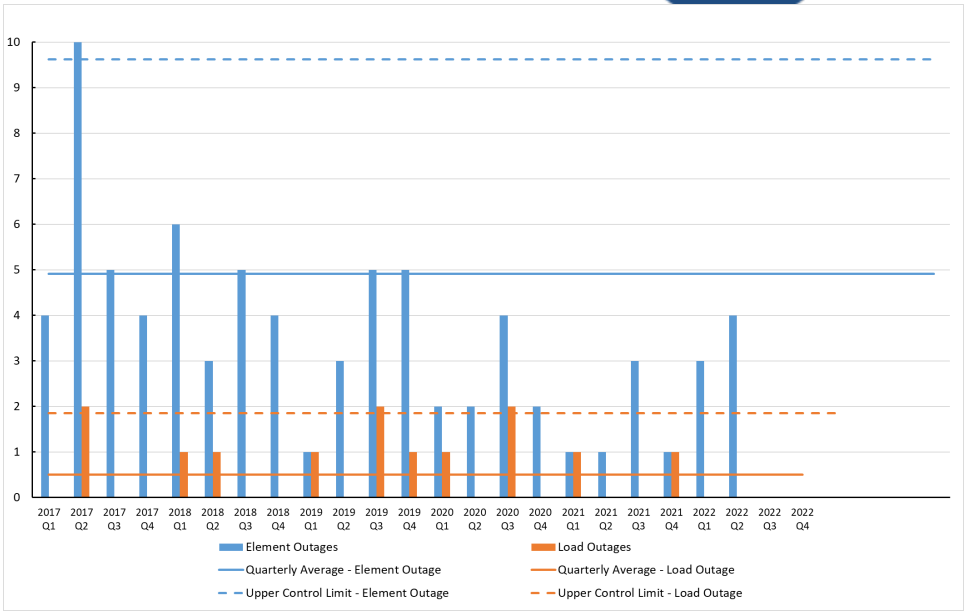
Failed AC Substation Equipment

Indicator 5c: Vegetation Encroachment

- **How is it measured?**
  - Number of vegetation encroachments: No Vegetation encroachment from inside of the right-of-way was reported to NERC during Q1-Q3 2022.

Security Indicator 6 : Impactful Cyber and Physical Security Incidents

- **How is it measured?**
  - Number of applicable DOE OE-417 Electric Emergency Incident and Disturbance Reports and NERC EOP-004 Event Reports



Data (Compared to 2016-2018 Quarterly Baseline)

- No disruption* of BES operations due to cyber security incidents
  Zero disruptions of BES operations due to cyber attacks in 2022 Q3
- Number of disruptions* of BES operations due to physical security incidents: *Below baseline Upper Control Limit is green, else is red*
  Zero disruptions of BES operations (Zero with load loss) due to physical attacks in 2022 Q3

*A disruption means that a BES element was removed from service as a result of the cyber or physical incident

2022 Status

Cyber Security

Physical Security

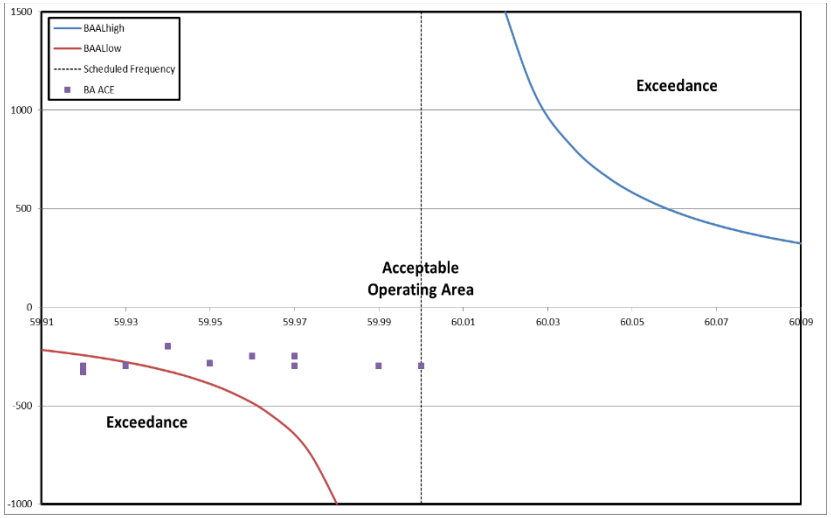
Indicator 7: Real Power Balancing Control Performance (BAAL)

Why is it important?

Each Balancing Authority (BA) is required to operate such that its clock-minute average of reporting area control error (ACE) does not exceed its clock-minute BA ACE limit (BAAL) for more than 30 consecutive clock-minutes. The purpose of this metric is to measure risk to the BPS by monitoring the trend in the number of clock minutes in which BAs return their ACE to within their BAAL after an exceedance has occurred.

How is it measured?

Success (green) is achieved when the linear regression line of the most recent four years of quarterly BAAL exceedances greater than or equal to 15 clock minutes has a statistically significant negative slope or when the slope of the time trend is statistically neither increasing nor decreasing. This equates to either improvement or no decline in performance. Failure (red) occurs if slope of the time trend is increasing with statistical significance.



Indicator 8: Interconnection Frequency Response

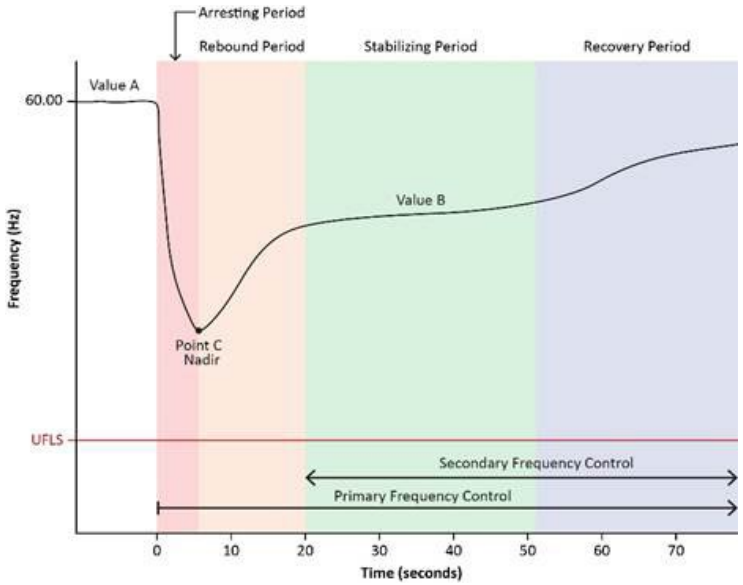
Why is it important?

Measures risk and impact to the BPS by evaluating the trend in the magnitude of the decline in Interconnection frequency experienced in each Interconnection during low frequency events selected for BAL-003-2 compliance. The Indicator will evaluate whether the risk of activating under frequency load shed devices is increasing or decreasing.

How is it measured?

EI, WI, QI, TI

Success (green) is achieved when the linear regression line of the most recent four years of quarterly mean values of Frequency A minus Frequency C has a statistically significant negative slope or when the slope of the time trend is statistically neither increasing nor decreasing. This equates to either improvement or no decline in performance where Interconnection risk has not changed or declined. Failure (red) occurs if the slope of the time trend is increasing with statistical significance or if under frequency load shedding is activated for any single BAL-003 frequency event in any Interconnection.



Indicator 8: Interconnection Frequency Response

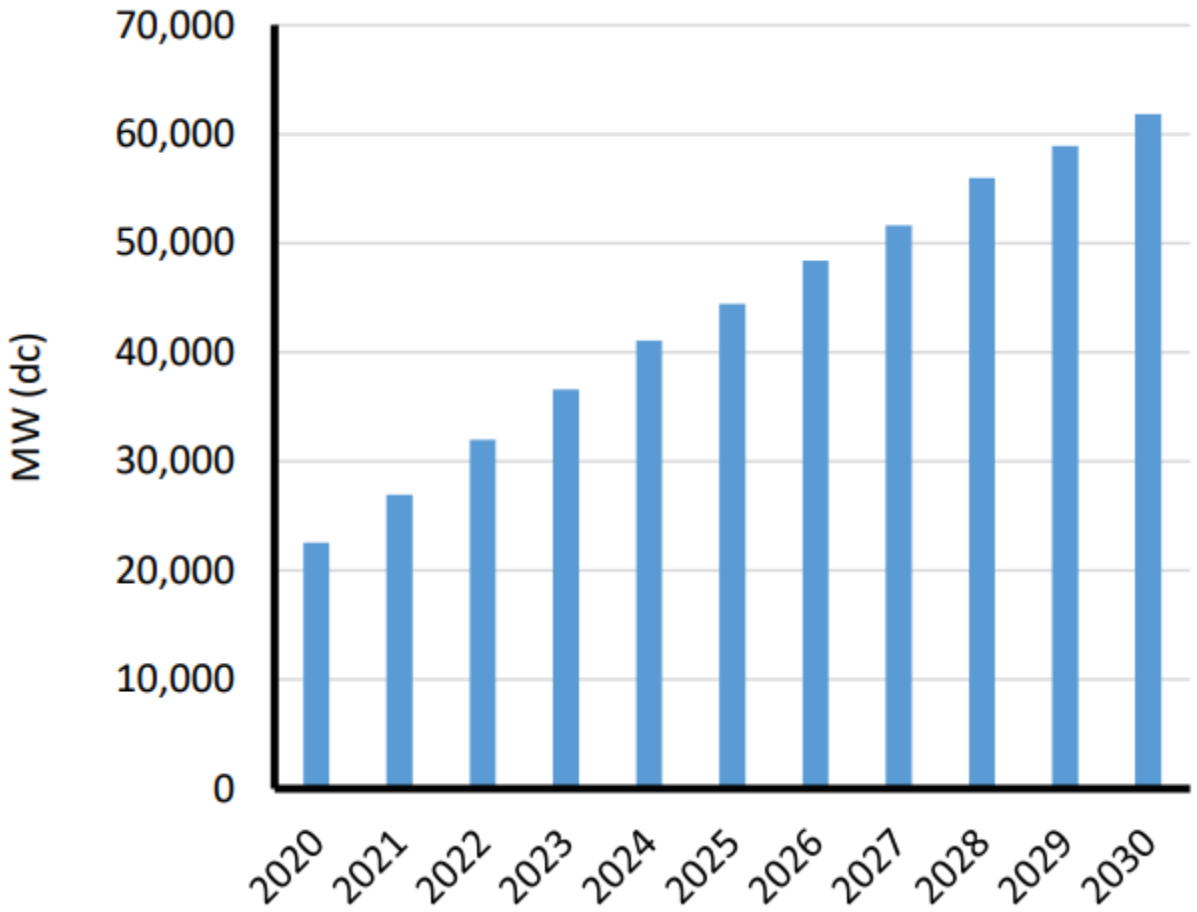
- **Why is it important?**
  - Measures risk and impact to the BPS by measuring the interconnection frequency response performance measure (IFRM) for each BAL-003-2 event as compared to the Interconnection Frequency Response Obligation (IFRO)
- **How is it measured?**
  - IFROs are calculated and recommended in the Frequency Response Annual Analysis Report for Reliability Standard BAL-003-2.1 implementation
  - IFRM performance is measured for each event by comparing the resource (or load) MW loss to the frequency deviation
  - Due to the timing in selection of events the metric is updated one quarter in arrears.

Data (Quarterly & Annual Measurement), NEW

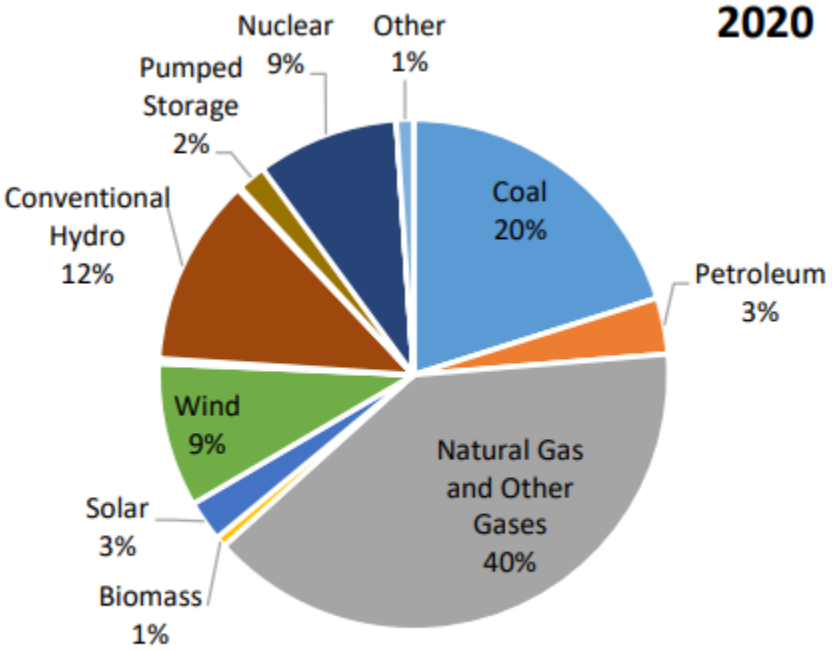
- IFRM for each BAL-003-2 event is compared to the IFRO for each quarter of the 2021 operating year
- Success is no Interconnection experiencing a BAL-003-2 frequency event where IFRM performance is below their respective IFRO: *Zero is green, else is red*
- **Metric Results through 1Q22:** No Interconnection experienced a BAL-003-2 event where their IFRM was below their IFRO

2022 Status

Indicator 9: DER Penetration



Indicator 10: Measure of the Changing Resource Mix



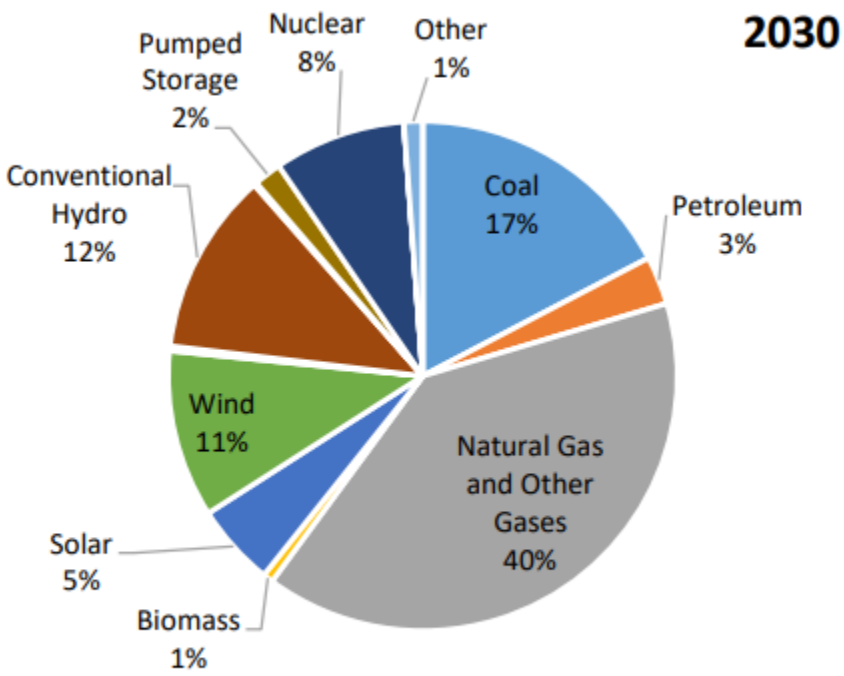


Figure 33: Installed Nameplate Capacity by Fuel Mix Trend (Includes Future Tier 1 Resources)

Indicator 10: Measure of the Changing Resource Mix

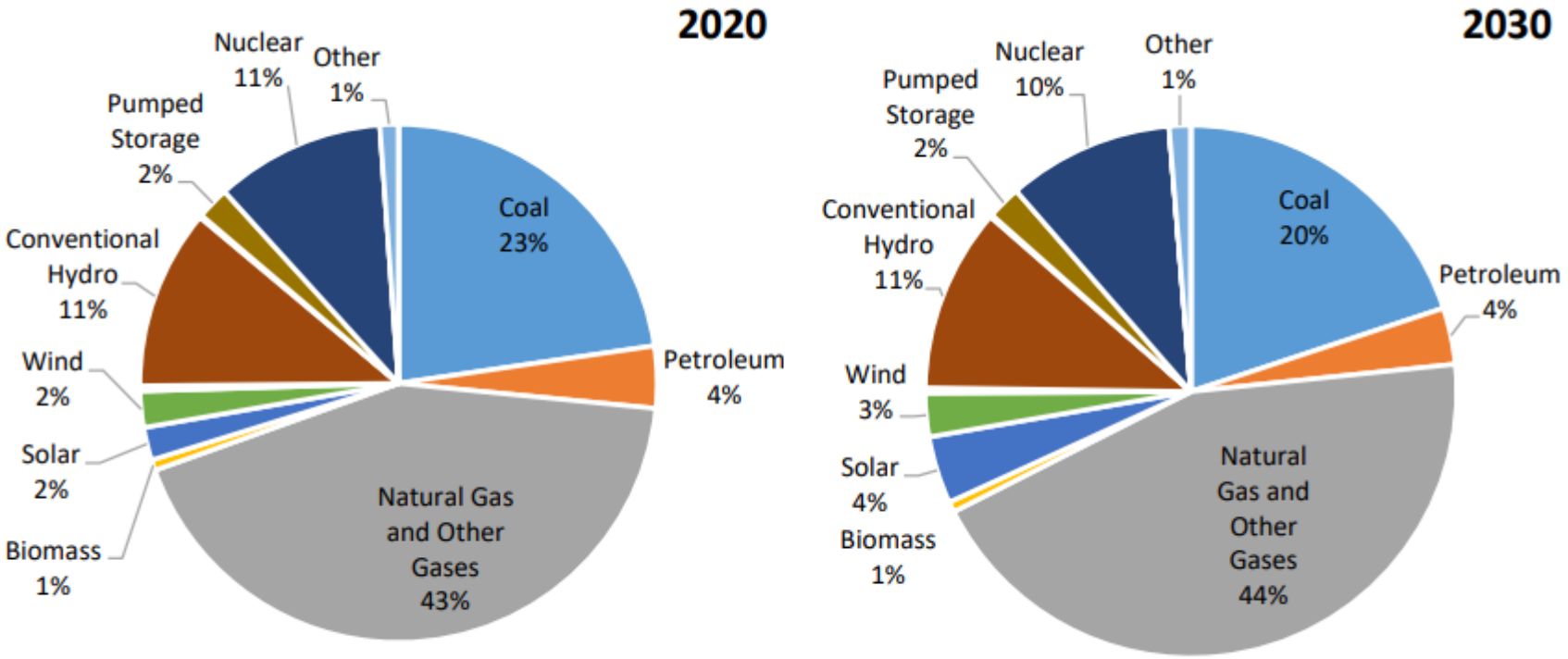


Figure 34: Installed On-Peak Anticipated Capacity Trend by Fuel Mix

Questions and Answers

Personnel Certification Governance Committee Report

Action
Information

Background
The Personnel Certification Governance Committee's (PCGC's) third quarter meeting was held virtually on August 22-25, 2022. During the third quarter meeting, EPRI and their contractor, Exceed Performance Solutions (EPS) presented a high-level Credential Maintenance Research Project (CMRP) overview and provided the final report to the PCGC and the Credential Maintenance Working Group (CMWG).

The purpose of the CMRP is to examine credential maintenance practices with the intention of identifying possible evidence-based changes and/or enhancements to the System Operator Certification Program and the Credential Maintenance Program. The CMRP Task Force is made up of PCGC and CMWG members.

Summary
Since September 2021, NERC and the CMRP Task Force have worked closely with EPRI and EPS. EPS performed historical analysis on data provided from SOCCED, research and analysis comparing other certification programs, conducted industry surveys, interviews, and reviewed activities with the CMRP Task Force weekly.

The CMRP Task Force will review and discuss the final report findings and recommendations provided by EPRI and EPS, and make a program recommendation in the second quarter of 2023.

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NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Agenda Item 8c
Board of Trustees Meeting
November 16, 2022

Reliability Standards

Quarterly Report

November 16, 2022

RELIABILITY | RESILIENCE | SECURITY




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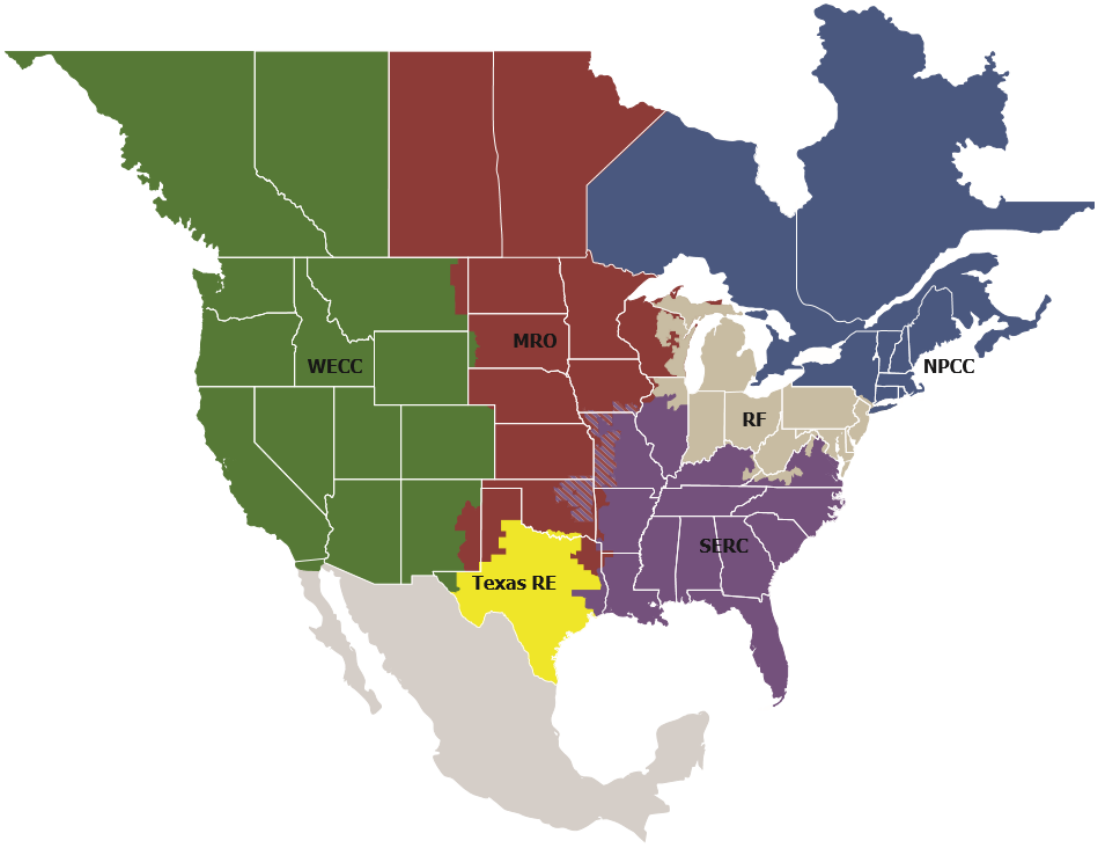
Table of Contents

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 Region 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	Western Electricity Coordinating Council

Chapter 1: Standards Development Forecast

Board Forecast for Standard Projects in Active Development

The following projections reflect anticipated Board of Trustees (Board) adoption dates for continent-wide Reliability Standards.

February 2023 or after

- Project 2016- 02: Modifications to CIP Standards (virtualization)
- Project 2017-01: Modifications to BAL-003-1.1 (phase 2)
- Project 2019-04: Modifications to PRC-005-6
- Project 2020-02: Modifications to PRC-024 (Generator Ride-through)
- Project 2020-04: Modifications to CIP-012-1
- Project 2020-06 Verifications of Models and Data for Generators
- Project 2021-01 Modifications to MOD-025 and PRC-019
- Project 2021-02 Modifications to VAR-002
- Project 2021-03 CIP-002 Transmission Owner Control Centers
- Project 2021-04 Modifications to PRC-002-2
- Project 2021-05 Modifications to PRC-023
- Project 2021-06 Modifications to IRO-010 and TOP-003
- Project 2021-08 Modifications to FAC-008
- Project 2022-01 Reporting ACE Definition and Associated Terms
- Project 2022-02 Modifications to TPL-001-5.1 and MOD-032-1
- Project 2022-03 Energy Assurance with Energy-Constrained Resources
- Project 2022-04 EMT Modeling

ANSI Reaccreditation

NERC filed for reaccreditation as a Standards Developer in accordance with the accreditation processes of the American National Standards Institute (ANSI) on July 1, 2019. While NERC's request remains pending, NERC is still considered an accredited developer.

Projects with Regulatory Directives

Table 1 below lists the current projects with regulatory directives. As of September 30, 2022, there is one standards-related directive to be resolved through standards development activities (not including non-standards related directives).[1]

[1] A second directive requires NERC to file quarterly updates in the project schedules for Project 2016-02 Modifications to CIP Standards and Project 2019-02 BES Cyber System Information Access Management.

Table 1: Projects with Regulatory Directives		
Project	**Regulatory Directives**	**Regulatory Deadline**
Project 2020-04: Modifications to CIP-012-1	1	N/A

Trend in Number of Reliability Requirements

As NERC Reliability Standards continue to mature, NERC analyzes the trend in the total number of requirements in the United States since 2007 when Reliability Standards became enforceable.

The *US Effective Date Status/Functional Applicability*[2] spreadsheet was used to analyze the number of requirements based on the U.S. Effective Date for each requirement shown in the charts below. Figure 1 displays the Trend in Number of Requirements for Continent-Wide standards, while Figure 2 displays Regional Reliability Standards.[3] Standards with variances were not included in the requirement count. Projections from projects that include standards currently under development, board adopted standards and board approved retirements are also included in the total number of requirements based on their projected effective or inactive date.[4]

The trend for total number of requirements indicates a constant flat trend line for the last four years, with a significant decline from 2017 to 2021 for Continent-wide standards, and a significant decline in total number of requirements from 2019 to 2021 for Regional Reliability Standards. Figure 1 indicates 445 continent-wide requirements; Figure 2 indicates 70 Regional Reliability standards forecast for 2027.

[2] Available from the Standards section of the NERC website: http://www.nerc.com/pa/Stand/Pages/default.aspx

[3] Charts were developed using Q1 2022 data.

[4] These projects include the following: Project 2015-09 (FAC-010-4, FAC-011-4, FAC-014-3), Project 2016-02 (CIP-003-7(i)), Project 2018-03 SER Retirements.

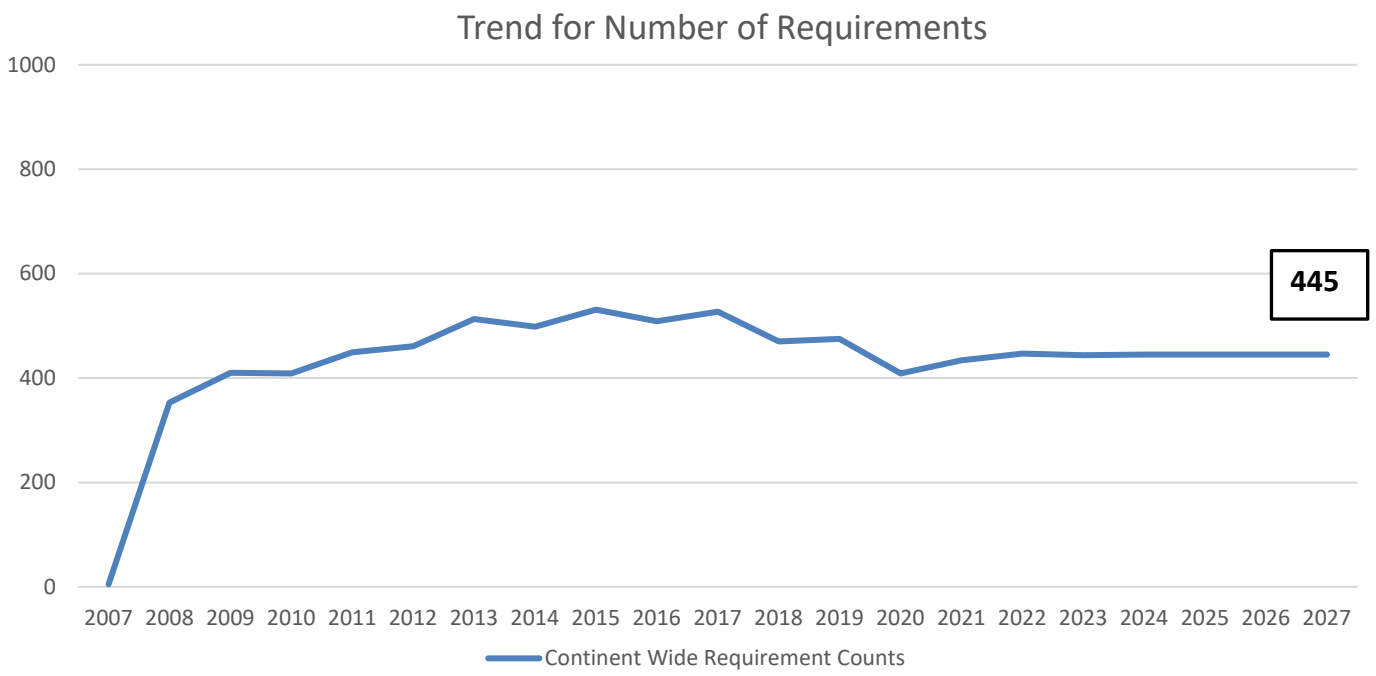
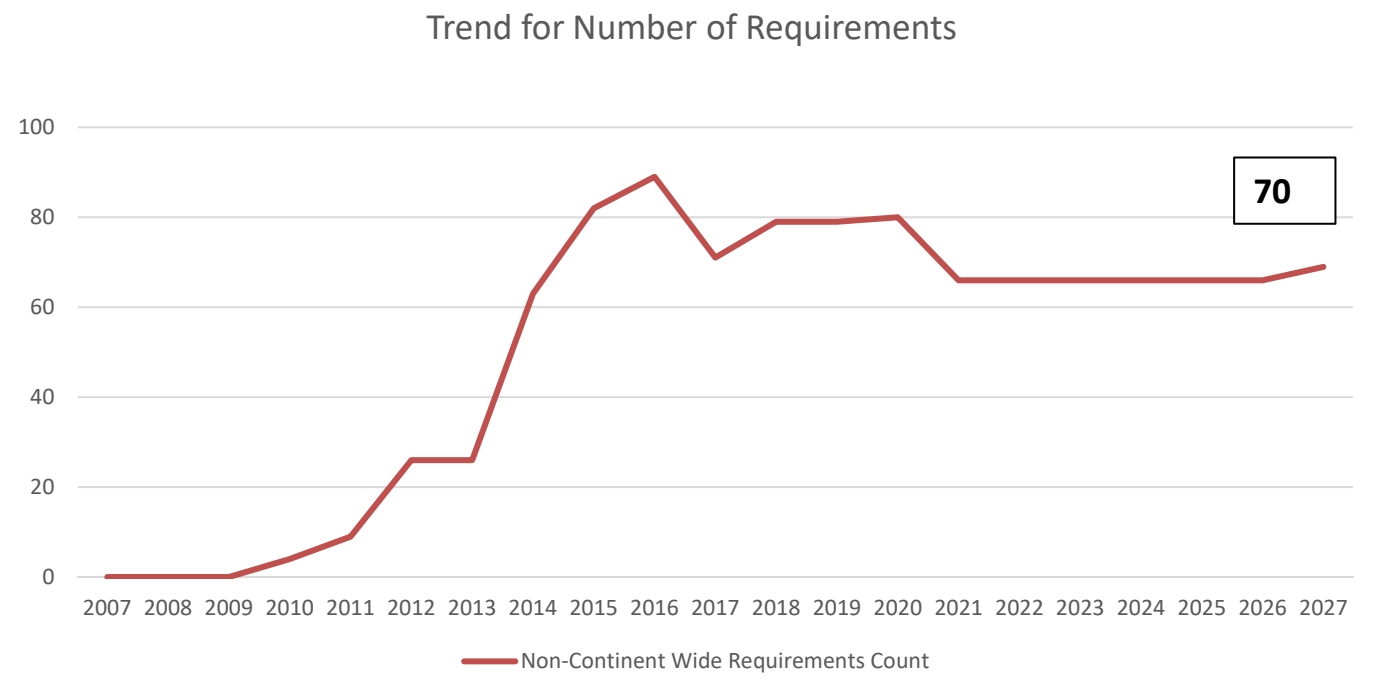


Figure 2: Trend for Number of Requirements for Regional Reliability Standards



Chapter 2: Regulatory Update

NERC FILINGS
July 1, 2022 – September 30, 2022

FERC Docket No.	Filing Description	FERC Submittal Date
RM21-17-000	Comments on Transmission Planning NOPR NERC and the Regional Entities submitted comments on the FERC Notice of Proposed Rulemaking (NOPR) regarding Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection.	8/17/2022
RM22-10-000	Comments on Transmission System Planning NOPR NERC and the Regional Entities submitted comments on the FERC Notice of Proposed Rulemaking (NOPR) prpopsing to direct revisions to Reliability Standard TPL-001-5.1 Transmission System Planning Performance Requirements to better account for extreme weather.	8/26/2022
RM22-16-000; AD21-13-000	Comments on Extreme Weather Vulnerability Assessments NERC and the Regional Entities submitted comments on the FERC Notice of Proposed Rulemaking (NOPR) proposing to direct entities to submit one-time informational filings regarding extreme weather vulnerability assessments.	8/30/2022
RD20-2-000	CIP SDT Schedule September Update Informational Filing NERC submitted an informational filing as directed by FERC in its February 20, 2020 Order. This filing contains a status update on one standard development project relating to the CIP Reliability Standards.	9/15/2022
RR10-1-000; RR13-3-000	Annual Report of NERC on Wide-Area Analysis of Technical Feasibility Exceptions NERC submitted to FERC the 2022 Annual Report of the Wide-Area Analysis of Technical Feasibility Exceptions in compliance with Paragraphs 220 and 221 of FERC's Order No. 706.	9/27/2022

FERC ISSUANCES
July 1, 2022 – September 30, 2022

FERC Docket No.	Issuance Description	FERC Issuance Date
RR21-8-000	Standards ROP Revisions Approved FERC issued an order approving revisions to the NERC Rules of Procedure regarding Reliability Standards.	8/25/2022
RM21-3-000; RM22-19-000	NOPR on Incentives for Advanced Cybersecurity Investment FERC issued a Notice of Proposed Rulemaking (NOPR) proposing to revise its regulations to provide incentive-based rate treatments for investments by utilities in advanced cybersecurity technology and participation by utilities in cybersecurity threat information sharing programs, as directed by the Infrastructure Investment and Jobs Act of 2021. This NOPR terminates the NOPR proceeding in Docket No. RM21-3-000 (December 2020 Cybersecurity Incentives NOPR), in which NERC and the Regional Entities filed joint comments on April 6, 2021.	9/22/2022

Chapter 3: Standards Committee Report

Summary

This report highlights some of the key activities of the Standards Committee (SC) during the third quarter of 2022.

At its July meeting, the SC:

- Accept the Standard Authorization Request (SAR) to revise three existing NERC Reliability Standards (i.e., FAC-002, MOD-032, and TPL-001), submitted by the Inverter-Based Resources Performance Subcommittee (IRPS) and that was endorsed by the Reliability and Security Technical Committee (RSTC). Authorized posting of the SAR for a 30-day informal comment period; and authorized solicitation of the SAR drafting team (DT) members.
- Authorized initial posting of proposed Reliability Standard BAL-003-3, the associated Implementation Plan, and related revised definitions for a 45-day formal comment period, with ballot pool formed in the first 30 days, and parallel initial ballots and non-binding polls on the Violation Risk Factors (VRFs) and Violation Severity Levels (VSLs), conducted during the last 10 days of the comment period.

The August SC meeting was cancelled due to lack of actionable items.

At its September meeting, the SC:

- Appointed supplemental Standard Drafting Team (SDT) members to Project 2021-03 CIP-002 Transmission Owner Control Center (TOCC), as recommended by NERC staff.
- Appointed supplemental members and vice chair to the SDT for 2020-02 Modifications to PRC-024 (Generator Ride-through), as recommended by NERC staff.
- Appointed the additional candidates for Project 2021-02 Modifications to VAR-002-4.1 to the Project 2021-02 SDT, as recommended by NERC staff.
- Appointed chair, vice chair, and members to the Project 2022-03 Energy Assurance with Energy Constrained Resources SAR DT, as recommended by NERC staff.
- Accepted the Project 2022-02 Modifications to TPL-001 and MOD-032 SARs; authorized drafting revisions to the Reliability Standards identified in the SARs; and appointed the Project 2022-02 SARs DT as the Project 2022-02 SDT.
- Accepted the CIP-008 Reporting Threshold SAR; authorized posting of the SAR for a 30-day informal comment period; and authorized solicitation of the SAR DT members.
- Accepted the Project 2021-08 Modifications to FAC-008 SAR; authorized drafting revisions to the Reliability Standard identified in the SAR; and appointed the Project 2021-08 SAR DT as the Project 2021-08 SDT.
- Authorized initial posting of proposed Reliability Standards MOD-025-3 and PRC-019-3, and the associated Implementation Plans for a 45-day formal comment period, with ballot pool formed in the first 30 days, and parallel initial ballot and non-binding polls for the VRFs and VSLs, conducted during the last 10 days of the comment period.
- Authorized initial posting of proposed Reliability Standard PRC-023-6 and the associated Implementation Plan for a 45-day formal comment period, with ballot pool formed in the first 30 days, and parallel initial ballots and non-binding polls on the VRFs and VSLs, conducted during the last 10 days of the comment period.
- Endorsed the 2023-2025 Reliability Standards Development Plan (RSDP).

Compliance and Certification Committee (CCC) Board Report

Action
Information

Highlights from the Third Quarter 2022 Meeting
The CCC convened its third quarter meeting in Denver, Colorado, on July 19-21. Approximately 25 people attended the CCC portion of the meeting in person, with the remaining Committee members and observers actively engaged via WebEx. The Committee would like to thank Xcel Energy for making their facilities available for the meeting and coordinating a joint meeting with the Standards Committee (SC) during that week.

The following are key highlights from the Q3 Meeting discussion:

- The Q3 Focused Discussion centered on Compliance Oversight Plans, revisiting a discussion the Committee held during its Q1 2021 meeting. The key objective was to explore whether COPs provide more value to the ERO Enterprise, particularly as a tool for auditors and those being audited. The Committee would like to acknowledge a comprehensive presentation on behalf of NERC and the regions from Kenath Carver at TRE, who outlined how auditors use COPs. We also addressed CMEP lessons learned coming out of the COVID-19 pandemic. Much of that conversation focused on enhancing the value of remote engagements.
- At the joint meeting of the CCC and the SC, the committees addressed areas of mutual interest and future collaboration activities. Through our collaboration with the SC, the committees will jointly look at the value of the Standards Grading Tool and whether it should be repurposed to ensure that it brings value to the ERO Business Model. Next year, the SC and the CCC will establish a Task Force to evaluate this and develop recommendations for future consideration.
- The Committee also heard a presentation from Kris Bienert of the BC Utilities Commission (and CCC member), providing an overview regarding Canadian Governance and how Canadian representatives deal with compliance, monitoring, and enforcement when they are not subject to FERC oversight under the Rules of Procedure. The presentation was intended as an educational opportunity for CCC members who address CMEP issues to begin a conversation focusing on how CMEP is treated in the US and Canada.

Highlights from the Fourth Quarter 2022 Meeting
The CCC held its fourth quarter meeting at the ReliabilityFirst (RF) Offices in Cleveland, Ohio, on October 11-13, with a good combination of CCC members and observers participating both in-person or via WebEx. The Committee would like to thank ReliabilityFirst President & Chief Executive Officer Tim Gallagher and his staff for their support and assistance in making the Q4 CCC meeting a success.

The following are key highlights from the Q4 meeting discussion:

- The Q4 Focused Discussion centered on industry perspectives regarding the Align Tool and the Secure Evidence Locker. NERC and the Regions began the discussion with a status report regarding Align tool, including timing on future releases. Staff offered a series of user experiences from the perspective of the Regions, with the remainder of the discussion addressing industry consideration. The Committee will be providing the Align team with a list of unique industry perspectives in response to the Committee's request for industry input.
- NERC and Regional Entity staff led a discussion addressing the lifecycle of a violation and reviewing the ERO Enterprise enforcement policy.
- The following CCC procedure was approved by the Committee, which will come before the Board for final approval later this year:
  - CCCPP-008 — Program for Monitoring Stakeholder's Perceptions

For both meetings, the Committee received its regular quarterly updates from each subcommittee operating on behalf of the full Committee in executing the Committee mandate and ongoing activities. Through the CCC Executive Committee, the CCC continues to support ERO Program Alignment topics, including review of Implementation Guidance, CMEP Practice Guides, and participation in the Align Users Group.

In general, the Committee has been increasingly pleased with the level of participation from each of the six regions. Regional participation is exponentially adding to the value of the focused group discussions the CCC is conducting as part of our ongoing efforts to capture stakeholder feedback related to compliance monitoring and enforcement activities.

Finally, I am pleased to confirm that the next meeting of the CCC will be held on February 1-2 at the offices of CLECO Cajun in Pineville, Louisiana. At that meeting, we will recognize Keith Comeaux for his 14 years of service as a member of the CCC. Keith's contributions during that period have been substantial, including active participation on the CCC Executive Committee and several years as Chair of the Organization Registration and Certification Subcommittee. The Committee will miss his leadership in the future.

Reliability and Security Technical Committee Report

Action
Information

RSTC Highlights
The RSTC held meetings on June 8-9, 2022 via WebEx. The following are highlights from the meeting:

The RSTC Approved:

- White Paper: NERC Reliability Standards Review
- White Paper: DER Impacts to Under Voltage Load Shedding Program Design
- Technical Report: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions
- Design Basis for a Natural Gas Study
- White Paper: 6 GHz Communication Network Extent of Condition
- SPCWG Cold Weather Report Recommendation 22
- Technical Reference Document: Inter-Entity Short Circuit Model
- The RSTC Endorsed the Risk and Mitigations for Losing EMS Functions Reference Document

RSTC reviewers were solicited to review the following documents:

- White Paper: Cybersecurity for Distributed Energy Resources and DER Aggregators
- White Paper: Battery Energy Storage and Multiple types of DER Modeling
- Standard Authorization Requests: *Analysis and Mitigation of BES Inverter-Based Resource Performance Issues* and *EOP-004-4 Event Reporting Alignment with Inverter-Based Resource Performance Issues*
- The RSTC formed a steering group for the RSTC Strategic Plan development.

The RSTC has conducted two electronic ballots between regular RSTC meetings in 2022:

- October 6, 2022: The RSTC voted to Endorse the GADS Section 1600 Data Request.
  - Quorum = 82.3% (28 of 34 members)
  - Endorsement = 100%
- October 25, 2022: The RSTC voted to Endorse the Frequency Response Annual Analysis

Future Actions

- December 6-7, 2022 (Virtual)
  - Act on Endorsement request for two SARs

North American Transmission FORUM

Community *Confidentiality* *Candor* *Commitment*

To: NERC Board of Trustees (BOT)

From: Thomas J. Galloway, NATF President and CEO

Date: October 17, 2022

Subject: NATF Periodic Report to the NERC BOT (November 2022)

Attachments: NATF External Newsletter (October 2022)
NATF Risk Construct for Prioritizing Facility Ratings Reviews

The NATF interfaces with the ERO as well as other external organizations on key reliability, resiliency, security, and safety topics to promote improvement, while reducing duplication of effort. Some examples are listed below and in the attached NATF external newsletter, which is also available on our public website: www.natf.net/news/newsletters.

NATF-ERO Leadership Meetings

To promote effective coordination, NATF and ERO leadership meet periodically to discuss topics and activities. The next call is scheduled for early November.

Facility Ratings Risk Construct

The NATF and its members developed the member-confidential "NATF Facility Ratings Practices Document" as a guide to members for establishing sustainable programs and processes for developing and maintaining accurate facility ratings. NATF members, representing approximately 84% of the total transmission mileage at 100 kV and above in the US and Canada, have been implementing those practices with increasing levels of maturity since mid-2020.

In 2021, the NATF practices document was supplemented with an appendix describing a risk construct for prioritizing implementation of the practices, specifically baseline reviews and periodic reviews to confirm ongoing accuracy of ratings and effective operation of controls. Considering continued ERO and industry focus on the facility ratings topic, including the ongoing NERC Facility Ratings Task Force (FRTF) efforts and the FAC-008 SAR drafting team activities, both with a focus on risk-based approaches, the NATF board has approved a version of the risk construct ("NATF Risk Construct for Prioritizing Facility Ratings Reviews") for industry use. We believe the NATF risk construct can establish a framework or baseline to inform related risk-focused efforts of the FRTF and FAC-008 SAR drafting team. The document is included as an attachment here.

The risk construct, which was previewed with NERC leadership, supplements the "Key NATF Practices for Facility Ratings" document[1] recently published in response to a request from NERC for reference in an "ERO Enterprise Themes and Best Practices for Sustaining Accurate Facility Ratings" document under development by NERC and the regional entities. The "NATF Risk Construct for Prioritizing Facility Ratings Reviews" and "Key NATF Practices for Facility Ratings" documents are posted in the Documents area of the NATF public site (https://www.natf.net/documents).

[1] a publicly available summary of the NATF member-confidential practices for facility ratings and how the practices address the issues and align with the controls identified by the ERO Enterprise in the November 1, 2019, ERO Facility Ratings Problem Statement

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North American Transmission Forum External Newsletter

October 2022

Facility Ratings Risk Construct

The "NATF Risk Construct for Prioritizing Facility Ratings Reviews" document has been posted for industry use on the NATF public website. This document supplements the publicly posted "Key NATF Practices for Facility Ratings" document[1] by providing a risk-based approach for prioritizing implementation of the practices, specifically baseline and periodic reviews to confirm ongoing accuracy of ratings and effective operation of controls.

Given the magnitude of performing comprehensive reviews of all facilities, Transmission Owners likely need to implement via a phased, prioritized approach. A good starting point is to conduct a review of a limited sample of facilities, evaluate the results, and, if necessary, expand the sample for review. This is best accomplished by initially targeting facilities with higher risk to BES reliability or higher likelihood for facility ratings error and continuing until all facilities have been reviewed. The NATF risk construct aids that approach.

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FERC Order 881 (Ambient-Adjusted Ratings)

The NATF continues to work with its members to prepare for the implementation of FERC Order 881 ("Managing Transmission Line Ratings"), which requires the use of ambient-adjusted ratings for most transmission lines by July 11, 2025.

As the order will have a significant impact on NATF members and other industry utilities, the NATF has a formed a multidisciplinary group to help members make the technical and process changes that are necessary to implement the order. The NATF's FERC Order 881 Working Group is defining the problems that need to be solved, assessing ongoing efforts in the industry, and, where appropriate, initiating projects to allow members to share information and develop solutions.

Recently, NATF staff briefed FERC staff from the Office of Energy Policy Innovation and Office of Electric Reliability on the NATF's approach to assisting our members through the FERC Order 881 response project.

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Redacted Operating Experience Reports

We recently posted a new operating experience report to the "Documents" section of our public site for members and other utilities to use internally and share with their contractors to help improve safety, reliability, and resilience.

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For more information about the NATF, please visit https://www.natf.net/.

[1] a summary of the NATF member-confidential practices for facility ratings and how the practices address the issues and align with the controls identified by the ERO Enterprise in the November 1, 2019, ERO Facility Ratings Problem Statement

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NATF Risk Construct for Prioritizing Facility Ratings Reviews

Version 1.0
Document ID: 1652
Approval Date: September 9, 2022

This document supplements the "Key NATF Practices for Facility Ratings" document (https://www.natf.net/docs/natf/documents/resources/facility-ratings/key-natf-practices-for-facility-ratings.pdf) by providing a risk-based approach for prioritizing baseline reviews of facilities. These reviews establish an accurate baseline for existing facilities, including all equipment in the series electrical path. This same risk construct may also be applied to the implementation of periodic reviews to validate facility ratings on an ongoing basis. These reviews are done after the baseline reviews and on an appropriate frequency to verify that ratings remain consistent with the entity's facility ratings methodology.

Scope

Given the magnitude of performing a comprehensive baseline review of all facilities, a Transmission Owner may want to consider a phased approach, with an emphasis on higher-risk facilities as the starting point. **A good starting point is to conduct a review of a limited sample of facilities, evaluate the results, and, if necessary, expand the sample for review.** This is best accomplished by initially targeting facilities with higher risk to BES reliability or higher likelihood for facility ratings error and continuing until all facilities have been reviewed.

Similarly, this risk construct can be applied to prioritize implementation and set the frequency of periodic reviews to verify ongoing accuracy of facility ratings. These periodic reviews confirm that the entity's comprehensive work processes, including internal controls, are resulting in facility ratings consistent with the associated methodology and consistently applied throughout the organization.

> Note: implementation will vary by (1) entity (e.g., size, scope of operations, and organizational structure) and (2) type of review activity conducted (baseline vs. periodic).

Relative Facility Risks

The construct below outlines a method for entities to prioritize reviews by determining facilities' relative risks, considering both the (1) inherent risk of facilities based upon potential reliability impact and (2) likelihood that errors could have been introduced since the last review. Entities should apply both facets to perform a risk assessment and determine the overall priorities.

The construct can be used to prioritize work for the following:

- **Establishing a baseline review.** Due to the large scope of work implied by establishing a baseline for all facilities, these projects may take months or years to complete. The risk construct advises entities on prioritization of that work, leading to completion of baseline reviews for the highest-risk facilities earlier in the project.
- **Validating through periodic reviews.** The risk construct is helpful in identifying which facilities to review earlier in the cycle as well as the periodicity of reviews for various groups of facilities, as determined by relative risk. Facilities with higher inherent reliability risk and greater likelihood of error should be reviewed sooner and more frequently to verify accuracy of ratings and, in turn, confirm ongoing effectiveness of the comprehensive work processes and internal controls.

Determining Relative Inherent Reliability Risk

The inherent risks in the table below are based on the potential for a facility ratings error to impact reliability. Specifically, the table generally categorizes various facility types by their relative inherent risks to reliability. There may be circumstances where an entity determines necessary variances to the higher/medium/lower designations for certain facilities or groups of facilities. In this case, clear documentation and explanations of exceptions are recommended.

Using the table below, entities review their facilities and assign a degree of inherent reliability risk for each.

Relative Inherent Risk of Facilities Based upon Potential Reliability Impact
Priority 1: Higher Risk BES Facility Type • 200 kV and above (for transformers, 200 kV and above on the low-voltage side) • Facilities identified as an element of an Interconnection Reliability Operating Limit (IROL) • Lines that are frequently congested, including interconnection points • Cranking Paths, including connections to blackstart resources • Facilities that are a part of a Remedial Action Scheme (RAS) • Connections to nuclear generation • Sources of off-site power for nuclear units • Connections to other generation deemed critical • Facilities that serve highest-priority critical loads as determined by entity (e.g., critical defense facilities, gas compressor stations) • CIP-014 stations and substations not included above, as determined by entity
Priority 2: Medium Risk BES Facility Type • 100-199 kV (for transformers, 100-199 kV on the low-voltage side) • Facilities that contain capacitors/reactors/FACTS devices • Jointly owned facilities (including tie lines or connection points to generators and customers) • Facilities that serve priority loads (not included in the higher risk category) as determined by entity
Priority 3: Lower Risk BES Facility Type/Non-BES Facilities • <100 kV (for transformers, <100 kV on the low-voltage side) • BES facilities not covered in medium or higher categories • Non-BES facilities such as radial facilities

Determining Relative Likelihood of Error Introduction

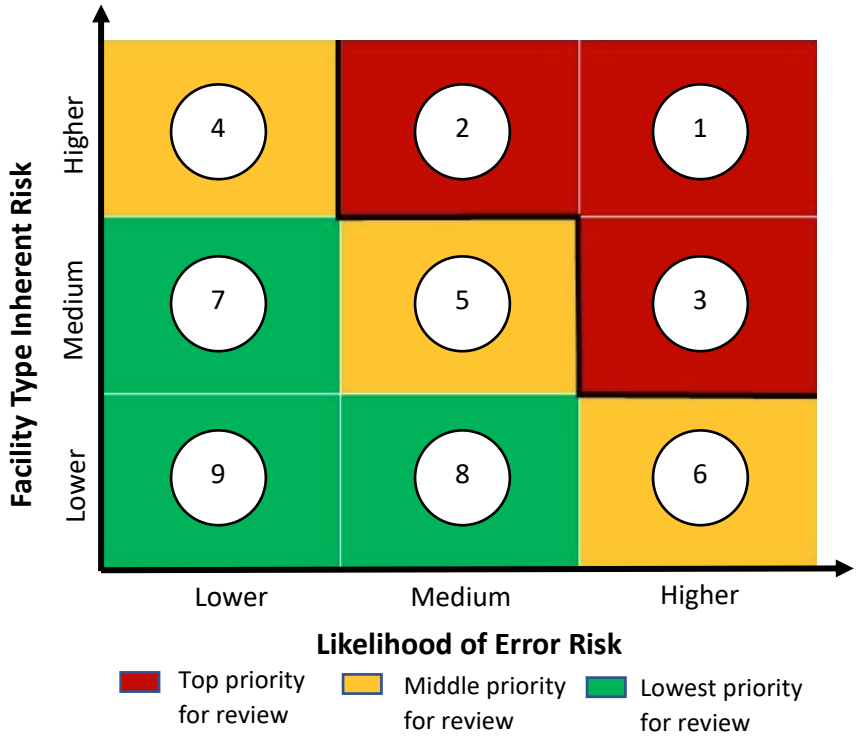
In addition to the inherent reliability risks discussed above, entities may identify certain areas of their systems or specific facilities that could be at a higher risk for the introduction of facility ratings errors. A few example scenarios where the likelihood of error may be increased are listed below:

- Significant number or scope of line/station construction project(s)
- Significant number or scope of storm damage and restoration work
- Acquired facilities
- Field work performed by contractors or external parties
- Facilities where clearance encroachment is more likely to occur (e.g., third-party activities, construction, grading, stockpiling, underbuilds)
- Facilities with temporary ratings

This is not an all-inclusive list and other scenarios may be identified and used in a risk assessment. Considering these scenarios and other pertinent information, entities assess their facilities and assign a relative likelihood of errors risk for each.

Determining Overall Relative Risk

Using the higher/medium/lower risk determinations for both inherent and likelihood of errors risks as described above, facilities can be mapped to areas 1-9 in the figure below to translate the risks into priorities. In generic terms, facilities mapping to areas ①, ②, and ③ need to be reviewed first and more frequently; facilities in ④, ⑤, and ⑥ fall into the second phase and periodicity of reviews; and ⑦, ⑧, and ⑨ are the lowest priority facilities for review.



For example, if an entity has a facility that is part of a Cranking Path (i.e., higher inherent risk) and deems the likelihood of errors for that facility is lower (e.g., due to little/no work done on the facility since the last review), then the overall risk maps to area ④, which is a middle priority for review. However, if that same facility has medium likelihood of error risk, that facility would map to area ② and is a top priority for review.

North American Generator Forum

TO: **NERC Board of Trustees**
James B. Robb, President and CEO

FROM: **Wayne D. Sipperly Jr, Executive Director, North American Generator Forum (NAGF)**

DATE: **November 1, 2022**

SUBJECT: NAGF 2022 Fall Activity Report

The NAGF is actively engaged in the following NERC Projects to help ensure the generator sector perspective is heard and understood:

- NERC Project 2017-01: Modifications to BAL-003 Phase II
- NERC Project 2020-02: Modifications to PRC-024
- NERC Project 2020-03: Supply Chain Supply Chain Low Impact Revisions
- NERC Project 2020-04: Modifications to CIP-012
- NERC Project 2020-06: Verification of Models and Data for Generators
- NERC Project 2021-04: Modifications to PRC-002
- NERC Project 2021-07: Extreme Cold Weather Grid Operations, Preparedness, and Coordination
- NERC Project 2022-03: Energy Assurance with Energy-Constrained Resources

The **NAGF GENerating Reliability and Resiliency Compliance Conference** was held October 11 (1/2 day pm), 12 (full day) and 13 (1/2 day am) at the NERC offices in Atlanta, GA. The theme for this year's conference was generator reliability and resiliency. The event format was In-Person with a remote attendance option available. NERC Senior Vice President and E-ISAC CEO Manny Cancel and TexasRE President/CEO Jim Albright provided keynote addresses. Topics discussed included Generator Modeling Standards, Future Energy Mix, Facility Ratings Best Practices, Cold Weather Standards, Low Impact Criteria Review White Paper, and more. Attendance averaged over 70 participants per day.

The **ESIG, EPRI, NAGF, and NERC Generation Interconnection Workshop** was held on August 11-13, 2022. This virtual workshop, co-sponsored by the NAGF, focused on the current challenges for the effective, reliable, and timely integration of Inverter-Based Resources (IBRs). The workshop provided an overview of grid forming inverter technology, including its status and future roles, and policy decisions to consider today for supporting the

rapid deployment of capabilities from important equipment standards, guidelines and industry efforts. Daily agendas, presentations, and recordings are available per the following link: https://www.esig.energy/event/joint-generator-interconnection-workshop/