

December 21, 2016

**VIA ELECTRONIC FILING**

Ms. Katie Mitchell  
Chief Clerk  
New Brunswick Energy and Utilities Board  
P.O. Box 5001  
15 Market Square, Suite 1400  
Saint John, NB  
E2L 4Y9

Re: *North American Electric Reliability Corporation*

Dear Ms. Mitchell:

The North American Electric Reliability Corporation hereby submits North American Electric Reliability Corporation Informational Filing of Reliability Standards Development Plan 2017-2019.

Please contact the undersigned if you have any questions concerning this filing.

Respectfully submitted,

/s/ Shama Elstein

Shama Elstein  
*Senior Counsel for the North American Electric  
Reliability Corporation*

Enclosure

**3353 Peachtree Road NE  
Suite 600, North Tower  
Atlanta, GA 30326  
404-446-2560 | [www.nerc.com](http://www.nerc.com)**

---

**BEFORE THE  
MINISTRY OF ENERGY  
OF THE PROVINCE OF NEW BRUNSWICK**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
INFORMATIONAL FILING OF RELIABILITY STANDARDS DEVELOPMENT PLAN  
2017-2019**

Gerald W. Cauley  
President and Chief Executive Officer  
North American Electric Reliability  
Corporation  
3353 Peachtree Road, N.E.  
Suite 600, North Tower  
Atlanta, GA 30326  
(404) 446-2560  
(404) 446-2595 – facsimile

Charles A. Berardesco  
Senior Vice President and General Counsel  
Shamai Elstein  
Senior Counsel  
Lauren A. Perotti  
Counsel  
North American Electric Reliability  
Corporation  
1325 G Street, N.W., Suite 600  
Washington, DC 20005  
(202) 400-3000  
(202) 644-8099 – facsimile  
charles.berardesco@nerc.net  
shamai.elstein@nerc.net  
lauren.perotti@nerc.net

*Counsel for the North American Electric  
Reliability Corporation*

December 21, 2016

---

**TABLE OF CONTENTS**

I. NOTICES AND COMMUNICATIONS..... 2

II. BACKGROUND ..... 2

III. 2017 DEVELOPMENT PLAN..... 3

    A. Summary of 2017 Development Plan ..... 3

    B. 2016 Progress Report ..... 4

    C. Prioritization of 2017 Projects..... 5

    D. Periodic Reviews..... 7

IV. CONCLUSION..... 7

**Attachment A**      *Reliability Standards Development Plan: 2017-2019*



## **I. NOTICES AND COMMUNICATIONS**

Notices and communications regarding this filing may be addressed to the following:

Shamai Elstein  
Senior Counsel  
Lauren A. Perotti  
Counsel  
North American Electric Reliability Corporation  
1325 G Street, N.W., Suite 600  
Washington, DC 20005  
(202) 400-3000  
shamai.elstein@nerc.net  
lauren.perotti@nerc.net

## **II. BACKGROUND**

Pursuant to Section 310 of the NERC Rules of Procedure, NERC submitted an initial version of a plan for Reliability Standards development, entitled the *Reliability Standards Development Plan: 2007–2009*, to the Federal Energy Regulatory Commission (“FERC”) in 2006. NERC has since updated the plan annually, and the 2017-2019 version of the plan is presented in this filing. Consistent with previous versions, the 2017 Development Plan is filed for informational purposes and no specific action is requested at this time.

The 2017 Development Plan is intended to:

1. Serve as a management tool to guide and coordinate the development of Reliability Standards and provide benchmarks for assessing progress;
2. Serve as a communications tool for coordinating standards development work with applicable governmental agencies in the United States and Canada and for engaging stakeholders in Reliability Standards development activities; and
3. Provide a basis for developing annual plans and budgets for the NERC Reliability Standards Program.

As with each prior year's plan, NERC obtained stakeholder input on the 2017 Development Plan. As detailed in Section III, NERC submits this filing to summarize the 2017 Development Plan and inform the applicable governmental authorities and other interested parties of projects noted in the 2016 Development Plan that will continue into 2017.

### **III. 2017 DEVELOPMENT PLAN**

#### **A. Summary of 2017 Development Plan**

The 2017 Development Plan identifies the current plans and priorities for development and modification of NERC Reliability Standards in the immediate three-year time horizon. Building upon the efforts of prior year Reliability Standard Development Plans, the 2017 Development Plan focuses on projects related to new FERC directives, emerging risks, and standard authorization requests, as well as projects related to periodic reviews and NERC's standards grading initiative. The addition of the standards grading metric, which uses an enhanced version of the template developed by the Independent Experts Review Panel ("IERP"),<sup>2</sup> will be used to inform the periodic reviews as to the quality and content of the standards.

As with the 2016 Development Plan, periodic reviews will continue at a measured pace, as NERC plans to complete a number of reviews each year while aligning these reviews with several strategic considerations to review the quality and content of standards in an efficient, effective manner. The 2017 Development Plan identifies each Reliability Standard or standard family that is a candidate for review through the periodic review process, and it highlights prioritization of all future projects with consideration of, among other things, communication

---

<sup>2</sup> See infra n. 4.

with NERC's Reliability Issues Steering Committee ("RISC"), potential FERC directives, and industry input.

NERC anticipates that the Reliability Standards development work outlined in the 2017 Development Plan will be dynamic and will be updated periodically as projects are completed or as new needs are identified and projects are considered. NERC also recognizes Reliability Standards development in 2017 may require flexibility in planning to ensure that activities are given appropriate resources and priority.

## **B. 2016 Progress Report**

The 2016 Development Plan identified eight (8) standard development projects that would be initiated in 2016 or continue from 2015. The projects and their current status are noted below.

### **Projects Completed in 2016**

The following projects identified in the 2016 Development Plan were completed in 2016:

- Project 2009-02 - Real-time Reliability Monitoring and Analysis Capabilities
- Project 2010-05.3 Phase 3 of Protection Systems: Remedial Action Schemes
- Project 2010-07.1 Vegetation Management
- Project 2015-07 Internal Communications Capabilities FERC Order No. 808 Directive
- Project 2014-02 Modifications to CIP Standards

In addition, the following projects identified in the 2015 Development Plan, which were noted as in progress in NERC's 2015 informational filing,<sup>3</sup> were completed in 2016:

- Project 2007-06 System Protection Coordination
- Project 2007-06.2 System Protection Coordination
- Project 2010-14.2.1 Phase 2 of Balancing Authority Reliability-based Controls
- Project 2010-14.2.2 Phase 2 of Balancing Authority Reliability-based Controls

### **Projects Continuing in 2017**

---

<sup>3</sup> See *North American Electric Reliability Corporation Informational Filing of Reliability Standards Development Plan 2016-2018*, filed on January 13, 2016.

The following projects identified in the 2016 Development Plan will continue into 2017:

- Project 2015-08 Emergency Operations
- Project 2015-09 System Operating Limits
- Project 2015-10 Single Points of Failure TPL-001

Following the development of the 2016 Development Plan, NERC also initiated several projects in response to FERC directives, two periodic review projects, and two interpretation projects. These projects are identified and prioritized in the 2017 Development Plan, as described in the following section.

### **C. Prioritization of 2017 Projects**

For each new Reliability Standard Project identified in the 2017 Development Plan, the NERC Standards Committee has assigned a priority of either high, medium, or low. These rankings are in addition to priority assignments made in previous plans for ongoing projects, and the assignments are based on, among other things, RISC category rankings, regulatory directives, regulatory deadlines, Reliability Standards that are candidates for retirement, and recommendations from the IEPR report.<sup>4</sup> The new and continuing projects identified in the 2017 Development Plan and their assigned priority category are provided below.

#### **High Priority**

- Project 2013-03 Geomagnetic Disturbance Mitigation<sup>5</sup>

---

<sup>4</sup> NERC retained a group of industry experts, referred to as the IERP, to independently review NERC Reliability Standards and produce a report, setting a foundation for a plan that will result in a set of clear, concise, and sustainable body of Reliability Standards. In this report, which was issued in June 2013, the IERP provided various recommendations, including suggestions for retirement of certain requirements in various Reliability Standards. The IERP report can be accessed online at: [http://www.nerc.com/pa/Stand/Standards%20Development%20Plan%20Library/Standards\\_Independent\\_Experts\\_Review\\_Project\\_Report.pdf](http://www.nerc.com/pa/Stand/Standards%20Development%20Plan%20Library/Standards_Independent_Experts_Review_Project_Report.pdf).

<sup>5</sup> This project was initiated in 2016 in response to FERC directives in Order No. 830 to modify Reliability Standard TPL-007-1. *See Reliability Standard for Transmission System Planned Performance for Geomagnetic Disturbance Events*, Order No. 830, 156 FERC ¶ 61,215 (Sep. 22, 2016). This project, which was added to the 2017 Development Plan in November 2016, has been assigned a high priority based on the regulatory deadlines established in Order No. 830.



- Project 2015-10 Single Points of Failure TPL-001<sup>6</sup>
- Project 2016-01 Modifications to TOP and IRO Standards<sup>7</sup>
- Project 2016-02 Modifications to CIP Standards<sup>8</sup>
- Project 2016-03 Cyber Security Supply Chain Management<sup>9</sup>

### Medium Priority

- Project 2015-08 Emergency Operations<sup>10</sup>
- Project 2015-09 System Operating Limits<sup>11</sup>
- 2016-EPR-01 Enhanced Periodic Review of Personnel Performance, Training, and Qualifications Standards – PER-001, PER-003, PER-004<sup>12</sup>
- 2016-EPR-02 Enhanced Periodic Review of Voltage and Reactive Standards – VAR-001, VAR-002<sup>13</sup>

### Medium to Low Priority<sup>14</sup>

- Project 2015-INT-03 Interpretation of TOP-002.2.1b for FMPP<sup>15</sup>

### Low Priority

- *No currently active projects have been identified as Low priority.*

As explained in the 2017 Development Plan, NERC does not anticipate development of any specific projects in 2017; rather, projects will be initiated based on: (i) periodic review recommendations to revise existing standards; (ii) emerging risks identified by FERC, the RISC,

---

<sup>6</sup> This project was identified in the 2016 Development Plan and will continue into 2017.

<sup>7</sup> This project was initiated in 2016 in response to FERC directives in Order No. 817 to make certain modifications to the revised TOP and IRO standards submitted for FERC approval in March 2015. *See Transmission Operations Reliability Standards and Interconnection Reliability Operations and Coordination Reliability Standards*, Order No. 817, 153 FERC ¶ 61,178 (Nov. 19, 2015).

<sup>8</sup> This project was initiated in 2016 in response to FERC directives in Order No. 822 to develop certain modifications to improve the CIP Reliability Standards. *See Revised Critical Infrastructure Protection Reliability Standards*, Order No. 822, 154 FERC ¶ 61,037 (Jan. 21, 2016).

<sup>9</sup> This project was initiated in 2016 in response to FERC directives in Order No. 829 to develop a new or modified standard to address supply chain risk management. *See Revised Critical Infrastructure Protection Reliability Standards*, Order No. 829, 156 FERC ¶ 61,050 (Jul. 21, 2016). This project, which was added to the 2017 Development Plan in November 2016, has been assigned a high priority due to the regulatory deadlines established in Order 829.

<sup>10</sup> This project was identified in the 2016 Development Plan and will continue into 2017.

<sup>11</sup> This project was identified in the 2016 Development Plan and will continue into 2017.

<sup>12</sup> This periodic review project was initiated in 2016 and will continue into 2017.

<sup>13</sup> This periodic review project was initiated in 2016 and will continue into 2017.

<sup>14</sup> Project 2015-INT-01 Interpretation of CIP-002-5.1 for Energy Sector Security Consortium (EnergySec), assigned a Medium to Low Priority in the 2017 Development Plan, was completed in November 2016.

<sup>15</sup> This project was initiated in 2016 in response to a Request for Interpretation and will continue into 2017.

NERC, or industry participants; or (iii) modifications to existing standards as directed by FERC in future orders.

The industry-led Standards Committee has prioritized current and upcoming projects, as communicated through prioritization schedules and project plans, to ensure that development moves at a measurable and sustainable pace.

#### **D. Periodic Reviews**

As indicated in the 2017 Development Plan, at least two periodic review projects will commence in 2017 from the following list of eligible standards or standards families:

- BAL and INT families (BAL-001 and INT-004, INT-006, INT-009, and INT-010)
- EOP-010
- FAC-003-4
- FAC-008-3
- NUC-001-3
- The PRC family of standards

Attachment 1 to the 2017 Development Plan describes the criteria that is used to determine which standards are eligible for periodic review and the specific elements which are to be considered in prioritizing the periodic reviews. An important consideration in this determination is the standards grade assigned by the Enhanced Periodic Review Standing Review Team. Beginning in 2016, this team was tasked with using metrics from the IERP to assign grades of content and quality to eligible standards. Attachment 2 to the 2017 Development Plan lists the final grades for the standards graded in 2016. In addition, the prioritization of periodic reviews may be informed by RISC category rankings, outstanding regulatory directives, and IERP findings and recommendations, among other factors.

#### **IV. CONCLUSION**

As discussed above, the 2017 Development Plan was developed in accordance with Section 310 of the NERC Rules of Procedure and identifies the current plans and priorities for

development and modification of NERC Reliability Standards in the immediate three-year time horizon. NERC submits this filing and the attached 2017 Development Plan for informational purposes only.

Respectfully submitted,

*/s/ Lauren A. Perotti*

Shamai Elstein  
Senior Counsel  
Lauren A. Perotti  
Counsel  
North American Electric Reliability Corporation  
1325 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 400-3000  
shamai.elstein@nerc.net  
lauren.perotti@nerc.net

*Counsel for the North American Electric Reliability  
Corporation*

Date: December 21, 2016

**ATTACHMENT A**

**RELIABILITY STANDARDS DEVELOPMENT PLAN**

**2017-2019**

**NERC**

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Reliability Standards Development Plan

2017–2019

November 2, 2016

**RELIABILITY | ACCOUNTABILITY**



3353 Peachtree Road NE  
Suite 600, North Tower  
Atlanta, GA 30326  
404-446-2560 | [www.nerc.com](http://www.nerc.com)

# Table of Contents

---

Background.....	iv
Executive Summary .....	v
2016 Progress Report .....	1
FERC Directives .....	1
Projects Completed in 2016 .....	1
2017 Projects .....	2
Projects Continuing from 2016 into 2017 .....	2
High Priority .....	2
Medium Priority.....	4
Medium to Low Priority.....	4
Projects Commencing in 2017 .....	5
Standards Cost Effectiveness Pilot .....	5
Enhanced Periodic Reviews.....	5
Standards Grading Metric.....	6
Interpretations.....	6
Feedback Loops (Factors for Consideration of Risk) .....	6
Compliance Monitoring Enforcement Program Feedback .....	7
Construct of Standards .....	7
Coordination with the North American Energy Standards Board (NAESB) .....	7
Emerging Risks and Changing Technologies .....	7
Event Analysis and Compliance Violation Statistics .....	7
Lessons Learned and Frequently Asked Questions .....	7
Measures .....	8
Rationale and Guidelines.....	8
Regional Variances.....	8
Request for Interpretations.....	8
RSAW Development and Compliance Input .....	8
Standard Authorization Requests.....	8
Surveys and Polls .....	8
Attachment 1 - Enhanced Periodic Review Guidelines .....	9
Standards Eligibility .....	9
Criteria for What Makes a Standard Eligible: .....	9
Criteria for What Makes a Standard Not Eligible: .....	10

Table of Contents

---

Prioritization ..... 10

Attachment 2 – Final Standards Grading for Standards Graded in 2016 ..... 11

## Background

---

The 2016–2018 Reliability Standards Development Plan (RSDP) set forth a transitional plan to bring the body of NERC Reliability Standards to the initial stage of “steady state”<sup>1</sup> by addressing remaining Federal Energy Regulatory Commission (FERC) directives and recommendations to retire standard requirements. It specifically included the Integration of Variable Generation Task Force and Essential Reliability Services Working Group (ERSWG) recommendations, and called for continued communication with the Reliability Issues Steering Committee (RISC) on emerging risks. The 2016-2018 RSDP recognized the need to address subsequent FERC directives and Standard Authorization Requests (SARs), and the need to enhance communication through industry feedback loops. The 2016-2018 RSDP also planned for initial Enhanced Periodic Reviews (EPR) of the PER and VAR standards, which successfully commenced in 2016.

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

---

<sup>1</sup> For the purposes of the RSDP, “steady state” means a stable set of clear, concise, high-quality, and technically sound Reliability Standards that are results-based, including retirement of requirements that do little to promote reliability.



## Executive Summary

---

The 2017–2019 RSDP recognizes the diligent work of the last few years to bring the body of NERC Reliability Standards to the initial stage of steady state while transitioning to focusing on EPRs, FERC directives, emerging risks, SARs, and the standards grading initiative. The 2017-2019 RSDP contemplates that the work of the ERSWG may result in one or more SARs and subsequent standards projects.

As with the 2016-2018 RSDP, EPRs will occur at a measured pace, compared to the level of activity and pace of standards development during the past three years,<sup>2</sup> and they will be aligned with strategic considerations of reviewing standard families<sup>3</sup> that are interrelated. The addition of the standards grading metric, which uses an enhanced version of the template developed by the Independent Experts Review Panel (IERP), will inform the EPRs as to the quality and content of the standards.<sup>4</sup>

The 2017-2019 RSDP also includes plans for completing the EPRs initiated in 2016, and for commencing additional EPRs in 2017.

While most of the work in the next three years will focus on EPRs, there may be new or emerging risks identified that would generate new standards development projects. NERC and the Standards Committee will continue to seek input and recommendations from the RISC with regard to emerging or potential risks to reliability that may require revisions to existing standards or new standards development.

The 2017-2019 RSDP provides insight into standards development activities anticipated at the time of publication so that stakeholders may make available appropriate resources to accomplish these standards development objectives.

---

<sup>2</sup> The Standards Committee approved an EPR template on September 30, 2014 and presented it to the NERC Board of Trustees on November 12, 2014 as part of the Standard Committee's update. The template includes background information and questions to guide a comprehensive review of the standard(s) by the EPR team, and serves as documentation of the EPR team's considerations and recommendations.

<sup>3</sup> In some cases, a narrower review of a standard will likely be appropriate. For example, there are not necessarily other interrelated standards with FAC-003.

<sup>4</sup> The EPR standing review team will grade the standards. The team includes representatives from NERC, the Regions, and the NERC technical committees. Grading will occur prior to conducting the EPR. If there is a change in the standard due to EPR recommendations and subject to the standards development process, the EPR standing review team will re-grade the standard with the revised language.

# 2016 Progress Report

---

## FERC Directives

As of June 30, 2016, there are 31 outstanding FERC directives.<sup>5</sup> FERC issued some directives pertaining to groups outside of NERC Standards, such as the NERC technical committees and other NERC departments (e.g., topics related to reliability assessment, performance analysis, etc.), and are not included in this count.

## Projects Completed in 2016

The 2016–2018 RSDP identified eight projects initiated in 2016 or continued from 2015. All of the projects listed therein have been completed in 2016 or are planned to be completed in 2016, except for Project 2015-08: Emergency Operations, Project 2015-10: Single Points of Failure TPL-001, and Project 2015-09: System Operating Limits, which are expected to be completed in 2017.

**The following projects have been or will be completed in 2016:**

### Projects from the 2016–2018 RSDP

1. Project 2009-02 Real-time Reliability Monitoring and Analysis Capabilities
2. Project 2010-05.3 Phase 3 of Protection Systems: Remedial Action Schemes (RAS)
3. Project 2010-07.1 Vegetation Management
4. Project 2010-14.2.1: Phase 2 of Balancing Authority Reliability-based Controls (BAL-005-1, BAL-006-2)
5. Project 2010-14.2.2: Phase 2 of Balancing Authority Reliability-based Controls (BAL-004-2)
6. Project 2015-07 Internal Communications Capabilities

---

<sup>5</sup> These directives include FERC considerations for future standards development.

# 2017 Projects

---

## Projects Continuing from 2016 into 2017

The approach to prioritizing Reliability Standards projects in this RSDP is consistent with previous RSDPs. Specific elements include: (1) RISC Category Rankings; (2) regulatory directives and deadlines; (3) Reliability Standard requirements recommended for retirement; (4) the IERP content and quality assessments; and (5) additional considerations (fill-in-the-blank status and five-year assessment commitments). The prioritization considers RISC category rankings, regulatory directives, and regulatory deadlines. Based on the application of these elements, this section prioritizes each Reliability Standard project as high, medium, low, or pending technical committee input.

### High Priority

- Project 2013-03 Geomagnetic Disturbance Mitigation
  - This project will develop reliability standards to mitigate the risk of instability, uncontrolled separation, and Cascading as a result of geomagnetic disturbances (GMDs) through application of Operating Procedures and strategies that address potential impacts identified in a registered entity's assessment as directed in FERC Order 779 and FERC Order No. 830.
    - From FERC Order No. 830:
      - Modify the benchmark GMD event definition used for GMD Vulnerability Assessments;
      - Make related modifications to requirements pertaining to transformer thermal impact assessments;
      - Require collection of GMD-related data. NERC is directed to make data available; and
      - Require deadlines for Corrective Action Plans (CAPs) and GMD mitigating actions.
      - The new standard or modified standard(s) must be with regulatory authorities by May 2018.
- Project 2015-10: Single Points of Failure TPL-001
  - This project will address two directives and consider other improvements to TPL-001-4 — Transmission System Planning Performance Requirements. There are no remaining time-sensitive directives.
    - From FERC Order No. 786
      - Paragraph 40 directs NERC to modify Reliability Standard TPL-001-4 to address the concern that the six-month threshold could exclude planned maintenance outages of significant facilities from future planning assessments.
      - Paragraph 89 directs NERC to consider a similar spare equipment strategy for stability analysis upon the next review cycle of Reliability Standard TPL-001-4.
  - RISC: overall risk priority is moderate for protection system and single points of failure (risk profile #3B).
  - IERP considerations: minor quality and content on possible P81 candidates.
- Project 2016-01: Modifications to TOP and IRO Standards
  - Modifications to the TOP and IRO standards developed in this project address reliability concerns identified in FERC Order No. 817 as described below.
    - From FERC Order No. 817:

- Paragraph 35 directs NERC to revise Reliability Standard TOP-001-3, Requirement R10 to require real-time monitoring of non-BES facilities. We believe this is best accomplished by adopting language similar to Reliability Standard IRO-002-4, Requirement R3, which requires Reliability Coordinators to monitor non-bulk electric system facilities to the extent necessary.
- Paragraph 47 directs NERC to modify Reliability Standards TOP-001-3, Requirements R19 and R20 to include the requirement that the data exchange capabilities of the Transmission Operators and Balancing Authorities require redundancy and diverse routing.
- Paragraph 47 directs NERC to clarify that “redundant infrastructure” for system monitoring in Reliability Standards IRO-002-4, Requirement R4 is equivalent to redundant and diversely routed data exchange capabilities.
- Paragraph 51 directs NERC to develop a modification to the TOP and IRO standards that addresses a data exchange capability testing framework for the data exchange capabilities used in the primary control centers to test the alternate or less frequently used data exchange capabilities of the Reliability Coordinator, Transmission Operator and Balancing Authority.
- RISC: overall risk priority is moderate for the loss of situational awareness (Risk Profile #3C).
- IERP considerations: minor quality and content on possible P81 candidates.
- Project 2016-02: Modifications to CIP Standards
  - This project will modify the CIP family of standards to address issues identified by the CIP V5 Transition Advisory Group, FERC directives contained in Order 822 as explained below; and requests for interpretations.
    - From FERC Order No. 822:
      - Paragraph 32 directs that NERC, pursuant to section 215(d)(5) of the FPA, develop modifications to the CIP Reliability Standards to provide mandatory protection for transient devices used at Low Impact BES Cyber Systems based on the risk posed to bulk electric system reliability. While NERC has flexibility in the manner in which it addresses the Commission’s concerns, the proposed modifications should be designed to effectively address the risks posed by transient devices to Low Impact BES Cyber Systems in a manner that is consistent with the risk-based approach reflected in the CIP version 5 Standards.
      - Paragraph 53 directs that NERC, pursuant to section 215(d)(5) of the FPA, develop modifications to the CIP Reliability Standards to require responsible entities to implement controls to protect, at a minimum, communication links and sensitive bulk electric system data communicated between bulk electric system Control Centers in a manner that is appropriately tailored to address the risks posed to the bulk electric system by the assets being protected (i.e., high, medium, or low impact).
      - Paragraph 64 directs NERC to conduct a study that assesses the effectiveness of the CIP version 5 remote access controls, the risks posed by remote access-related threats and vulnerabilities, and appropriate mitigating controls for any identified risks. NERC should consult with Commission staff to determine the general contents of the directed report. We direct NERC to submit a report on the above outlined study within one year of the implementation of the CIP version 5 Standards for High and Medium Impact BES Cyber Systems.
      - Paragraph 73 directs NERC to develop a modification to provide the needed clarity, within one year of the effective date of this Final Rule. We agree with NERC and other commenters

that a suitable means to address our concern is to modify the Low Impact External Routable Connectivity definition consistent with the commentary in the Guidelines and Technical Basis section of CIP-003-6.

- RISC: overall risk priority is high for cyber security vulnerabilities (risk profile #4A).
- IERP considerations: not addressed, as they require specialized expertise.
- Project 2016-03 Cyber Security Supply Chain Management
  - This project will address directives from FERC Order No. 829 to develop a new or modified standard to address supply chain risk management for industrial control system hardware, software, and computing and networking services associated with bulk electric system operations. The project will propose a new standard or revisions to approved CIP standards.
    - From FERC Order No. 829:
      - Paragraph 3 directs that NERC develop a forward-looking, objective-based Reliability Standard to require each affected entity to develop and implement a plan that includes security controls for supply chain management for industrial control system hardware, software, and services associated with bulk electric system operations.
      - The new or modified Reliability Standard should address the following security objectives:
        - (1) software integrity and authenticity;
        - (2) vendor remote access;
        - (3) information system planning; and
        - (4) vendor risk management and procurement controls.
      - The new standard or modified standard(s) must be filed with regulatory authorities within one year of the Order No 829 effective date.

## Medium Priority

- Project 2015-08: Emergency Operations
  - No FERC directives (FERC guidance has been provided to this project)
  - RISC : medium-priority area (coordinated attack on multiple facilities), low-priority areas (extreme weather/acts of nature)
- RISC: medium-priority area (coordinated attack on multiple facilities), low-priority areas (extreme weather/acts of nature)
  - IERP considerations: minor quality and content on possible P81 candidates
- Project 2015-09: System Operating Limits
  - No FERC directives
  - RISC: high-priority area (Situational Awareness)
  - IERP considerations: minor quality and content on possible P81 candidates
- 2016-EPR-01: Enhanced Periodic Review of Personnel Performance, Training, and Qualifications Standards - PER-001, PER-003, PER-004
- 2016-EPR-02: Enhanced Periodic Review of Voltage and Reactive Standards - VAR-001, VAR-002

### **Medium to Low Priority**

The following requests for interpretation have commenced in 2016:

- Project 2015-INT-01: Interpretation of CIP-002-5.1 for EnergySec
- Project 2015-INT-03: Interpretation of TOP-002-2.1b for FMPP

### **Projects Commencing in 2017**

The following projects should commence in 2017. Not all projects have SARs, which will be developed and presented to the Standards Committee at the appropriate time to initiate the project.

- At least two EPRs that may recommend revisions to standards.
- Emerging risks, if any, with input from the RISC on whether a standard is needed.
- Potential modifications to existing standards that respond to FERC directives.

### **Standards Cost Effectiveness Pilot**

Federal, state, and provincial regulatory authorities, the NERC Board of Trustees, Regional Entities, and many industry stakeholders have expressed interest in identifying the costs incurred from implementing NERC Reliability Standards compared to risks addressed. The desire is to balance costs and risks during the standards development and revision process. Therefore, in 2016 NERC developed and implemented Phase 1 of its Standards Cost Effectiveness Pilot to inform the Project 2015-10: Single Points of Failure TPL-001 drafting team on potential implementation costs.<sup>6</sup> Phase 2 of the pilot is expected to be completed in 2016 or 2017.

### **Enhanced Periodic Reviews**

Periodic reviews provide a wide view of the standards to determine whether a particular group of standards is effective. Attachment 1 to the RSDP contains the “Enhanced Periodic Review Guidelines” that further explain standards prioritization and selection criteria.

The following EPRs commenced in 2016:

- PER-001, PER-003, and PER-004
- VAR-001 and VAR-002

The following EPRs are eligible to commence in 2017.<sup>7</sup> At least two EPRs will commence in 2017 selected from the following set of eligible standards:

- BAL and INT families of standards (BAL-001, INT-004, INT-006, INT-009, and INT-010)
- EOP-010
- FAC-003-4
- FAC-008-3
- NUC-001-3
- PRC family of standards (PRC-004-5(i), PRC-005-6, PRC-006-2, PRC-010-2, PRC-018-1, PRC-019-2, PRC-023-4, PRC-024-2, PRC-025-1, and PRC-026-1)

---

<sup>6</sup> Please see the Cost Effectiveness Pilot web page at <http://www.nerc.com/pa/Stand/Pages/CostEffectivenessPilot.aspx> for additional information on this initiative.

<sup>7</sup> For reference, the following standards will be eligible for EPRs in 2018 and 2019: EOP-011-1, BAL-003-1.1, COM-001-2.1, COM-002-4, FAC-001-2, FAC-002-2, IRO-009-2, MOD-032-1, MOD-031-2, and TPL-001-4.

## Standards Grading Metric

In 2016, NERC implemented a standards grading metric to grade all standards eligible for an EPR, which requires that the standard be in effect in the United States (compliance enforcement date) for at least one year. The EPR standing review team grades the standards using an enhanced version of the IERP grading template. Standards grades are harmonized in public meetings with the initial EPR standing review team grades posted for stakeholder comment. After consideration of comments, the EPR standing review team finalizes the grades and provides the results to the EPR teams, which are comprised of the standing review team and industry subject matter experts tasked with implementing the EPR to completion. Final grades are included as Attachment 2 for informational purposes. The grading will also assist in prioritizing future EPRs. For example, if the grading indicates a gap or a significant need to increase the quality or content of a standard or standard family, that set of standards may have a higher priority over standards and standard families that have high quality and content grades. If an EPR recommendation results in a revised standard, that standard will be re-graded, and the new grade will be attached to a future RSDP for informational purposes.

In 2017, the grading metric will be applied to the standards that are eligible for an EPR to start in 2017, time and resources permitting. In 2017, the grading will occur in the first half of the year, which will assist in the prioritizing of EPRs in 2017 and 2018.

The following non-CIP standards become eligible for standards grading in 2017:<sup>8</sup>

- BAL-003-1.1
- COM-001-2.1
- COM-002-4
- FAC-001-2
- FAC-002-2
- IRO-009-2
- MOD-032-1
- TPL-001-4

In 2018, the TOP and IRO families of standards would be eligible for grading and EPR.

## Interpretations

Pursuant to section 7 of the NERC Standard Processes Manual (SPM), the Standards Committee may accept requests for interpretation in 2016 and beyond. Those requests would commence based on NERC and the Standards Committee prioritization, which would also consider timing to ensure projects are developed at a measurable and sustainable pace, consistent with the criteria to prioritize standard projects that are included in this list.

## Feedback Loops (Factors for Consideration of Risk)

The following feedback loops, or factors for consideration, will assist in keeping the workload steady by prioritizing (a) the projects that do not have a one-year deadline, and (b) compliance input built earlier into the project's timeline. Projects with a deadline are based on FERC directives that have a filing due date specific in a Final Rule.

---

<sup>8</sup> For reference, in 2018 the TOP and IRO families of standards will be eligible for standards grading and EPR.

## **Compliance Monitoring and Enforcement Program Feedback**

Compliance Monitoring and Enforcement Program (CMEP) feedback is an available mechanism for ERO Enterprise CMEP staff and registered entities subject to the CMEP activities to provide feedback on a standard, which could be beneficial to identify issues with standards. During CMEP activities, that feedback could be valuable for instructing standards development activity.

The ERO CMEP Implementation Plan is the annual operating plan carried out by Compliance Enforcement Authorities while performing their responsibilities and duties as called for in the CMEP. It prioritizes risks to the Bulk Electric System (BES), registered entity functions, and Reliability Standards based on risk to determine appropriate oversight focus. The results of that plan also help shape prioritizing standards development projects, including EPRs.

ERO Enforcement staff is collecting impact data to determine whether a particular violation caused or contributed to some observed impact on reliability. Data of this kind can further inform standards development by identifying the most consequential requirements, particularly in the context of EPRs.

Implementation Guidance promotes a common understanding between industry and CMEP staff by providing examples for implementing a standard. For many standards, this is straightforward. For others, a variety of approaches may achieve the same objective. The fact that there is significant Implementation Guidance by itself may or may not mean there is reason for changing a standard. For example, the standard language may be clear but have many complicated ways of achieving compliance. Nonetheless, Implementation Guidance is another important feedback mechanism to alert drafting teams of possible ambiguities or complexities during standards development.

## **Construct of Standards**

The IERP recommendations on a new construct of standards will need to be consulted with industry to establish the benefit of realigning the standards. For example, the total transfer capability standards (proposed MOD-001-2) and some of the FAC standards have some overlap. If there is consensus in the industry, a discussion about the standards alignment and where requirements could best reside can take place as part of the EPR discussion.

## **Coordination with the North American Energy Standards Board (NAESB)**

NERC routinely coordinates with NAESB on NERC Reliability Standard development and how it may affect some of the NAESB business practices. NAESB monitors various NERC projects and the coordination between NERC and NAESB will continue.

## **Emerging Risks and Changing Technologies**

The RISC, Integration of Variable Generation Task Force, and ERSWG are three important committees and task forces that focus on emerging risks and changing technologies. They need to be involved during the beginning of 2017 to assist in the EPR for prioritization and technical expertise.

## **Event Analysis and Compliance Violation Statistics**

Event analysis and compliance violation statistics should be reviewed as the EPRs get underway. Lessons learned and statistics from analyzing events will allow teams to review existing requirements to see if there is any correlation between the events and requirements. Violations statistics allow teams to investigate requirements that are highly violated to identify areas where language may have been misinterpreted and provide training to the industry on the intent of the requirements.

## **Lessons Learned and Frequently Asked Questions**

Lessons learned documents are designed to convey information from NERC's various implementation activities. They are not intended to establish new requirements under NERC's Reliability Standards, to modify the requirements in any existing Reliability Standards, nor to provide an interpretation under section 7 of the SPM.



Additionally, there may be other legitimate ways to fulfill the obligations of the requirements that are not expressed in these supporting documents. Compliance will continue to be determined based on the language in the NERC Reliability Standards as amended from time to time. Implementation of a lesson learned is not a substitute for compliance with requirements in NERC's Reliability Standards.

Frequently asked questions (FAQs) provide transparency in providing answers to questions asked by entities. The information presented in FAQ documents is intended to provide guidance and is not intended to establish new requirements under NERC's Reliability Standards or to modify the requirements in any existing Reliability Standards.

A standard being the subject of numerous lessons learned or FAQs is an indication that the language in the standard may be ambiguous, subject to multiple interpretations, or does not appropriately capture the reliability risk.

### **Measures**

There have been more requests for guidance to industry on expectations for measuring performance on standard requirements. This is evidence that the measures within some standards may not be sufficiently informative. The EPRs should include consideration of requests for guidance from industry, and the efforts should have an emphasis on improving measures such that guidance documents or detailed reliability standard audit worksheets (RSAWs) are not necessary and the measures are sufficient guidance to the industry.

### **Rationale and Guidelines**

Industry feedback will be encouraged on how these sections relate to the work of the Member Representative Committee's compliance guidance work.

### **Regional Variances**

If a regional standard is in effect, or is under consideration for a standards development project, it should be incorporated into continent-wide Reliability Standards as a regional variance in cases where there is a continent-wide standard that addresses the same subject.

### **Request for Interpretations**

Similar to lessons learned and FAQs, a standard receiving a valid interpretation request may indicate problems with the language of the standard or of a requirement.

### **RSAW Development**

In the beginning of 2013, NERC endeavored to develop RSAWs concurrently with standards. The purpose was to post RSAWs within 15 days of a standard posting date to allow the industry to consider the compliance approach from auditors as they vote on the standard(s) being balloted.

### **Standard Authorization Requests**

SARs are an important mechanism for sponsors to transmit standards information to NERC. For example, SARs submitted either by a Registered Entity or Regional Entity after conducting an Inherent Risk Assessment may identify requirements that should be modified to mitigate an emerging reliability risk, or are little to no risk to the BES and should be considered for retirement.

### **Surveys and Polls**

Surveys and polls could be good outreach tools as the feedback loops are implemented in the beginning of 2017. Questions for the industry or thoughts on conducting the EPRs could be an efficient way to collect stakeholder opinions, since standards development is on a more measured and deliberate pace compared to previous years. Therefore, industry feedback is critical to ensure projects and EPRs are appropriately prioritized to focus on high-risk areas.

# Attachment 1

## Enhanced Periodic Review Guidelines<sup>9</sup>

---

Developing the plan to conduct EPRs considers several factors. The first task is determining how to group standards for review. For example, it may be reasonable to review standards by looking at the entire standards family, but it may also make sense to look at reliability actions that cut across standard families or by sections of standards that relate to each other.<sup>10</sup>

The next task is determining whether the subject group of standards is eligible for review. Other ongoing or planned standards development projects may affect standards eligibility. Standards are then grouped and prioritized.

### Standards Eligibility

The criteria below determine standard eligibility to conduct the EPRs for standards for 2017, 2018, and 2019.

#### Criteria for What Makes a Standard Eligible:

- All requirements of a Reliability Standard must have been in effect, based on the implementation/compliance dates approved by the applicable governmental authority, for at least a year. In some instances, a standard may be eligible if it has been a year since the effective date of the order<sup>11</sup> approving that standard if entities are “early adopting” the requirements as they implement their programs to prepare for the effective date. Examples of standards that met this criterion for the initial 2016 EPRs were:
  - NUC-001-3 and NUC-001-2.1: NUC-001-2.1 was effective 4/1/2013 and NUC-001-3 was effective 1/1/2016. The changes in NUC-001-3 were not significant (e.g., they related to capitalization of terms, deleting unneeded terms, etc.).
- Compliance expectations are not clear or the standard is not being consistently monitored.
- Feedback loops indicate risk (e.g., Event Analysis lessons learned).

---

<sup>9</sup>Per Section 13 of the SPM, all Reliability Standards shall be reviewed at least once every ten years from the effective date of the Reliability Standard or the date of the latest NERC Board of Trustees adoption to a revision of the Reliability Standard, whichever is later. If a Reliability Standard is approved by the American National Standards Institute as an American national standard, it shall be reviewed at least once every five years from the effective date of the Reliability Standard or the date of the latest NERC Board of Trustees adoption to a revision of the Reliability Standard, whichever is later.

The RSDP shall include projects that address this five- or ten-year review of Reliability Standards.

- If a Reliability Standard is nearing its five- or ten-year review and has an issue that needs resolved, then the Reliability Standards Development Plan shall include a project for the complete review and associated revision of the Reliability Standard. This includes addressing all outstanding governmental directives, all approved interpretations, and all unresolved issues identified by stakeholders.
- If a Reliability Standard is nearing its five- or ten-year review and there are no outstanding governmental directives, interpretations, or unresolved stakeholder issues associated with the Reliability Standard, then the RSDP shall include a project solely for the “five-year review” of that Reliability Standard.

While the main work in the next three years will be the continuation of research and conducting of the enhanced periodic reviews with consideration of the topics discussed below, there may be risks identified for which projects may need to be initiated.

<sup>10</sup> The IERP developed one approach to grouping standards.

<sup>11</sup> “Effective date” and “issue date” are different, so this must be considered.

- Outstanding Paragraph 81 requirements that may not have been addressed.
- The implementation of the *Standards Independent Experts Review Project - Final Report* recommendations.<sup>12</sup>
- Per the SPM, standards will go through a review at least once every 10 years for non-American National Standards Institute (ANSI) approved standards and every five years for ANSI-approved standards.

### **Criteria for What Makes a Standard Not Eligible:**

- A standard that is part of a current standards development project or is scheduled for standards development that will likely result in significant revisions of the standard currently in effect.
  - Standards development here includes standards:
    - in a standards development project;
    - adopted by the NERC Board of Trustees;
    - pending regulatory filing;
    - filed with regulatory agencies; or
    - approved by regulatory agencies but not yet in effect.

### **Prioritization**

Specific elements considered in the prioritization of the EPRs include:

1. RISC category rankings
2. Feedback on risk through a risk-based input mechanism
3. Outstanding regulatory directives with deadlines
4. Outstanding regulatory directives
5. Outstanding requirements that are candidates for retirement
6. The grading of Standards developed by the Standing Review Team, including the final grades set forth in Attachment 2 and any additional final grades developed and finalized in any given year
7. *Standards Independent Experts Review Panel - Final Report* content and quality assessments

---

<sup>12</sup> The Standards IERP final report recommendations can be found here:

[http://www.nerc.com/pa/Stand/Standards%20Development%20Plan%20Library/Standards\\_Independent\\_Experts\\_Review\\_Project\\_Report.pdf](http://www.nerc.com/pa/Stand/Standards%20Development%20Plan%20Library/Standards_Independent_Experts_Review_Project_Report.pdf)

## Attachment 2

### Final Grades for Standards Graded in 2016

The Enhanced Periodic Review (EPR) Standing Review Team (SRT) was tasked with using metrics from the 2013 Independent Experts Review Panel to assign numeric grades to instruct future EPR teams. While the SRT’s final standards grades are important data points for the EPRs to consider, they are intended as one of many inputs to facilitate discussion during the reviews.

The EPRSRT completed the initial grading of eligible Reliability Standards, which NERC posted for a 30-day stakeholder comment period. The EPR SRT conducted a second public meeting in which it considered input from stakeholders and held additional discussion prior to reaching consensus to finalize the grades. Shown below are the average SRT grades for content (0-3) and quality (0-12) for each of the standard requirements eligible for EPR in 2016-2017. Detailed analysis and background information on the Standards Grading process can be found on the [project page](#).

Standard and Requirement	Content Average	Quality Average
BAL-001-2 , R1	3.00	11.5
BAL-001-2 , R2	3.00	11
EOP-010-1, R1	3.00	12
EOP-010-1, R2	2.67	10
EOP-010-1, R3.	3.00	11.75
EOP-011-1, R1.	3.00	11.5
EOP-011-1, R2.	3.00	12
EOP-011-1, R3.	2.50	10.75
EOP-011-1, R4.	2.50	11
EOP-011-1, R5.	2.75	11.75
EOP-011-1, R6.	2.75	11.5
FAC-008-3, R1	3.00	10.75
FAC-008-3, R2.	3.00	11.333333
FAC-008-3, R3.	3.00	11.5
FAC-008-3, R6.	3.00	11
FAC-008-3, R7.	2.50	10.5
FAC-008-3, R8.	2.75	10.25
INT-004-3.1, R3.	3.00	11.25
INT-006-4, R1	3.00	11
INT-006-4, R2	3.00	11.25
INT-006-4, R3.	3.00	11.5
INT-006-4, R4	3.00	11.25
INT-006-4, R5	3.00	11.75
INT-009-2.1, R1	3.00	11.5
INT-009-2.1, R2	3.00	12

Standard and Requirement	Content Average	Quality Average
INT-009-2.1, R3.	3.00	12
INT-010-2.1, R1	3.00	11
INT-010-2.1, R2	3.00	11.5
INT-010-2.1, R3.	3.00	11
NUC-001-3, R1	3.00	12
NUC-001-3, R2.	3.00	12
NUC-001-3, R3.	2.75	12
NUC-001-3, R4.	3.00	11.75
NUC-001-3, R5.	3.00	12
NUC-001-3, R6.	3.00	12
NUC-001-3, R7.	3.00	12
NUC-001-3, R8.	3.00	12
NUC-001-3, R9	3.00	11.75
PER-003-1, R1.	3.00	11.5
PER-003-1, R2.	3.00	11.5
PER-003-1, R3.	3.00	11.5
PER-004-2, R1.	2.75	11.25
PER-004-2, R2.	3.00	9.5
PRC-004-5(i), R1.	2.75	11.75
PRC-004-5(i), R2.	3.00	11.75
PRC-004-5(i), R3.	3.00	11.25
PRC-004-5(i), R4.	3.00	11.5
PRC-004-5(i), R5.	3.00	11.5
PRC-004-5(i), R6.	3.00	11.5
PRC-005-6, R1.	2.75	11.25

Final Grades for Standards

Standard and Requirement	Content Average	Quality Average
PRC-005-6, R2.	3.00	11.5
PRC-005-6, R3.	3.00	11.5
PRC-005-6, R4.	3.00	11.5
PRC-005-6, R5.	2.75	10.5
PRC-006-2, R1.	3.00	11.5
PRC-006- , R11.	3.00	12
PRC-006-2, R12.	3.00	11.75
PRC-006-2, R13.	3.00	12
PRC-006-2, R2.	2.00	11.5
PRC-006-2, R3.	3.00	11.5
PRC-006-2, R4.	3.00	11.75
PRC-006-2, R5.	3.00	11.75
PRC-006-2, R6.	3.00	11.75
PRC-006-2, R7.	3.00	12
PRC-006-2, R8.	3.00	11.75
PRC-006-2, R9.	3.00	11.5
PRC-010-2, R1.	2.50	11.5
PRC-010-2, R2.	3.00	11.5
PRC-010-2, R3.	2.50	11.25
PRC-010-2, R4.	2.50	12
PRC-010-2, R5.	2.50	12
PRC-010-2, R6.	3.00	11.5
PRC-010-2, R7.	3.00	12
PRC-010-2, R8.	3.00	12
PRC-019-2, R1.	3.00	11.75

Standard and Requirement	Content Average	Quality Average
PRC-019-2, R2.	3.00	11.75
PRC-023-4, R1.	3.00	11.25
PRC-023-4, R2.	2.75	11.25
PRC-023-4, R3.	2.75	11.75
PRC-023-4, R4.	2.75	11.5
PRC-023-4, R5.	3.00	11.25
PRC-023-4, R6.	3.00	11.75
PRC-024-2, R1.	3.00	11.75
PRC-024-2, R2.	3.00	11.75
PRC-024-2, R3.	3.00	11.5
PRC-024-2, R4.	3.00	11.75
PRC-025-1, R1.	2.75	11.5
VAR-001-4.1, R1.	3.00	11.25
VAR-001-4.1, R2.	3.00	11.25
VAR-001-4.1, R3.	3.00	11.5
VAR-001-4.1, R4.	3.00	11
VAR-001-4.1, R5.	3.00	11.75
VAR-001-4.1, R6.	2.75	11.75
VAR-002-4, R1.	3.00	11.25
VAR-002-4, R2.	3.00	12
VAR-002-4, R3.	3.00	12
VAR-002-4, R4.	3.00	11.5
VAR-002-4, R5.	3.00	12
VAR-002-4, R6.	3.00	11.25