
**BEFORE THE
NOVA SCOTIA UTILITY AND REVIEW BOARD
OF THE PROVINCE OF NOVA SCOTIA**

**NORTH AMERICAN ELECTRIC)
RELIABILITY CORPORATION)**

**QUARTERLY APPLICATION FOR APPROVAL OF RELIABILITY
STANDARDS OF THE NORTH AMERICAN ELECTRIC RELIABILITY
CORPORATION**

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September 2, 2011

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I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”)¹ hereby submits to the Nova Scotia Utility and Review Board (“NSUARB”) a quarterly application for approval of the NERC Reliability Standards and an updated NERC Glossary of Terms approved by the Federal Energy Regulatory Commission (“FERC”) since NERC’s June 30, 2010 Application for Approval of Reliability Standards was filed with the NSUARB.² NERC requests that the Reliability Standards and updated NERC Glossary of Terms be made mandatory and enforceable for users, owners, and operators of the bulk power system within the Province of Nova Scotia. Going forward, NERC will file a quarterly application with the NSUARB within sixty days after the end of each quarter for approval of all NERC Reliability Standards and updated Glossary of Terms approved by FERC during that quarter, as necessary.

In support of its request for approval by the NSUARB of the proposed Reliability Standards, NERC submits the following information: (1) an updated listing of the Reliability Standards approved by FERC that are currently effective (*see, Exhibit A*); (2) a list of the the Reliability Standards approved by FERC since the June 30, 2010 NERC application, electronic copies of those standards, and the associated NERC Glossary of Terms (*see, Exhibit B*), for which approval is sought in this request³; (3) the critical infrastructure protection (“CIP”) implementation plans for Version 3 of the CIP Reliability Standards (*see, Exhibit C*); (4) the associated Violation Risk Factors (“VRF”)

¹ The Federal Energy Regulatory Commission (“FERC”) certified NERC as the electric reliability organization (“ERO”) in its order issued July 20, 2006 in Docket No. RR06-1-000. 116 FERC ¶ 61,062 (2006) (“ERO Certification Order”).

² Application for Approval of Reliability Standards of the North American Electric Reliability Corporation, NSUARB-NERC-R-10 (June 30, 2010).

³ The NERC Glossary of Terms includes Regional definitions that do not apply to the Province of Nova Scotia.

(see, **Exhibit D**); and (5) the associated Violation Severity Levels (“VSL”) (see, **Exhibit E**).

II. NOTICES AND COMMUNICATIONS

Notices and communications regarding this Application may be addressed to:

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III. REQUEST FOR APPROVAL OF RELIABILITY STANDARDS

A. NERC Quarterly Filing of Proposed Reliability Standards

On July 20, 2011, NSUARB issued a decision approving the Reliability Standards and NERC Glossary of Terms that NERC submitted to NSUARB on June 30, 2010, and accepted as guidance the associated Violation Risk Factors (“VRF”) and Violation Severity Levels (“VSL”).⁴ In its application, NERC provided a list of additional Reliability Standards that were approved by the NERC Board of Trustees that were

⁴ *In the Matter of an Application by North American Electric Reliability Corporation for Approval of its Reliability Standards, and an application by Northeast Power Coordinating Council, Inc. for Approval of its Regional Reliability Criteria*, NSUARB-NERC-R-10 (July 20, 2011) (“NSUARB Decision”).

pending before FERC at that time. NERC also stated that it would file a subsequent request for approval of those standards with the NSUARB, once FERC has taken final action. By this filing, NERC seeks NSUARB approval of the standards that FERC has taken final action on since NERC's June 30, 2010 application.

NERC has been certified⁵ as the Electric Reliability Organization ("ERO") in the United States under Section 215 of the Federal Power Act.⁶ The Reliability Standards contained in Exhibit B have been approved as mandatory and enforceable for users, owners, and operators within the United States by FERC.⁷ Some or all of NERC's Reliability Standards are now mandatory in the Canadian Provinces of Alberta, British Columbia, New Brunswick, Nova Scotia, Ontario, and Saskatchewan.

NERC has entered into a Memorandum of Understanding ("MOU") with NSUARB⁸ and a separate MOU with Nova Scotia Power Incorporated ("NSPI"), and the Northeast Power Coordinating Council, Inc. ("NPCC"),⁹ which became effective on December 22, 2006 and May 11, 2010, respectively. The May 11, 2010 MOU sets forth the mutual understandings of NERC, NSPI, and NPCC regarding the approval and implementation of NERC Reliability Standards and NPCC Regional Reliability Criteria in Nova Scotia and other related matters.

⁵ Through enactment of the Energy Policy Act of 2005, the U.S. Congress entrusted FERC with the duties of approving and enforcing rules in the U.S. to ensure the reliability of the Nation's bulk power system, and with the duties of certifying an ERO. On July 20, 2006, FERC certified NERC as the ERO, charged with developing mandatory and enforceable Reliability Standards, which are subject to FERC review and approval.

⁶ 16 U.S.C. § 824o(f) (2006).

⁷ 31 of the 48 standards in Exhibit B are currently effective. Those standards marked with an asterisk are not yet effective, but have been approved by FERC.

⁸ See Memorandum of Understanding between Nova Scotia Utility and Review Board and North American Electric Reliability Corporation (signed December 22, 2006).

⁹ See Memorandum of Understanding between Nova Scotia Power Incorporated and the Northeast Power Coordinating Council, Inc. and the North American Electric Reliability Corporation (signed May 11, 2010).

In addition to approving currently effective NERC Reliability Standards, the NSUARB Decision approved a “quarterly review” process for considering new and amended NERC standards and criteria.¹⁰ The NSUARB Decision also determined that quarterly “applications will not be processed by the Board until [FERC] has approved or remanded the standards in the United States.”¹¹ Accordingly, NERC is only requesting NSUARB approval for those Reliability Standards that have been approved by FERC.

The NSUARB Decision also concluded that formal approval is not required for VRFs and VSLs associated with proposed Reliability Standards.¹² Therefore, NERC will not seek formal approval of VRFs and VSLs associated with the Reliability Standards submitted in this or future quarterly applications. However, because the NSUARB has determined that it will accept the VRFs and VSLs for guidance, NERC is providing a list of the associated VRFs and VSLs for the Reliability Standards approved by FERC since June 30, 2010 for information only.

NERC has not included in this filing the full developmental record for the standards, which consists of the draft standards, comments received, responses to the comments by the drafting teams, and the full voting record, because the record for each standard may consist of several thousand pages. NERC will make the full developmental record available to the NSUARB and other interested parties upon request and as needed.

B. Overview of Reliability Standards Development Process

NERC Reliability Standards define the requirements for reliably planning and operating the North American bulk power system. These standards are developed by

¹⁰ NSUARB Decision at P 30.

¹¹ *Id.*

¹² *Id.* at P 33.

industry stakeholders using a balanced, open, fair and inclusive process managed by the NERC Standards Committee. The Standards Committee is facilitated by NERC staff and comprised of representatives from ten electricity stakeholder segments. Stakeholders, through the balloting process, and the NERC Board of Trustees have approved the standards provided in Exhibit B.

NERC develops Reliability Standards in accordance with Section 300 of its Rules of Procedure (Reliability Standards Development) and Appendix 3A, Standards Processes Manual.¹³ A detailed overview of the process for developing NERC Reliability Standards was provided in the June 30, 2010 application.¹⁴ That overview included an explanation of the requirements in Section 300 of the NERC Rules of Procedure and the benchmarks of an excellent Reliability Standard. In addition, NERC’s application explained that the Reliability Standards Development process has been approved by the American National Standards Institute (“ANSI”) as being open, inclusive, balanced, and fair.¹⁵

C. Description of Proposed Reliability Standards

The Reliability Standards presented in Exhibit B are grouped by topical area, as summarized below.¹⁶

Reliability Standard	Effective Date
Resource and Demand Balancing (BAL) Standards	
BAL-002-1 - Disturbance Control Performance (formerly BAL-002-0)	04/01/12*
BAL-006-2 - Inadvertent Interchange (formerly BAL-006-1.1)	04/01/11

¹³ NERC’s Rules of Procedure are available at: <http://www.nerc.com/page.php?cid=1|8|169>.

¹⁴ NERC June 30, 2010 Application at pp. 8-13.

¹⁵ *Id.* at pp. 13-19.

¹⁶ Reliability Standards marked with an asterisk are not yet mandatorily effective, but have been approved by FERC and have a future mandatory effective date.

Critical Infrastructure Protection (CIP) Standards	
CIP-001-1a - Sabotage Reporting (formerly CIP-001-1)	02/02/11
CIP-002-3 - Cyber Security – Critical Cyber Asset Identification (formerly CIP-002-2)	10/01/10
CIP-003-3 - Cyber Security - Security Management Controls (formerly CIP-003-2)	10/01/10
CIP-004-3 - Cyber Security - Personnel & Training (formerly CIP-004-2)	10/01/10
CIP-005-3a - Cyber Security - Electronic Security Perimeter(s) (formerly CIP-005-2)	02/02/11
CIP-006-3c - Cyber Security - Physical Security of Critical Cyber Assets (formerly CIP-006-2)	10/01/10
CIP-007-3 - Cyber Security - Systems Security Management (formerly CIP-007-2a)	10/01/10
CIP-008-3 - Cyber Security - Incident Reporting and Response Planning (formerly CIP-008-2)	10/01/10
CIP-009-3 - Cyber Security - Recovery Plans for Critical Cyber Assets (formerly CIP-009-2)	10/01/10
Emergency Preparedness and Operations (EOP) Standards	
EOP-001-2 - Emergency Operations Planning (formerly EOP-001-0)	07/01/13*
EOP-002-3 - Capacity and Energy Emergencies (formerly EOP-002-2.1)	10/01/11*
EOP-005-2 - System Restoration from Blackstart Resources (formerly EOP-005-1; also incorporates parts of now retired EOP-009-0)	07/01/13*
EOP-006-2 - System Restoration Coordination (formerly EOP-006-1; also incorporates parts of now retired EOP-009-0)	07/01/13*
EOP-008-1 - Loss of Control Center Functionality (formerly EOP-008-0)	07/01/13*
Facilities Design, Connections, and Maintenance (FAC) Standards	
FAC-002-1 - Coordination of Plans For New Generation, Transmission, and End-User Facilities (formerly FAC-002-0)	10/01/11*
Standards Interchange Scheduling and Coordination (INT)	
INT-003-3 - Interchange Transaction Implementation (formerly INT-003-2)	04/01/11
INT-005-3 - Interchange Authority Distributes Arranged Interchange (formerly INT-005-2)	07/01/10
INT-006-3 - Response to Interchange Authority (formerly INT-006-2)	07/01/10
INT-008-3 - Interchange Authority Distributes Status (formerly INT-008-2)	07/01/10
Interconnection Reliability Operations and Coordination (IRO)	
IRO-002-2 - Reliability Coordination - Facilities (formerly IRO-002-1)	10/01/11*
IRO-004-2 - Reliability Coordination - Operations Planning (formerly IRO-004-1)	10/01/11*
IRO-005-2a - Reliability Coordination - Current Day Operations (formerly IRO-005-2)	05/26/11
IRO-005-3a - Reliability Coordination - Current Day Operations (formerly IRO-005-2a)	10/01/11*
IRO-006-5 - Reliability Coordination - Transmission Loading Relief	07/01/11

(TLR) (formerly IRO-006-4.1)	
IRO-006-EAST-1 - Transmission Loading Relief Procedure for the Eastern Interconnection (new standard)	07/01/11
IRO-008-1 Reliability Coordinator Operational Analyses and Real-time Assessments (new standard)	10/01/11*
IRO-009-1 - Reliability Coordinator Actions to Operate Within IROLs (new standard)	10/01/11*
IRO-010-1a - Reliability Coordinator Data Specification and Collection (new standard)	10/01/11*
Modeling, Data, and Analysis (MOD) Standards	
MOD-001-1a - Available Transmission System Capability	04/01/11
MOD-004-1 - Capacity Benefit Margin (incorporates now retired MOD-007-0)	04/01/11
MOD-008-1 - Transmission Reliability Margin Calculation Methodology	04/01/11
MOD-021-1 - Documentation of the Accounting Methodology for the Effects of Demand-Side Management in Demand and Energy Forecasts (formerly MOD-021-1)	04/01/11
MOD-028-1 - Area Interchange Methodology (new standard)	04/01/11
MOD-029-1a - Rated System Path Methodology (new standard)	04/01/11
MOD-030-2 - Flowgate Methodology (new standard)	04/01/11
Personnel Performance, Training, and Qualification (PER) Standards	
PER-004-2 - Reliability Coordination – Staffing (formerly PER-004-1)	04/01/11
PER-005-1 - System Personnel Training (new standard; incorporates PER-002-0 and parts of PER-004-1)	04/01/11
Protection and Control (PRC) Standards	
PRC-004-2 - Analysis and Mitigation of Transmission and Generation Protection System Misoperations (formerly PRC-004-1)	04/01/12*
PRC-023-1 - Transmission Relay Loadability (new standard)	7/1/2010
Transmission Operations (TOP) Standards	
TOP-003-1 - Planned Outage Coordination (formerly TOP-003-0)	10/01/11*
TOP-005-1.1a - Operational Reliability Information (formerly TOP-005-1.1)	05/26/11
TOP-005-2a - Operational Reliability Information (formerly TOP-005-1.1a)	10/01/11*
TOP-006-2 - Monitoring System Conditions (formerly TOP-006-1)	10/01/11*
Voltage and Reactive (VAR) Standards	
VAR-001-2 -Voltage and Reactive Control (formerly VAR-001-1)	10/1/2011*
VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules (formerly VAR-002-1.1a)	9/16/10

The NERC Glossary of Terms used in Reliability Standards – most recently updated May 24, 2011 – lists each term that is defined for use in one or more of NERC’s

continent-wide or Regional Reliability Standards and adopted by the NERC Board of Trustees.

IV. CONCLUSION

By this filing, NERC requests that the NSUARB approve the Reliability Standards and NERC Glossary of Terms used in Reliability Standards, as set out in Exhibit B.

Respectfully submitted,

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Exhibit A

List of Currently Effective FERC-Approved Reliability Standards

Resource and Demand Balancing (BAL) Standards
BAL-001-0.1a
BAL-002-0
BAL-003-0.1b
BAL-004-0
BAL-005-0.1b
BAL-006-2
BAL-STD-002-0
BAL-004-WECC-01
BAL-502-RFC-02
Critical Infrastructure Protection (CIP) Standards
CIP-001-1a
CIP-002-3
CIP-003-3
CIP-004-3
CIP-005-3a
CIP-006-3c
CIP-007-3
CIP-008-3
CIP-009-3
Communications (COM) Standards
COM-001-1.1
COM-002-2
Emergency Preparedness and Operations (EOP) Standards
EOP-001-0
EOP-002-2.1
EOP-003-1
EOP-004-1
EOP-005-1
EOP-006-1
EOP-008-0
EOP-009-0
Facilities Design, Connections, and Maintenance (FAC) Standards
FAC-001-0
FAC-002-0
FAC-003-1
FAC-008-1
FAC-009-1
FAC-010-2.1
FAC-011-2
FAC-013-1
FAC-014-2
FAC-501-WECC-1

Standards Interchange Scheduling and Coordination (INT)
INT-001-3
INT-003-3
INT-004-2
INT-005-3
INT-006-3
INT-007-1
INT-008-3
INT-009-1
INT-010-1
Interconnection Reliability Operations and Coordination (IRO)
IRO-001-1.1
IRO-002-1
IRO-003-2
IRO-004-1
IRO-005-2a
IRO-006-5
IRO-014-1
IRO-015-1
IRO-016-1
IRO-006-EAST-1
IRO-006-WECC-1
Modeling, Data, and Analysis (MOD) Standards
MOD-001-1a
MOD-004-1
MOD-008-1
MOD-010-0
MOD-012-0
MOD-016-1.1
MOD-017-0.1
MOD-018-0
MOD-019-0.1
MOD-020-0
MOD-021-1
MOD-028-1
MOD-029-1a
MOD-030-2
Nuclear (NUC) Standards
NUC-001-2
Personnel Performance, Training, and Qualification (PER) Standards
PER-001-0.1
PER-002-0
PER-003-0
PER-004-2
PER-005-1

Protection and Control (PRC) Standards
PRC-001-1
PRC-004-1
PRC-005-1
PRC-007-0
PRC-008-0
PRC-009-0
PRC-010-0
PRC-011-0
PRC-015-0
PRC-016-0.1
PRC-017-0
PRC-018-1
PRC-021-1
PRC-022-1
PRC-023-1
PRC-STD-001-1
PRC-STD-003-1
Transmission Operations (TOP) Standards
TOP-001-1
TOP-002-2a
TOP-003-0
TOP-004-2
TOP-005-1.1a
TOP-006-1
TOP-007-0
TOP-008-1
TOP-007-WECC-1
Transmission Planning (TPL) Standards
TPL-001-0.1
TPL-002-0a
TPL-003-0a
TPL-004-0
Voltage and Reactive (VAR) Standards
VAR-001-1
VAR-002-1.1b
VAR-002-WECC-1
VAR-501-WECC-1

Exhibit B

- 1) NERC Reliability Standards Applicable to Nova Scotia Approved by FERC Since June 30, 2010 Filing**
- 2) PDF copies of Reliability Standards being filed for Approval**
- 3) Updated NERC Glossary of Terms**

**1.) NERC Reliability Standards Applicable to Nova Scotia
Approved by FERC Since June 30, 2010 Filing**

Reliability Standard	Effective Date
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CIP-004-3 - Cyber Security - Personnel & Training (formerly CIP-004-2)	10/01/10
CIP-005-3a - Cyber Security - Electronic Security Perimeter(s) (formerly CIP-005-2)	02/02/11
CIP-006-3c - Cyber Security - Physical Security of Critical Cyber Assets (formerly CIP-006-2)	10/01/10
CIP-007-3 - Cyber Security - Systems Security Management (formerly CIP-007-2a)	10/01/10
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EOP-005-2 - System Restoration from Blackstart Resources (formerly EOP-005-1; also incorporates parts of now retired EOP-009-0)	07/01/13*
EOP-006-2 - System Restoration Coordination (formerly EOP-006-1; also incorporates parts of now retired EOP-009-0)	07/01/13*
EOP-008-1 - Loss of Control Center Functionality (formerly EOP-008-0)	07/01/13*
Facilities Design, Connections, and Maintenance (FAC) Standards	
FAC-002-1 - Coordination of Plans For New Generation, Transmission, and End-User Facilities (formerly FAC-002-0)	10/01/11*
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INT-003-3 - Interchange Transaction Implementation (formerly INT-003-2)	04/01/11
INT-005-3 - Interchange Authority Distributes Arranged Interchange (formerly INT-005-2)	07/01/10
INT-006-3 - Response to Interchange Authority (formerly INT-006-2)	07/01/10
INT-008-3 - Interchange Authority Distributes Status (formerly INT-008-2)	07/01/10
Interconnection Reliability Operations and Coordination (IRO)	
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IRO-004-2 - Reliability Coordination - Operations Planning (formerly IRO-004-1)	10/01/11*
IRO-005-2a - Reliability Coordination - Current Day Operations (formerly IRO-005-2)	05/26/11
IRO-005-3a - Reliability Coordination - Current Day Operations (formerly IRO-005-2a)	10/01/11*
IRO-006-5 - Reliability Coordination - Transmission Loading Relief (TLR) (formerly IRO-006-4.1)	07/01/11

IRO-006-EAST-1 - Transmission Loading Relief Procedure for the Eastern Interconnection (new standard)	07/01/11
IRO-008-1 Reliability Coordinator Operational Analyses and Real-time Assessments (new standard)	10/01/11*
IRO-009-1 - Reliability Coordinator Actions to Operate Within IROLs (new standard)	10/01/11*
IRO-010-1a - Reliability Coordinator Data Specification and Collection (new standard)	10/01/11*
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MOD-008-1 - Transmission Reliability Margin Calculation Methodology	04/01/11
MOD-021-1 - Documentation of the Accounting Methodology for the Effects of Demand-Side Management in Demand and Energy Forecasts (formerly MOD-021-1)	04/01/11
MOD-028-1 - Area Interchange Methodology (new standard)	04/01/11
MOD-029-1a - Rated System Path Methodology (new standard)	04/01/11
MOD-030-2 - Flowgate Methodology (new standard)	04/01/11
Personnel Performance, Training, and Qualification (PER) Standards	
PER-004-2 - Reliability Coordination – Staffing (formerly PER-004-1)	04/01/11
PER-005-1 - System Personnel Training (new standard; incorporates PER-002-0 and parts of PER-004-1)	04/01/11
Protection and Control (PRC) Standards	
PRC-004-2 - Analysis and Mitigation of Transmission and Generation Protection System Misoperations (formerly PRC-004-1)	04/01/12*
PRC-023-1 - Transmission Relay Loadability (new standard)	7/1/2010
Transmission Operations (TOP) Standards	
TOP-003-1 - Planned Outage Coordination (formerly TOP-003-0)	10/01/11*
TOP-005-1.1a - Operational Reliability Information (formerly TOP-005-1.1)	05/26/11
TOP-005-2a - Operational Reliability Information (formerly TOP-005-1.1a)	10/01/11*
TOP-006-2 - Monitoring System Conditions (formerly TOP-006-1)	10/01/11*
Voltage and Reactive (VAR) Standards	
VAR-001-2 -Voltage and Reactive Control (formerly VAR-001-2)	10/1/2011*
VAR-002-1.1b - Generator Operation for Maintaining Network Voltage Schedules (formerly VAR-002-1.1a)	9/16/10

*** At the time of this filing, all standards marked with an asterisk are not yet mandatorily effective, but have been approved by FERC and have a future mandatory effective date.**

**2.) PDF copies of Reliability Standards being filed for
Approval**

A. Introduction

- 1. Title:** **Disturbance Control Performance**
- 2. Number:** BAL-002-1
- 3. Purpose:** The purpose of the Disturbance Control Standard (DCS) is to ensure the Balancing Authority is able to utilize its Contingency Reserve to balance resources and demand and return Interconnection frequency within defined limits following a Reportable Disturbance. Because generator failures are far more common than significant losses of load and because Contingency Reserve activation does not typically apply to the loss of load, the application of DCS is limited to the loss of supply and does not apply to the loss of load.
- 4. Applicability:**
 - 4.1.** Balancing Authorities
 - 4.2.** Reserve Sharing Groups (Balancing Authorities may meet the requirements of Standard 002 through participation in a Reserve Sharing Group.)
 - 4.3.** Regional Reliability Organizations
- 5. (Proposed) Effective Date:** The first day of the first calendar quarter, one year after applicable regulatory approval; or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter one year after Board of Trustees' adoption.

B. Requirements

- R1.** Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.
 - R1.1.** A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002.
- R2.** Each Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:
 - R2.1.** The minimum reserve requirement for the group.
 - R2.2.** Its allocation among members.
 - R2.3.** The permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.
 - R2.4.** The procedure for applying Contingency Reserve in practice.
 - R2.5.** The limitations, if any, upon the amount of interruptible load that may be included.
 - R2.6.** The same portion of resource capacity (e.g. reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.
- R3.** Each Balancing Authority or Reserve Sharing Group shall activate sufficient Contingency Reserve to comply with the DCS.
 - R3.1.** As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently

Standard BAL-002-1 — Disturbance Control Performance

than annually, their probable contingencies to determine their prospective most severe single contingencies.

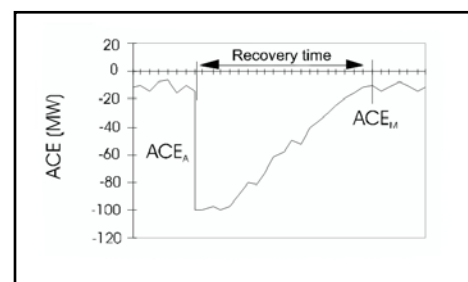
- R4.** A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:
- R4.1.** A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero. For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.
- R4.2.** The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance.
- R5.** Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more other group members. (If a group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:
- R5.1.** The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS. To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.
- or
- R5.2.** The Reserve Sharing Group reviews each member's ACE in response to the activation of reserves. To be in compliance, a member's ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.
- R6.** A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within the Contingency Reserve Restoration Period for its Interconnection.
- R6.1.** The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.
- R6.2.** The default Contingency Reserve Restoration Period is 90 minutes.

C. Measures

- M1.** A Balancing Authority or Reserve Sharing Group shall calculate and report compliance with the Disturbance Control Standard for all Disturbances greater than or equal to 80% of the magnitude of the Balancing Authority's or of the Reserve Sharing Group's most severe single contingency loss. Regions may, at their discretion, require a lower reporting threshold. Disturbance Control Standard is measured as the percentage recovery (R_i).

For loss of generation:

if $ACE_A < 0$
then



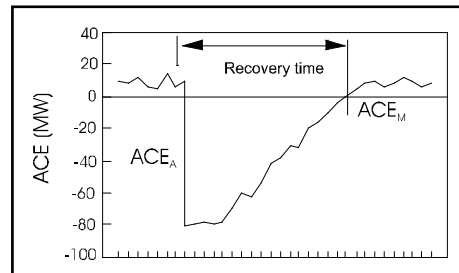
$$R_i = \frac{MW_{Loss} - \max(0, ACE_A - ACE_M)}{MW_{Loss}} * 100\%$$

if $ACE_A \geq 0$
then

$$R_i = \frac{MW_{Loss} - \max(0, -ACE_M)}{MW_{Loss}} * 100\%$$

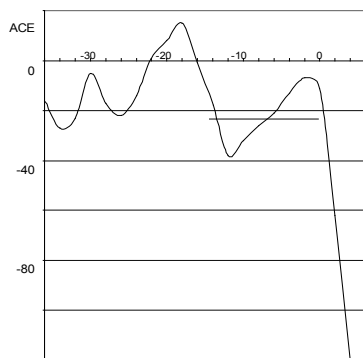
where:

- MW_{LOSS} is the MW size of the Disturbance as measured at the beginning of the loss,
- ACE_A is the pre-disturbance ACE,
- ACE_M is the maximum algebraic value of ACE measured within the fifteen minutes following the Disturbance. A Balancing Authority or Reserve Sharing Group may, at its discretion, set $ACE_M = ACE_{15 \text{ min}}$, and



The Balancing Authority or Reserve Sharing Group shall record the MW_{LOSS} value as measured at the site of the loss to the extent possible. The value should not be measured as a change in ACE since governor response and AGC response may introduce error.

The Balancing Authority or Reserve Sharing Group shall base the value for ACE_A on the average ACE over the period just prior to the start of the Disturbance (10 and 60 seconds prior and including at least 4 scans of ACE). In the illustration below, the horizontal line represents an averaging of ACE for 15 seconds prior to the start of the Disturbance with a result of $ACE_A = -25 \text{ MW}$.



The average percent recovery is the arithmetic average of all the calculated R_i 's for Reportable Disturbances during a given quarter. Average percent recovery is similarly calculated for excludable Disturbances.

D. Compliance

1. Compliance Monitoring Process

Compliance with the DCS shall be measured on a percentage basis as set forth in the measures above.

Each Balancing Authority or Reserve Sharing Group shall submit one completed copy of DCS Form, “NERC Control Performance Standard Survey – All Interconnections” to its Resources Subcommittee Survey Contact no later than the 10th day following the end of the calendar quarter (i.e. April 10th, July 10th, October 10th, January 10th). The Regional Entity must submit a summary document reporting compliance with DCS to NERC no later than the 20th day of the month following the end of the quarter.

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Timeframe

Compliance for DCS will be evaluated for each reporting period. Reset is one calendar quarter without a violation.

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The data that support the calculation of DCS are to be retained in electronic form for at least a one-year period. If the DCS data for a Reserve Sharing Group and Balancing Area are undergoing a review to address a question that has been raised regarding the data, the data are to be saved beyond the normal retention period until the question is formally resolved.

1.5. Additional Compliance Information

Reportable Disturbances – Reportable Disturbances are contingencies that are greater than or equal to 80% of the most severe single Contingency. A Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group may optionally reduce the 80% threshold, provided that normal operating characteristics are not being considered or misrepresented as contingencies. Normal operating characteristics are excluded because DCS only measures the recovery from sudden, unanticipated losses of supply-side resources.

Simultaneous Contingencies – Multiple Contingencies occurring within one minute or less of each other shall be treated as a single Contingency. If the combined magnitude of the multiple Contingencies exceeds the most severe single Contingency, the loss shall be reported, but excluded from compliance evaluation.

Multiple Contingencies within the Reportable Disturbance Period – Additional Contingencies that occur after one minute of the start of a Reportable Disturbance but before the end of the Disturbance Recovery Period can be excluded from evaluation. The Balancing Authority or Reserve Sharing Group shall determine the DCS compliance of the initial Reportable Disturbance by performing a reasonable

estimation of the response that would have occurred had the second and subsequent contingencies not occurred.

Multiple Contingencies within the Contingency Reserve Restoration Period – Additional Reportable Disturbances that occur after the end of the Disturbance Recovery Period but before the end of the Contingency Reserve Restoration Period shall be reported and included in the compliance evaluation. However, the Balancing Authority or Reserve Sharing Group can request a waiver from the Resources Subcommittee for the event if the contingency reserves were rendered inadequate by prior contingencies and a good faith effort to replace contingency reserve can be shown.

2. Levels of Non-Compliance

Each Balancing Authority or Reserve Sharing Group not meeting the DCS during a given calendar quarter shall increase its Contingency Reserve obligation for the calendar quarter (offset by one month) following the evaluation by the NERC or Compliance Monitor [e.g. for the first calendar quarter of the year, the penalty is applied for May, June, and July.] The increase shall be directly proportional to the non-compliance with the DCS in the preceding quarter. This adjustment is not compounded across quarters, and is an additional percentage of reserve needed beyond the most severe single Contingency. A Reserve Sharing Group may choose an allocation method for increasing its Contingency Reserve for the Reserve Sharing Group provided that this increase is fully allocated.

A representative from each Balancing Authority or Reserve Sharing Group that was non-compliant in the calendar quarter most recently completed shall provide written documentation verifying that the Balancing Authority or Reserve Sharing Group will apply the appropriate DCS performance adjustment beginning the first day of the succeeding month, and will continue to apply it for three months. The written documentation shall accompany the quarterly Disturbance Control Standard Report when a Balancing Authority or Reserve Sharing Group is non-compliant.

3. Violation Severity Levels (no changes)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
0	February 14, 2006	Revised graph on page 3, “10 min.” to “Recovery time.” Removed fourth bullet.	Errata
1	TBD	Modified to address Order No. 693 Directives contained in paragraph 321.	Revised.

A. Introduction

1. Title: Inadvertent Interchange

2. Number: BAL-006-2

3. Purpose:

This standard defines a process for monitoring Balancing Authorities to ensure that, over the long term, Balancing Authority Areas do not excessively depend on other Balancing Authority Areas in the Interconnection for meeting their demand or Interchange obligations.

4. Applicability:

4.1. Balancing Authorities.

5. Effective Date: First day of first calendar quarter after applicable regulatory approval, or in those jurisdictions where no regulatory approval is required, first day of first calendar quarter after Board of Trustees adoption.

B. Requirements

R1. Each Balancing Authority shall calculate and record hourly Inadvertent Interchange. (*Violation Risk Factor: Lower*)

R2. Each Balancing Authority shall include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. The Balancing Authority shall take into account interchange served by jointly owned generators. (*Violation Risk Factor: Lower*)

R3. Each Balancing Authority shall ensure all of its Balancing Authority Area interconnection points are equipped with common megawatt-hour meters, with readings provided hourly to the control centers of Adjacent Balancing Authorities. (*Violation Risk Factor: Lower*)

R4. Adjacent Balancing Authority Areas shall operate to a common Net Interchange Schedule and Actual Net Interchange value and shall record these hourly quantities, with like values but opposite sign. Each Balancing Authority shall compute its Inadvertent Interchange based on the following: (*Violation Risk Factor: Lower*)

R4.1. Each Balancing Authority, by the end of the next business day, shall agree with its Adjacent Balancing Authorities to: (*Violation Risk Factor: Lower*)

R4.1.1. The hourly values of Net Interchange Schedule. (*Violation Risk Factor: Lower*)

R4.1.2. The hourly integrated megawatt-hour values of Net Actual Interchange. (*Violation Risk Factor: Lower*)

R4.2. Each Balancing Authority shall use the agreed-to daily and monthly accounting data to compile its monthly accumulated Inadvertent Interchange for the On-Peak and Off-Peak hours of the month. (*Violation Risk Factor: Lower*)

R4.3. A Balancing Authority shall make after-the-fact corrections to the agreed-to daily and monthly accounting data only as needed to reflect actual operating conditions (e.g. a meter being used for control was sending bad data). Changes or corrections based on non-reliability considerations shall not be reflected in the Balancing Authority's Inadvertent Interchange. After-the-fact corrections to scheduled or actual values will not be accepted without agreement of the Adjacent Balancing Authority(ies). (*Violation Risk Factor: Lower*)

R5. Adjacent Balancing Authorities that cannot mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following

month shall, for the purposes of dispute resolution, submit a report to their respective Regional Reliability Organization Survey Contact. The report shall describe the nature and the cause of the dispute as well as a process for correcting the discrepancy. (*Violation Risk Factor: Lower*)

C. Measures

None specified.

D. Compliance

1. Compliance Monitoring Process

- 1.1.** Each Balancing Authority shall submit a monthly summary of Inadvertent Interchange. These summaries shall not include any after-the-fact changes that were not agreed to by the Source Balancing Authority, Sink Balancing Authority and all Intermediate Balancing Authority(ies).
- 1.2.** Inadvertent Interchange summaries shall include at least the previous accumulation, net accumulation for the month, and final net accumulation, for both the On-Peak and Off-Peak periods.
- 1.3.** Each Balancing Authority shall submit its monthly summary report to its Regional Reliability Organization Survey Contact by the 15th calendar day of the following month.
- 1.4.** Each Balancing Authority shall perform an Area Interchange Error (AIE) Survey as requested by the NERC Operating Committee to determine the Balancing Authority's Interchange error(s) due to equipment failures or improper scheduling operations, or improper AGC performance.
- 1.5.** Each Regional Reliability Organization shall prepare a monthly Inadvertent Interchange summary to monitor the Balancing Authorities' monthly Inadvertent Interchange and all-time accumulated Inadvertent Interchange. Each Regional Reliability Organization shall submit a monthly accounting to NERC by the 22nd day following the end of the month being summarized.

2. Violation Severity Levels

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	Each Balancing Authority failed to calculate and record hourly Inadvertent Interchange.
R2.	N/A	N/A	The Balancing Authority failed to include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. OR Failed to take into account interchange served by jointly owned generators.	The Balancing Authority failed to include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. AND Failed to take into account interchange served by jointly owned generators.
R3.	N/A	N/A	N/A	The Balancing Authority failed to ensure all of its Balancing Authority Area interconnection points are equipped with common megawatt-hour meters, with readings provided hourly to the control centers of Adjacent Balancing Authorities.
R4.	The Balancing Authority failed to record Actual Net Interchange values that are equal but opposite in sign to its Adjacent Balancing Authorities.	The Balancing Authority failed to compute Inadvertent Interchange.	The Balancing Authority failed to operate to a common Net Interchange Schedule that is equal but opposite to its Adjacent Balancing Authorities.	N/A
R4.1.	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly values of Net Interchanged

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
				<p>Schedule.</p> <p>AND</p> <p>The hourly integrated megawatt-hour values of Net Actual Interchange.</p>
R4.1.1.	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly values of Net Interchanged Schedule.
R4.1.2.	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly integrated megawatt-hour values of Net Actual Interchange.
R4.2.	N/A	N/A	N/A	The Balancing Authority failed to use the agreed-to daily and monthly accounting data to compile its monthly accumulated Inadvertent Interchange for the On-Peak and Off-Peak hours of the month.
R4.3.	N/A	N/A	N/A	The Balancing Authority failed to make after-the-fact corrections to the agreed-to daily and monthly accounting data to reflect actual operating conditions or changes or corrections based on non-reliability considerations were reflected in the Balancing Authority's Inadvertent

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Interchange.
R5.	Adjacent Balancing Authorities that could not mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities, submitted a report to their respective Regional Reliability Organizations Survey Contact describing the nature and the cause of the dispute but failed to provide a process for correcting the discrepancy.	Adjacent Balancing Authorities that could not mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following month, failed to submit a report to their respective Regional Reliability Organizations Survey Contact describing the nature and the cause of the dispute as well as a process for correcting the discrepancy.	N/A	N/A

E. Regional Differences

1. [Inadvertent Interchange Accounting](#) Waiver approved by the Operating Committee on March 25, 2004 includes SPP effective May 1, 2006.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	April 6, 2006	Added following to “Effective Date:” This standard will expire for one year beyond the effective date or when replaced by a new version of BAL-006, whichever comes first.	Errata
2	November 5, 2009	Added approved VRFs and VSLs to document. Removed MISO from list of entities with an Inadvertent Interchange Accounting Waiver (Project 2009-18).	Revision
2	November 5, 2009	Approved by the Board of Trustees	
2	January 6, 2011	Approved by FERC	

A. Introduction

1. **Title:** **Sabotage Reporting**
2. **Number:** CIP-001-1a
3. **Purpose:** Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, governmental agencies, and regulatory bodies.
4. **Applicability**
 - 4.1. Reliability Coordinators.
 - 4.2. Balancing Authorities.
 - 4.3. Transmission Operators.
 - 4.4. Generator Operators.
 - 4.5. Load Serving Entities.
5. **Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.
- R2. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.
- R3. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage events.
- R4. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.

C. Measures

- M1. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have and provide upon request a procedure (either electronic or hard copy) as defined in Requirement 1
- M2. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have and provide upon request the procedures or guidelines that will be used to confirm that it meets Requirements 2 and 3.
- M3. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have and provide upon request evidence that could include, but is not limited to procedures, policies, a letter of understanding, communication records, or other equivalent evidence that will be used to confirm that it has established communications contacts with the applicable, local FBI or RCMP officials to communicate sabotage events (Requirement 4).

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to verify compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Reliability Coordinator, Transmission Operator, Generator Operator, Distribution Provider, and Load Serving Entity shall have current, in-force documents available as evidence of compliance as specified in each of the Measures.

If an entity is found non-compliant the entity shall keep information related to the non-compliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance:

2.1. Level 1: There shall be a separate Level 1 non-compliance, for every one of the following requirements that is in violation:

- 2.1.1** Does not have procedures for the recognition of and for making its operating personnel aware of sabotage events (R1).
- 2.1.2** Does not have procedures or guidelines for the communication of information concerning sabotage events to appropriate parties in the Interconnection (R2).
- 2.1.3** Has not established communications contacts, as specified in R4.

2.2. Level 2: Not applicable.

Standard CIP-001-1a — Sabotage Reporting

2.3. Level 3: Has not provided its operating personnel with sabotage response procedures or guidelines (R3).

2.4. Level 4: Not applicable.

E. Regional Differences

None.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Amended
1	April 4, 2007	Regulatory Approval — Effective Date	New
1a	February 16, 2010	Added Appendix 1 — Interpretation of R2 approved by the NERC Board of Trustees	Addition
1a	February 2, 2011	Interpretation of R2 approved by FERC on February 2, 2011	Same addition

Appendix 1

Requirement Number and Text of Requirement
<p>CIP-001-1:</p> <p>R2. Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.</p>
Question
<p>Please clarify what is meant by the term, “appropriate parties.” Moreover, who within the Interconnection hierarchy deems parties to be appropriate?</p>
Response
<p>The drafting team interprets the phrase “appropriate parties in the Interconnection” to refer collectively to entities with whom the reporting party has responsibilities and/or obligations for the communication of physical or cyber security event information. For example, reporting responsibilities result from NERC standards IRO-001 Reliability Coordination — Responsibilities and Authorities, COM-002-2 Communication and Coordination, and TOP-001 Reliability Responsibilities and Authorities, among others. Obligations to report could also result from agreements, processes, or procedures with other parties, such as may be found in operating agreements and interconnection agreements.</p> <p>The drafting team asserts that those entities to which communicating sabotage events is appropriate would be identified by the reporting entity and documented within the procedure required in CIP-001-1 Requirement R2.</p> <p>Regarding “who within the Interconnection hierarchy deems parties to be appropriate,” the drafting team knows of no interconnection authority that has such a role.</p>

A. Introduction

1. **Title:** Cyber Security — Critical Cyber Asset Identification
2. **Number:** CIP-002-3
3. **Purpose:** NERC Standards CIP-002-3 through CIP-009-3 provide a cyber security framework for the identification and protection of Critical Cyber Assets to support reliable operation of the Bulk Electric System.

These standards recognize the differing roles of each entity in the operation of the Bulk Electric System, the criticality and vulnerability of the assets needed to manage Bulk Electric System reliability, and the risks to which they are exposed.

Business and operational demands for managing and maintaining a reliable Bulk Electric System increasingly rely on Cyber Assets supporting critical reliability functions and processes to communicate with each other, across functions and organizations, for services and data. This results in increased risks to these Cyber Assets.

Standard CIP-002-3 requires the identification and documentation of the Critical Cyber Assets associated with the Critical Assets that support the reliable operation of the Bulk Electric System. These Critical Assets are to be identified through the application of a risk-based assessment.

4. **Applicability:**
 - 4.1. Within the text of Standard CIP-002-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity.
 - 4.2. The following are exempt from Standard CIP-002-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required)

B. Requirements

- R1.** Critical Asset Identification Method — The Responsible Entity shall identify and document a risk-based assessment methodology to use to identify its Critical Assets.
- R1.1.** The Responsible Entity shall maintain documentation describing its risk-based assessment methodology that includes procedures and evaluation criteria.
 - R1.2.** The risk-based assessment shall consider the following assets:
 - R1.2.1.** Control centers and backup control centers performing the functions of the entities listed in the Applicability section of this standard.
 - R1.2.2.** Transmission substations that support the reliable operation of the Bulk Electric System.
 - R1.2.3.** Generation resources that support the reliable operation of the Bulk Electric System.
 - R1.2.4.** Systems and facilities critical to system restoration, including blackstart generators and substations in the electrical path of transmission lines used for initial system restoration.
 - R1.2.5.** Systems and facilities critical to automatic load shedding under a common control system capable of shedding 300 MW or more.
 - R1.2.6.** Special Protection Systems that support the reliable operation of the Bulk Electric System.
 - R1.2.7.** Any additional assets that support the reliable operation of the Bulk Electric System that the Responsible Entity deems appropriate to include in its assessment.
- R2.** Critical Asset Identification — The Responsible Entity shall develop a list of its identified Critical Assets determined through an annual application of the risk-based assessment methodology required in R1. The Responsible Entity shall review this list at least annually, and update it as necessary.
- R3.** Critical Cyber Asset Identification — Using the list of Critical Assets developed pursuant to Requirement R2, the Responsible Entity shall develop a list of associated Critical Cyber Assets essential to the operation of the Critical Asset. Examples at control centers and backup control centers include systems and facilities at master and remote sites that provide monitoring and control, automatic generation control, real-time power system modeling, and real-time inter-utility data exchange. The Responsible Entity shall review this list at least annually, and update it as necessary. For the purpose of Standard CIP-002-3, Critical Cyber Assets are further qualified to be those having at least one of the following characteristics:
- R3.1.** The Cyber Asset uses a routable protocol to communicate outside the Electronic Security Perimeter; or,
 - R3.2.** The Cyber Asset uses a routable protocol within a control center; or,
 - R3.3.** The Cyber Asset is dial-up accessible.
- R4.** Annual Approval — The senior manager or delegate(s) shall approve annually the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets. Based on Requirements R1, R2, and R3 the Responsible Entity may determine that it has no Critical Assets or Critical Cyber Assets. The Responsible Entity shall keep a signed and dated record of the senior manager or delegate(s)'s approval of the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets (even if such lists are null.)

C. Measures

- M1.** The Responsible Entity shall make available its current risk-based assessment methodology documentation as specified in Requirement R1.
- M2.** The Responsible Entity shall make available its list of Critical Assets as specified in Requirement R2.
- M3.** The Responsible Entity shall make available its list of Critical Cyber Assets as specified in Requirement R3.
- M4.** The Responsible Entity shall make available its approval records of annual approvals as specified in Requirement R4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entity.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications
Spot Checking
Compliance Violation Investigations
Self-Reporting
Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep documentation required by Standard CIP-002-3 from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.2** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

- 1.5.1** None.

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
1	January 16, 2006	R3.2 — Change “Control Center” to “control center”	03/24/06
2		<p>Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Removal of reasonable business judgment.</p> <p>Replaced the RRO with the RE as a responsible entity.</p> <p>Rewording of Effective Date.</p> <p>Changed compliance monitor to Compliance Enforcement Authority.</p>	
3		Updated version number from -2 to -3	
3	12/16/09	Approved by the NERC Board of Trustees	Update

A. Introduction

1. **Title:** Cyber Security — Security Management Controls
2. **Number:** CIP-003-3
3. **Purpose:** Standard CIP-003-3 requires that Responsible Entities have minimum security management controls in place to protect Critical Cyber Assets. Standard CIP-003-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-003-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity.
 - 4.2. The following are exempt from Standard CIP-003-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets shall only be required to comply with CIP-003-3 Requirement R2.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Cyber Security Policy — The Responsible Entity shall document and implement a cyber security policy that represents management’s commitment and ability to secure its Critical Cyber Assets. The Responsible Entity shall, at minimum, ensure the following:
 - R1.1. The cyber security policy addresses the requirements in Standards CIP-002-3 through CIP-009-3, including provision for emergency situations.

- R1.2.** The cyber security policy is readily available to all personnel who have access to, or are responsible for, Critical Cyber Assets.
- R1.3.** Annual review and approval of the cyber security policy by the senior manager assigned pursuant to R2.
- R2.** Leadership — The Responsible Entity shall assign a single senior manager with overall responsibility and authority for leading and managing the entity’s implementation of, and adherence to, Standards CIP-002-3 through CIP-009-3.
 - R2.1.** The senior manager shall be identified by name, title, and date of designation.
 - R2.2.** Changes to the senior manager must be documented within thirty calendar days of the effective date.
 - R2.3.** Where allowed by Standards CIP-002-3 through CIP-009-3, the senior manager may delegate authority for specific actions to a named delegate or delegates. These delegations shall be documented in the same manner as R2.1 and R2.2, and approved by the senior manager.
 - R2.4.** The senior manager or delegate(s), shall authorize and document any exception from the requirements of the cyber security policy.
- R3.** Exceptions — Instances where the Responsible Entity cannot conform to its cyber security policy must be documented as exceptions and authorized by the senior manager or delegate(s).
 - R3.1.** Exceptions to the Responsible Entity’s cyber security policy must be documented within thirty days of being approved by the senior manager or delegate(s).
 - R3.2.** Documented exceptions to the cyber security policy must include an explanation as to why the exception is necessary and any compensating measures.
 - R3.3.** Authorized exceptions to the cyber security policy must be reviewed and approved annually by the senior manager or delegate(s) to ensure the exceptions are still required and valid. Such review and approval shall be documented.
- R4.** Information Protection — The Responsible Entity shall implement and document a program to identify, classify, and protect information associated with Critical Cyber Assets.
 - R4.1.** The Critical Cyber Asset information to be protected shall include, at a minimum and regardless of media type, operational procedures, lists as required in Standard CIP-002-3, network topology or similar diagrams, floor plans of computing centers that contain Critical Cyber Assets, equipment layouts of Critical Cyber Assets, disaster recovery plans, incident response plans, and security configuration information.
 - R4.2.** The Responsible Entity shall classify information to be protected under this program based on the sensitivity of the Critical Cyber Asset information.
 - R4.3.** The Responsible Entity shall, at least annually, assess adherence to its Critical Cyber Asset information protection program, document the assessment results, and implement an action plan to remediate deficiencies identified during the assessment.
- R5.** Access Control — The Responsible Entity shall document and implement a program for managing access to protected Critical Cyber Asset information.
 - R5.1.** The Responsible Entity shall maintain a list of designated personnel who are responsible for authorizing logical or physical access to protected information.
 - R5.1.1.** Personnel shall be identified by name, title, and the information for which they are responsible for authorizing access.

- R5.1.2.** The list of personnel responsible for authorizing access to protected information shall be verified at least annually.
- R5.2.** The Responsible Entity shall review at least annually the access privileges to protected information to confirm that access privileges are correct and that they correspond with the Responsible Entity's needs and appropriate personnel roles and responsibilities.
- R5.3.** The Responsible Entity shall assess and document at least annually the processes for controlling access privileges to protected information.
- R6.** Change Control and Configuration Management — The Responsible Entity shall establish and document a process of change control and configuration management for adding, modifying, replacing, or removing Critical Cyber Asset hardware or software, and implement supporting configuration management activities to identify, control and document all entity or vendor-related changes to hardware and software components of Critical Cyber Assets pursuant to the change control process.

C. Measures

- M1.** The Responsible Entity shall make available documentation of its cyber security policy as specified in Requirement R1. Additionally, the Responsible Entity shall demonstrate that the cyber security policy is available as specified in Requirement R1.2.
- M2.** The Responsible Entity shall make available documentation of the assignment of, and changes to, its leadership as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation of the exceptions, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation of its information protection program as specified in Requirement R4.
- M5.** The Responsible Entity shall make available its access control documentation as specified in Requirement R5.
- M6.** The Responsible Entity shall make available its change control and configuration management documentation as specified in Requirement R6.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entity.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications

- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep all documentation and records from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.2** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

- 1.5.1** None

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment. Replaced the RRO with the RE as a responsible entity. Rewording of Effective Date. Requirement R2 applies to all Responsible Entities, including Responsible Entities which have no Critical Cyber Assets. Modified the personnel identification information requirements in R5.1.1 to include name, title, and the information for which they are responsible for authorizing access (removed the business phone information). Changed compliance monitor to Compliance Enforcement Authority.	
3		Update version number from -2 to -3	
3	12/16/09	Approved by the NERC Board of Trustees	Update

A. Introduction

1. **Title:** Cyber Security — Personnel & Training
2. **Number:** CIP-004-3
3. **Purpose:** Standard CIP-004-3 requires that personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness. Standard CIP-004-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-004-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity.
 - 4.2. The following are exempt from Standard CIP-004-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Awareness — The Responsible Entity shall establish, document, implement, and maintain a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices. The program shall include security awareness reinforcement on at least a quarterly basis using mechanisms such as:
 - Direct communications (e.g., emails, memos, computer based training, etc.);
 - Indirect communications (e.g., posters, intranet, brochures, etc.);
 - Management support and reinforcement (e.g., presentations, meetings, etc.).

- R2.** Training — The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. The cyber security training program shall be reviewed annually, at a minimum, and shall be updated whenever necessary.
- R2.1.** This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained prior to their being granted such access except in specified circumstances such as an emergency.
- R2.2.** Training shall cover the policies, access controls, and procedures as developed for the Critical Cyber Assets covered by CIP-004-3, and include, at a minimum, the following required items appropriate to personnel roles and responsibilities:
- R2.2.1.** The proper use of Critical Cyber Assets;
- R2.2.2.** Physical and electronic access controls to Critical Cyber Assets;
- R2.2.3.** The proper handling of Critical Cyber Asset information; and,
- R2.2.4.** Action plans and procedures to recover or re-establish Critical Cyber Assets and access thereto following a Cyber Security Incident.
- R2.3.** The Responsible Entity shall maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.
- R3.** Personnel Risk Assessment — The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. A personnel risk assessment shall be conducted pursuant to that program prior to such personnel being granted such access except in specified circumstances such as an emergency.
- The personnel risk assessment program shall at a minimum include:
- R3.1.** The Responsible Entity shall ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check. The Responsible Entity may conduct more detailed reviews, as permitted by law and subject to existing collective bargaining unit agreements, depending upon the criticality of the position.
- R3.2.** The Responsible Entity shall update each personnel risk assessment at least every seven years after the initial personnel risk assessment or for cause.
- R3.3.** The Responsible Entity shall document the results of personnel risk assessments of its personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and that personnel risk assessments of contractor and service vendor personnel with such access are conducted pursuant to Standard CIP-004-3.
- R4.** Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.
- R4.1.** The Responsible Entity shall review the list(s) of its personnel who have such access to Critical Cyber Assets quarterly, and update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, or any change in the access rights of such personnel. The Responsible Entity shall ensure access list(s) for contractors and service vendors are properly maintained.
- R4.2.** The Responsible Entity shall revoke such access to Critical Cyber Assets within 24 hours for personnel terminated for cause and within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.

C. Measures

- M1.** The Responsible Entity shall make available documentation of its security awareness and reinforcement program as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation of its cyber security training program, review, and records as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation of the personnel risk assessment program and that personnel risk assessments have been applied to all personnel who have authorized cyber or authorized unescorted physical access to Critical Cyber Assets, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation of the list(s), list review and update, and access revocation as needed as specified in Requirement R4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entity.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not Applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications
Spot Checking
Compliance Violation Investigations
Self-Reporting
Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep personnel risk assessment documents in accordance with federal, state, provincial, and local laws.
- 1.4.2** The Responsible Entity shall keep all other documentation required by Standard CIP-004-3 from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.3** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
1	01/16/06	D.2.2.4 — Insert the phrase “for cause” as intended. “One instance of personnel termination for cause...”	03/24/06
1	06/01/06	D.2.1.4 — Change “access control rights” to “access rights.”	06/05/06
2		<p>Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Removal of reasonable business judgment.</p> <p>Replaced the RRO with the RE as a responsible entity.</p> <p>Rewording of Effective Date.</p> <p>Reference to emergency situations.</p> <p>Modification to R1 for the Responsible Entity to establish, document, implement, and maintain the awareness program.</p> <p>Modification to R2 for the Responsible Entity to establish, document, implement, and maintain the training program; also stating the requirements for the cyber security training program.</p> <p>Modification to R3 Personnel Risk Assessment to clarify that it pertains to personnel having authorized cyber or authorized unescorted physical access to “Critical Cyber Assets”.</p> <p>Removal of 90 day window to complete training and 30 day window to complete personnel risk assessments.</p> <p>Changed compliance monitor to Compliance Enforcement Authority.</p>	
3		Update version number from -2 to -3	
3	12/16/09	Approved by NERC Board of Trustees	Update

A. Introduction

1. **Title:** Cyber Security — Electronic Security Perimeter(s)
2. **Number:** CIP-005-3a
3. **Purpose:** Standard CIP-005-3 requires the identification and protection of the Electronic Security Perimeter(s) inside which all Critical Cyber Assets reside, as well as all access points on the perimeter. Standard CIP-005-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability**
 - 4.1. Within the text of Standard CIP-005-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity
 - 4.2. The following are exempt from Standard CIP-005-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Electronic Security Perimeter — The Responsible Entity shall ensure that every Critical Cyber Asset resides within an Electronic Security Perimeter. The Responsible Entity shall identify and document the Electronic Security Perimeter(s) and all access points to the perimeter(s).
 - R1.1. Access points to the Electronic Security Perimeter(s) shall include any externally connected communication end point (for example, dial-up modems) terminating at any device within the Electronic Security Perimeter(s).
 - R1.2. For a dial-up accessible Critical Cyber Asset that uses a non-routable protocol, the Responsible Entity shall define an Electronic Security Perimeter for that single access point at the dial-up device.

- R1.3.** Communication links connecting discrete Electronic Security Perimeters shall not be considered part of the Electronic Security Perimeter. However, end points of these communication links within the Electronic Security Perimeter(s) shall be considered access points to the Electronic Security Perimeter(s).
- R1.4.** Any non-critical Cyber Asset within a defined Electronic Security Perimeter shall be identified and protected pursuant to the requirements of Standard CIP-005-3.
- R1.5.** Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall be afforded the protective measures as a specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3 Requirement R3; Standard CIP-007-3 Requirements R1 and R3 through R9; Standard CIP-008-3; and Standard CIP-009-3.
- R1.6.** The Responsible Entity shall maintain documentation of Electronic Security Perimeter(s), all interconnected Critical and non-critical Cyber Assets within the Electronic Security Perimeter(s), all electronic access points to the Electronic Security Perimeter(s) and the Cyber Assets deployed for the access control and monitoring of these access points.
- R2.** Electronic Access Controls — The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for control of electronic access at all electronic access points to the Electronic Security Perimeter(s).
 - R2.1.** These processes and mechanisms shall use an access control model that denies access by default, such that explicit access permissions must be specified.
 - R2.2.** At all access points to the Electronic Security Perimeter(s), the Responsible Entity shall enable only ports and services required for operations and for monitoring Cyber Assets within the Electronic Security Perimeter, and shall document, individually or by specified grouping, the configuration of those ports and services.
 - R2.3.** The Responsible Entity shall implement and maintain a procedure for securing dial-up access to the Electronic Security Perimeter(s).
 - R2.4.** Where external interactive access into the Electronic Security Perimeter has been enabled, the Responsible Entity shall implement strong procedural or technical controls at the access points to ensure authenticity of the accessing party, where technically feasible.
 - R2.5.** The required documentation shall, at least, identify and describe:
 - R2.5.1.** The processes for access request and authorization.
 - R2.5.2.** The authentication methods.
 - R2.5.3.** The review process for authorization rights, in accordance with Standard CIP-004-3 Requirement R4.
 - R2.5.4.** The controls used to secure dial-up accessible connections.
 - R2.6.** Appropriate Use Banner — Where technically feasible, electronic access control devices shall display an appropriate use banner on the user screen upon all interactive access attempts. The Responsible Entity shall maintain a document identifying the content of the banner.
- R3.** Monitoring Electronic Access — The Responsible Entity shall implement and document an electronic or manual process(es) for monitoring and logging access at access points to the Electronic Security Perimeter(s) twenty-four hours a day, seven days a week.

- R3.1.** For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall implement and document monitoring process(es) at each access point to the dial-up device, where technically feasible.
- R3.2.** Where technically feasible, the security monitoring process(es) shall detect and alert for attempts at or actual unauthorized accesses. These alerts shall provide for appropriate notification to designated response personnel. Where alerting is not technically feasible, the Responsible Entity shall review or otherwise assess access logs for attempts at or actual unauthorized accesses at least every ninety calendar days.
- R4.** Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of the electronic access points to the Electronic Security Perimeter(s) at least annually. The vulnerability assessment shall include, at a minimum, the following:
 - R4.1.** A document identifying the vulnerability assessment process;
 - R4.2.** A review to verify that only ports and services required for operations at these access points are enabled;
 - R4.3.** The discovery of all access points to the Electronic Security Perimeter;
 - R4.4.** A review of controls for default accounts, passwords, and network management community strings;
 - R4.5.** Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.
- R5.** Documentation Review and Maintenance — The Responsible Entity shall review, update, and maintain all documentation to support compliance with the requirements of Standard CIP-005-3.
 - R5.1.** The Responsible Entity shall ensure that all documentation required by Standard CIP-005-3 reflect current configurations and processes and shall review the documents and procedures referenced in Standard CIP-005-3 at least annually.
 - R5.2.** The Responsible Entity shall update the documentation to reflect the modification of the network or controls within ninety calendar days of the change.
 - R5.3.** The Responsible Entity shall retain electronic access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.

C. Measures

- M1.** The Responsible Entity shall make available documentation about the Electronic Security Perimeter as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation of the electronic access controls to the Electronic Security Perimeter(s), as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation of controls implemented to log and monitor access to the Electronic Security Perimeter(s) as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation of its annual vulnerability assessment as specified in Requirement R4.
- M5.** The Responsible Entity shall make available access logs and documentation of review, changes, and log retention as specified in Requirement R5.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

1.1.1 Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.

1.1.2 ERO for Regional Entity.

1.1.3 Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

1.4.1 The Responsible Entity shall keep logs for a minimum of ninety calendar days, unless: a) longer retention is required pursuant to Standard CIP-008-3, Requirement R2; b) directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

1.4.2 The Responsible Entity shall keep other documents and records required by Standard CIP-005-3 from the previous full calendar year.

1.4.3 The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
1	01/16/06	D.2.3.1 — Change “Critical Assets,” to “Critical Cyber Assets” as intended.	03/24/06
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment. Replaced the RRO with the RE as a responsible entity. Reworking of Effective Date. Revised the wording of the Electronic Access Controls requirement stated in R2.3 to clarify that the Responsible Entity	

		shall “implement and maintain” a procedure for securing dial-up access to the Electronic Security Perimeter(s). Changed compliance monitor to Compliance Enforcement Authority.	
3		Update version from -2 to -3	
3	12/16/09	Approved by the NERC Board of Trustees	Update
3a	02/16/10	Added Appendix 1 – Interpretation of R1.3 approved by BOT on February 16, 2010	Interpretation
3a	02/02/11	Approved by FERC	

Appendix 1

Requirement Number and Text of Requirement
<p>Section 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.</p> <p>Requirement R1.3 Communication links connecting discrete Electronic Security Perimeters shall not be considered part of the Electronic Security Perimeter. However, end points of these communication links within the Electronic Security Perimeter(s) shall be considered access points to the Electronic Security Perimeter(s).</p>
Question 1 (Section 4.2.2)
<p>What kind of cyber assets are referenced in 4.2.2 as "associated"? What else could be meant except the devices forming the communication link?</p>
Response to Question 1
<p>In the context of applicability, associated Cyber Assets refer to any communications devices external to the Electronic Security Perimeter, i.e., beyond the point at which access to the Electronic Security Perimeter is controlled. Devices controlling access into the Electronic Security Perimeter are not exempt.</p>
Question 2 (Section 4.2.2)
<p>Is the communication link physical or logical? Where does it begin and terminate?</p>
Response to Question 2
<p>The drafting team interprets the data communication link to be physical or logical, and its termination points depend upon the design and architecture of the communication link.</p>
Question 3 (Requirement R1.3)
<p>Please clarify what is meant by an “endpoint”? Is it physical termination? Logical termination of OSI layer 2, layer 3, or above?</p>
Response to Question 3
<p>The drafting team interprets the endpoint to mean the device at which a physical or logical communication link terminates. The endpoint is the Electronic Security Perimeter access point if access into the Electronic Security Perimeter is controlled at the endpoint, irrespective of which Open Systems Interconnection (OSI) layer is managing the communication.</p>
Question 4 (Requirement R1.3)
<p>If “endpoint” is defined as logical and refers to layer 3 and above, please clarify if the termination points of an encrypted tunnel (layer 3) must be treated as an “access point? If two control centers are owned and managed by the same entity, connected via an encrypted link by properly applied Federal</p>

Information Processing Standards, with tunnel termination points that are within the control center ESPs and PSPs and do not terminate on the firewall but on a separate internal device, and the encrypted traffic already passes through a firewall access point at each ESP boundary where port/protocol restrictions are applied, must these encrypted communication tunnel termination points be treated as "access points" in addition to the firewalls through which the encrypted traffic has already passed?

Response to Question 4

In the case where the "endpoint" is defined as logical and is \geq layer 3, the termination points of an encrypted tunnel must be treated as an "access point." The encrypted communication tunnel termination points referred to above are "access points."

A. Introduction

1. **Title:** Cyber Security — Physical Security of Critical Cyber Assets
2. **Number:** CIP-006-3c
3. **Purpose:** Standard CIP-006-3 is intended to ensure the implementation of a physical security program for the protection of Critical Cyber Assets. Standard CIP-006-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-006-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator
 - 4.1.2 Balancing Authority
 - 4.1.3 Interchange Authority
 - 4.1.4 Transmission Service Provider
 - 4.1.5 Transmission Owner
 - 4.1.6 Transmission Operator
 - 4.1.7 Generator Owner
 - 4.1.8 Generator Operator
 - 4.1.9 Load Serving Entity
 - 4.1.10 NERC
 - 4.1.11 Regional Entity
 - 4.2. The following are exempt from Standard CIP-006-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Physical Security Plan — The Responsible Entity shall document, implement, and maintain a physical security plan, approved by the senior manager or delegate(s) that shall address, at a minimum, the following:
 - R1.1. All Cyber Assets within an Electronic Security Perimeter shall reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to such Cyber Assets.
 - R1.2. Identification of all physical access points through each Physical Security Perimeter and measures to control entry at those access points.
 - R1.3. Processes, tools, and procedures to monitor physical access to the perimeter(s).

- R1.4.** Appropriate use of physical access controls as described in Requirement R4 including visitor pass management, response to loss, and prohibition of inappropriate use of physical access controls.
- R1.5.** Review of access authorization requests and revocation of access authorization, in accordance with CIP-004-3 Requirement R4.
- R1.6.** A visitor control program for visitors (personnel without authorized unescorted access to a Physical Security Perimeter), containing at a minimum the following:
 - R1.6.1.** Logs (manual or automated) to document the entry and exit of visitors, including the date and time, to and from Physical Security Perimeters.
 - R1.6.2.** Continuous escorted access of visitors within the Physical Security Perimeter.
- R1.7.** Update of the physical security plan within thirty calendar days of the completion of any physical security system redesign or reconfiguration, including, but not limited to, addition or removal of access points through the Physical Security Perimeter, physical access controls, monitoring controls, or logging controls.
- R1.8.** Annual review of the physical security plan.
- R2.** Protection of Physical Access Control Systems — Cyber Assets that authorize and/or log access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access point such as electronic lock control mechanisms and badge readers, shall:
 - R2.1.** Be protected from unauthorized physical access.
 - R2.2.** Be afforded the protective measures specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3 Requirements R4 and R5; Standard CIP-007-3; Standard CIP-008-3; and Standard CIP-009-3.
- R3.** Protection of Electronic Access Control Systems — Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall reside within an identified Physical Security Perimeter.
- R4.** Physical Access Controls — The Responsible Entity shall document and implement the operational and procedural controls to manage physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. The Responsible Entity shall implement one or more of the following physical access methods:
 - Card Key: A means of electronic access where the access rights of the card holder are predefined in a computer database. Access rights may differ from one perimeter to another.
 - Special Locks: These include, but are not limited to, locks with “restricted key” systems, magnetic locks that can be operated remotely, and “man-trap” systems.
 - Security Personnel: Personnel responsible for controlling physical access who may reside on-site or at a monitoring station.
 - Other Authentication Devices: Biometric, keypad, token, or other equivalent devices that control physical access to the Critical Cyber Assets.
- R5.** Monitoring Physical Access — The Responsible Entity shall document and implement the technical and procedural controls for monitoring physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. Unauthorized access attempts shall be reviewed immediately and handled in accordance with the procedures specified in Requirement CIP-008-3. One or more of the following monitoring methods shall be used:

- Alarm Systems: Systems that alarm to indicate a door, gate or window has been opened without authorization. These alarms must provide for immediate notification to personnel responsible for response.
 - Human Observation of Access Points: Monitoring of physical access points by authorized personnel as specified in Requirement R4.
- R6.** Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:
- Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method.
 - Video Recording: Electronic capture of video images of sufficient quality to determine identity.
 - Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R4.
- R7.** Access Log Retention — The Responsible Entity shall retain physical access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.
- R8.** Maintenance and Testing — The Responsible Entity shall implement a maintenance and testing program to ensure that all physical security systems under Requirements R4, R5, and R6 function properly. The program must include, at a minimum, the following:
- R8.1.** Testing and maintenance of all physical security mechanisms on a cycle no longer than three years.
 - R8.2.** Retention of testing and maintenance records for the cycle determined by the Responsible Entity in Requirement R8.1.
 - R8.3.** Retention of outage records regarding access controls, logging, and monitoring for a minimum of one calendar year.

C. Measures

- M1.** The Responsible Entity shall make available the physical security plan as specified in Requirement R1 and documentation of the implementation, review and updating of the plan.
- M2.** The Responsible Entity shall make available documentation that the physical access control systems are protected as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation that the electronic access control systems are located within an identified Physical Security Perimeter as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation identifying the methods for controlling physical access to each access point of a Physical Security Perimeter as specified in Requirement R4.
- M5.** The Responsible Entity shall make available documentation identifying the methods for monitoring physical access as specified in Requirement R5.
- M6.** The Responsible Entity shall make available documentation identifying the methods for logging physical access as specified in Requirement R6.

- M7.** The Responsible Entity shall make available documentation to show retention of access logs as specified in Requirement R7.
- M8.** The Responsible Entity shall make available documentation to show its implementation of a physical security system maintenance and testing program as specified in Requirement R8.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entities.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications
Spot Checking
Compliance Violation Investigations
Self-Reporting
Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep documents other than those specified in Requirements R7 and R8.2 from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.2** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

- 1.5.1** The Responsible Entity may not make exceptions in its cyber security policy to the creation, documentation, or maintenance of a physical security plan.
- 1.5.2** For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall not be required to comply with Standard CIP-006-3 for that single access point at the dial-up device.

2. Violation Severity Levels (Under development by the CIP VSL Drafting Team)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		<p>Modifications to remove extraneous information from the requirements, improve readability, and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards.</p> <p>Replaced the RRO with RE as a responsible entity.</p> <p>Modified CIP-006-1 Requirement R1 to clarify that a physical security plan to protect Critical Cyber Assets must be documented, maintained, implemented, and approved by the senior manager.</p> <p>Revised the wording in R1.2 to identify all “physical” access points. Added Requirement R2 to CIP-006-2 to clarify the requirement to safeguard the Physical Access Control Systems and exclude hardware at the Physical Security Perimeter access point, such as electronic lock control mechanisms and badge readers from the requirement. Requirement R2.1 requires the Responsible Entity to protect the Physical Access Control Systems from unauthorized access. CIP-006-1 Requirement R1.8 was moved to become CIP-006-2 Requirement R2.2.</p> <p>Added Requirement R3 to CIP-006-2, clarifying the requirement for Electronic Access Control Systems to be safeguarded within an identified Physical Security Perimeter.</p> <p>The sub requirements of CIP-006-2 Requirements R4, R5, and R6 were changed from formal requirements to bulleted lists of options consistent with the intent of the requirements.</p> <p>Changed the Compliance Monitor to Compliance Enforcement Authority.</p>	
3		<p>Updated version numbers from -2 to -3</p> <p>Revised Requirement 1.6 to add a Visitor Control program component to the Physical Security Plan, in response to FERC order issued September 30, 2009.</p> <p>In Requirement R7, the term “Responsible Entity” was capitalized.</p>	
	11/18/2009	Updated Requirements R1.6.1 and R1.6.2 to be responsive to FERC Order RD09-7	
3	12/16/09	Approved by NERC Board of Trustees	Update
1a	Board approved 02/12/ 2008	Interpretation of R1 and Additional Compliance Information Section 1.4.4 (Appendix 1)	Interpretation (Project 2007-27)
1b/2b	Board approved 08/05/2009	Interpretation of R4 (Appendix 2)	Interpretation (Project 2008-15)
3c	Board approved 02/16/2010	Interpretation of R1 and R1.1 (Appendix 3)	Interpretation (Project 2009-13)

Appendix 1

Interpretation of Requirement R1.1.

Request: *Are dial-up RTUs that use non-routable protocols and have dial-up access required to have a six-wall perimeters or are they exempted from CIP-006-1 and required to have only electronic security perimeters? This has a direct impact on how any identified RTUs will be physically secured.*

Interpretation:

Dial-up assets are Critical Cyber Assets, assuming they meet the criteria in CIP-002-1, and they must reside within an Electronic Security Perimeter. However, physical security control over a critical cyber asset is not required if that asset does not have a routable protocol. Since there is minimal risk of compromising other critical cyber assets dial-up devices such as Remote Terminals Units that do not use routable protocols are not required to be enclosed within a “six-wall” border.

CIP-006-1 — Requirement 1.1 requires a Responsible Entity to have a physical security plan that stipulate cyber assets that are within the Electronic Security Perimeter also be within a Physical Security Perimeter.

R1. Physical Security Plan — The Responsible Entity shall create and maintain a physical security plan, approved by a senior manager or delegate(s) that shall address, at a minimum, the following:

R1.1. Processes to ensure and document that all Cyber Assets within an Electronic Security Perimeter also reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to the Critical Cyber Assets.

CIP-006-1 — Additional Compliance Information 1.4.4 identifies dial-up accessible assets that use non-routable protocols as a special class of cyber assets that are not subject to the Physical Security Perimeter requirement of this standard.

1.4. Additional Compliance Information

1.4.4 For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall not be required to comply with Standard CIP-006 for that single access point at the dial-up device.

Appendix 2

The following interpretation of CIP-006-1a — Cyber Security — Physical Security of Critical Cyber Assets, Requirement R4 was developed by the standard drafting team assigned to Project 2008-14 (Cyber Security Violation Severity Levels) on October 23, 2008.

Request:

1. *For physical access control to cyber assets, does this include monitoring when an individual leaves the controlled access cyber area?*
2. *Does the term, “time of access” mean logging when the person entered the facility or does it mean logging the entry/exit time and “length” of time the person had access to the critical asset?*

Interpretation:

No, monitoring and logging of access are only required for ingress at this time. The term “time of access” refers to the time an authorized individual enters the physical security perimeter.

Requirement Number and Text of Requirement

- R4. Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:**
- R4.1. Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method.**
 - R4.2. Video Recording: Electronic capture of video images of sufficient quality to determine identity.**
 - R4.3. Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R2.3.**

Appendix 3

Requirement Number and Text of Requirement
<p>R1. Physical Security Plan — The Responsible Entity shall create and maintain a physical security plan, approved by a senior manager or delegate(s) that shall address, at a minimum, the following:</p> <p style="padding-left: 40px;">R1.1. Processes to ensure and document that all Cyber Assets within an Electronic Security Perimeter also reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to the Critical Cyber Assets.</p>
Question
<p>If a completely enclosed border cannot be created, what does the phrase, “to control physical access” require? Must the alternative measure be physical in nature? If so, must the physical barrier literally prevent physical access e.g. using concrete encased fiber, or can the alternative measure effectively mitigate the risks associated with physical access through cameras, motions sensors, or encryption?</p> <p>Does this requirement preclude the application of logical controls as an alternative measure in mitigating the risks of physical access to Critical Cyber Assets?</p>
Response
<p>For Electronic Security Perimeter wiring external to a Physical Security Perimeter, the drafting team interprets the Requirement R1.1 as not limited to measures that are “physical in nature.” The alternative measures may be physical or logical, on the condition that they provide security equivalent or better to a completely enclosed (“six-wall”) border. Alternative physical control measures may include, but are not limited to, multiple physical access control layers within a non-public, controlled space. Alternative logical control measures may include, but are not limited to, data encryption and/or circuit monitoring to detect unauthorized access or physical tampering.</p>

A. Introduction

1. **Title:** Cyber Security — Systems Security Management
2. **Number:** CIP-007-3
3. **Purpose:** Standard CIP-007-3 requires Responsible Entities to define methods, processes, and procedures for securing those systems determined to be Critical Cyber Assets, as well as the other (non-critical) Cyber Assets within the Electronic Security Perimeter(s). Standard CIP-007-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-007-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity.
 - 4.2. The following are exempt from Standard CIP-007-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Test Procedures — The Responsible Entity shall ensure that new Cyber Assets and significant changes to existing Cyber Assets within the Electronic Security Perimeter do not adversely affect existing cyber security controls. For purposes of Standard CIP-007-3, a significant change shall, at a minimum, include implementation of security patches, cumulative service packs, vendor releases, and version upgrades of operating systems, applications, database platforms, or other third-party software or firmware.
 - R1.1. The Responsible Entity shall create, implement, and maintain cyber security test procedures in a manner that minimizes adverse effects on the production system or its operation.

- R1.2.** The Responsible Entity shall document that testing is performed in a manner that reflects the production environment.
 - R1.3.** The Responsible Entity shall document test results.
- R2.** Ports and Services — The Responsible Entity shall establish, document and implement a process to ensure that only those ports and services required for normal and emergency operations are enabled.
 - R2.1.** The Responsible Entity shall enable only those ports and services required for normal and emergency operations.
 - R2.2.** The Responsible Entity shall disable other ports and services, including those used for testing purposes, prior to production use of all Cyber Assets inside the Electronic Security Perimeter(s).
 - R2.3.** In the case where unused ports and services cannot be disabled due to technical limitations, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
- R3.** Security Patch Management — The Responsible Entity, either separately or as a component of the documented configuration management process specified in CIP-003-3 Requirement R6, shall establish, document and implement a security patch management program for tracking, evaluating, testing, and installing applicable cyber security software patches for all Cyber Assets within the Electronic Security Perimeter(s).
 - R3.1.** The Responsible Entity shall document the assessment of security patches and security upgrades for applicability within thirty calendar days of availability of the patches or upgrades.
 - R3.2.** The Responsible Entity shall document the implementation of security patches. In any case where the patch is not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
- R4.** Malicious Software Prevention — The Responsible Entity shall use anti-virus software and other malicious software (“malware”) prevention tools, where technically feasible, to detect, prevent, deter, and mitigate the introduction, exposure, and propagation of malware on all Cyber Assets within the Electronic Security Perimeter(s).
 - R4.1.** The Responsible Entity shall document and implement anti-virus and malware prevention tools. In the case where anti-virus software and malware prevention tools are not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.
 - R4.2.** The Responsible Entity shall document and implement a process for the update of anti-virus and malware prevention “signatures.” The process must address testing and installing the signatures.
- R5.** Account Management — The Responsible Entity shall establish, implement, and document technical and procedural controls that enforce access authentication of, and accountability for, all user activity, and that minimize the risk of unauthorized system access.
 - R5.1.** The Responsible Entity shall ensure that individual and shared system accounts and authorized access permissions are consistent with the concept of “need to know” with respect to work functions performed.
 - R5.1.1.** The Responsible Entity shall ensure that user accounts are implemented as approved by designated personnel. Refer to Standard CIP-003-3 Requirement R5.

- R5.1.2.** The Responsible Entity shall establish methods, processes, and procedures that generate logs of sufficient detail to create historical audit trails of individual user account access activity for a minimum of ninety days.
 - R5.1.3.** The Responsible Entity shall review, at least annually, user accounts to verify access privileges are in accordance with Standard CIP-003-3 Requirement R5 and Standard CIP-004-3 Requirement R4.
 - R5.2.** The Responsible Entity shall implement a policy to minimize and manage the scope and acceptable use of administrator, shared, and other generic account privileges including factory default accounts.
 - R5.2.1.** The policy shall include the removal, disabling, or renaming of such accounts where possible. For such accounts that must remain enabled, passwords shall be changed prior to putting any system into service.
 - R5.2.2.** The Responsible Entity shall identify those individuals with access to shared accounts.
 - R5.2.3.** Where such accounts must be shared, the Responsible Entity shall have a policy for managing the use of such accounts that limits access to only those with authorization, an audit trail of the account use (automated or manual), and steps for securing the account in the event of personnel changes (for example, change in assignment or termination).
 - R5.3.** At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:
 - R5.3.1.** Each password shall be a minimum of six characters.
 - R5.3.2.** Each password shall consist of a combination of alpha, numeric, and “special” characters.
 - R5.3.3.** Each password shall be changed at least annually, or more frequently based on risk.
- R6.** Security Status Monitoring — The Responsible Entity shall ensure that all Cyber Assets within the Electronic Security Perimeter, as technically feasible, implement automated tools or organizational process controls to monitor system events that are related to cyber security.
 - R6.1.** The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for monitoring for security events on all Cyber Assets within the Electronic Security Perimeter.
 - R6.2.** The security monitoring controls shall issue automated or manual alerts for detected Cyber Security Incidents.
 - R6.3.** The Responsible Entity shall maintain logs of system events related to cyber security, where technically feasible, to support incident response as required in Standard CIP-008-3.
 - R6.4.** The Responsible Entity shall retain all logs specified in Requirement R6 for ninety calendar days.
 - R6.5.** The Responsible Entity shall review logs of system events related to cyber security and maintain records documenting review of logs.
- R7.** Disposal or Redeployment — The Responsible Entity shall establish and implement formal methods, processes, and procedures for disposal or redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in Standard CIP-005-3.

- R7.1.** Prior to the disposal of such assets, the Responsible Entity shall destroy or erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.
- R7.2.** Prior to redeployment of such assets, the Responsible Entity shall, at a minimum, erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.
- R7.3.** The Responsible Entity shall maintain records that such assets were disposed of or redeployed in accordance with documented procedures.
- R8.** Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of all Cyber Assets within the Electronic Security Perimeter at least annually. The vulnerability assessment shall include, at a minimum, the following:
 - R8.1.** A document identifying the vulnerability assessment process;
 - R8.2.** A review to verify that only ports and services required for operation of the Cyber Assets within the Electronic Security Perimeter are enabled;
 - R8.3.** A review of controls for default accounts; and,
 - R8.4.** Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.
- R9.** Documentation Review and Maintenance — The Responsible Entity shall review and update the documentation specified in Standard CIP-007-3 at least annually. Changes resulting from modifications to the systems or controls shall be documented within thirty calendar days of the change being completed.

C. Measures

- M1.** The Responsible Entity shall make available documentation of its security test procedures as specified in Requirement R1.
- M2.** The Responsible Entity shall make available documentation as specified in Requirement R2.
- M3.** The Responsible Entity shall make available documentation and records of its security patch management program, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available documentation and records of its malicious software prevention program as specified in Requirement R4.
- M5.** The Responsible Entity shall make available documentation and records of its account management program as specified in Requirement R5.
- M6.** The Responsible Entity shall make available documentation and records of its security status monitoring program as specified in Requirement R6.
- M7.** The Responsible Entity shall make available documentation and records of its program for the disposal or redeployment of Cyber Assets as specified in Requirement R7.
- M8.** The Responsible Entity shall make available documentation and records of its annual vulnerability assessment of all Cyber Assets within the Electronic Security Perimeters(s) as specified in Requirement R8.
- M9.** The Responsible Entity shall make available documentation and records demonstrating the review and update as specified in Requirement R9.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1 Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2 ERO for Regional Entity.
- 1.1.3 Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.4. Data Retention

- 1.4.1 The Responsible Entity shall keep all documentation and records from the previous full calendar year unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.
- 1.4.2 The Responsible Entity shall retain security-related system event logs for ninety calendar days, unless longer retention is required pursuant to Standard CIP-008-3 Requirement R2.
- 1.4.3 The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information.

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment and acceptance of risk. Revised the Purpose of this standard to clarify that Standard CIP-007-2 requires Responsible Entities to define methods, processes, and procedures for securing Cyber Assets and other (non-Critical)	

		<p>Assets within an Electronic Security Perimeter. Replaced the RRO with the RE as a responsible entity. Rewording of Effective Date. R9 changed ninety (90) days to thirty (30) days Changed compliance monitor to Compliance Enforcement Authority.</p>	
3		Updated version numbers from -2 to -3	
3	12/16/09	Approved by the NERC Board of Trustees	

A. Introduction

1. **Title:** Cyber Security — Incident Reporting and Response Planning
2. **Number:** CIP-008-3
3. **Purpose:** Standard CIP-008-3 ensures the identification, classification, response, and reporting of Cyber Security Incidents related to Critical Cyber Assets. Standard CIP-008-23 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability**
 - 4.1. Within the text of Standard CIP-008-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Interchange Authority.
 - 4.1.4 Transmission Service Provider.
 - 4.1.5 Transmission Owner.
 - 4.1.6 Transmission Operator.
 - 4.1.7 Generator Owner.
 - 4.1.8 Generator Operator.
 - 4.1.9 Load Serving Entity.
 - 4.1.10 NERC.
 - 4.1.11 Regional Entity.
 - 4.2. The following are exempt from Standard CIP-008-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Cyber Security Incident Response Plan — The Responsible Entity shall develop and maintain a Cyber Security Incident response plan and implement the plan in response to Cyber Security Incidents. The Cyber Security Incident response plan shall address, at a minimum, the following:
 - R1.1. Procedures to characterize and classify events as reportable Cyber Security Incidents.
 - R1.2. Response actions, including roles and responsibilities of Cyber Security Incident response teams, Cyber Security Incident handling procedures, and communication plans.

- R1.3.** Process for reporting Cyber Security Incidents to the Electricity Sector Information Sharing and Analysis Center (ES-ISAC). The Responsible Entity must ensure that all reportable Cyber Security Incidents are reported to the ES-ISAC either directly or through an intermediary.
- R1.4.** Process for updating the Cyber Security Incident response plan within thirty calendar days of any changes.
- R1.5.** Process for ensuring that the Cyber Security Incident response plan is reviewed at least annually.
- R1.6.** Process for ensuring the Cyber Security Incident response plan is tested at least annually. A test of the Cyber Security Incident response plan can range from a paper drill, to a full operational exercise, to the response to an actual incident.
- R2.** Cyber Security Incident Documentation — The Responsible Entity shall keep relevant documentation related to Cyber Security Incidents reportable per Requirement R1.1 for three calendar years.

C. Measures

- M1.** The Responsible Entity shall make available its Cyber Security Incident response plan as indicated in Requirement R1 and documentation of the review, updating, and testing of the plan.
- M2.** The Responsible Entity shall make available all documentation as specified in Requirement R2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entity.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications
Spot Checking
Compliance Violation Investigations
Self-Reporting
Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep documentation other than that required for reportable Cyber Security Incidents as specified in Standard CIP-008-3 for the previous full calendar year unless directed by its Compliance Enforcement

Authority to retain specific evidence for a longer period of time as part of an investigation.

1.4.2 The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

1.5.1 The Responsible Entity may not take exception in its cyber security policies to the creation of a Cyber Security Incident response plan.

1.5.2 The Responsible Entity may not take exception in its cyber security policies to reporting Cyber Security Incidents to the ES ISAC.

2. Violation Severity Levels (To be developed later.)

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment. Replaced the RRO with the RE as a responsible entity. Reworking of Effective Date. Changed compliance monitor to Compliance Enforcement Authority.	
3		Updated Version number from -2 to -3 In Requirement 1.6, deleted the sentence pertaining to removing component or system from service in order to perform testing, in response to FERC order issued September 30, 2009.	
3	12/16/09	Approved by NERC Board of Trustees	Update

A. Introduction

1. **Title:** Cyber Security — Recovery Plans for Critical Cyber Assets
2. **Number:** CIP-009-3
3. **Purpose:** Standard CIP-009-3 ensures that recovery plan(s) are put in place for Critical Cyber Assets and that these plans follow established business continuity and disaster recovery techniques and practices. Standard CIP-009-3 should be read as part of a group of standards numbered Standards CIP-002-3 through CIP-009-3.
4. **Applicability:**
 - 4.1. Within the text of Standard CIP-009-3, “Responsible Entity” shall mean:
 - 4.1.1 Reliability Coordinator
 - 4.1.2 Balancing Authority
 - 4.1.3 Interchange Authority
 - 4.1.4 Transmission Service Provider
 - 4.1.5 Transmission Owner
 - 4.1.6 Transmission Operator
 - 4.1.7 Generator Owner
 - 4.1.8 Generator Operator
 - 4.1.9 Load Serving Entity
 - 4.1.10 NERC
 - 4.1.11 Regional Entity
 - 4.2. The following are exempt from Standard CIP-009-3:
 - 4.2.1 Facilities regulated by the U.S. Nuclear Regulatory Commission or the Canadian Nuclear Safety Commission.
 - 4.2.2 Cyber Assets associated with communication networks and data communication links between discrete Electronic Security Perimeters.
 - 4.2.3 Responsible Entities that, in compliance with Standard CIP-002-3, identify that they have no Critical Cyber Assets.
5. **Effective Date:** The first day of the third calendar quarter after applicable regulatory approvals have been received (or the Reliability Standard otherwise becomes effective the first day of the third calendar quarter after BOT adoption in those jurisdictions where regulatory approval is not required).

B. Requirements

- R1. Recovery Plans — The Responsible Entity shall create and annually review recovery plan(s) for Critical Cyber Assets. The recovery plan(s) shall address at a minimum the following:
 - R1.1. Specify the required actions in response to events or conditions of varying duration and severity that would activate the recovery plan(s).
 - R1.2. Define the roles and responsibilities of responders.
- R2. Exercises — The recovery plan(s) shall be exercised at least annually. An exercise of the recovery plan(s) can range from a paper drill, to a full operational exercise, to recovery from an actual incident.

- R3.** Change Control — Recovery plan(s) shall be updated to reflect any changes or lessons learned as a result of an exercise or the recovery from an actual incident. Updates shall be communicated to personnel responsible for the activation and implementation of the recovery plan(s) within thirty calendar days of the change being completed.
- R4.** Backup and Restore — The recovery plan(s) shall include processes and procedures for the backup and storage of information required to successfully restore Critical Cyber Assets. For example, backups may include spare electronic components or equipment, written documentation of configuration settings, tape backup, etc.
- R5.** Testing Backup Media — Information essential to recovery that is stored on backup media shall be tested at least annually to ensure that the information is available. Testing can be completed off site.

C. Measures

- M1.** The Responsible Entity shall make available its recovery plan(s) as specified in Requirement R1.
- M2.** The Responsible Entity shall make available its records documenting required exercises as specified in Requirement R2.
- M3.** The Responsible Entity shall make available its documentation of changes to the recovery plan(s), and documentation of all communications, as specified in Requirement R3.
- M4.** The Responsible Entity shall make available its documentation regarding backup and storage of information as specified in Requirement R4.
- M5.** The Responsible Entity shall make available its documentation of testing of backup media as specified in Requirement R5.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

- 1.1.1** Regional Entity for Responsible Entities that do not perform delegated tasks for their Regional Entity.
- 1.1.2** ERO for Regional Entities.
- 1.1.3** Third-party monitor without vested interest in the outcome for NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits
Self-Certifications
Spot Checking
Compliance Violation Investigations
Self-Reporting
Complaints

1.4. Data Retention

- 1.4.1** The Responsible Entity shall keep documentation required by Standard CIP-009-3 from the previous full calendar year unless directed by its Compliance

Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

- 1.4.2** The Compliance Enforcement Authority in conjunction with the Registered Entity shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

- 2. Violation Severity Levels (To be developed later.)**

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
2		Modifications to clarify the requirements and to bring the compliance elements into conformance with the latest guidelines for developing compliance elements of standards. Removal of reasonable business judgment. Replaced the RRO with the RE as a responsible entity. Rewording of Effective Date. Communication of revisions to the recovery plan changed from 90 days to 30 days. Changed compliance monitor to Compliance Enforcement Authority.	
3		Updated version numbers from -2 to -3	
3	12/16/09	Approved by the NERC Board of Trustees	Update

A. Introduction

1. **Title:** **Emergency Operations Planning**
2. **Number:** EOP-001-2
3. **Purpose:** Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator.
4. **Applicability**
 - 4.1. Balancing Authorities.
 - 4.2. Transmission Operators.
5. **Proposed Effective Date:** Twenty-four months after the first day of the first calendar quarter following applicable regulatory approval. In those jurisdictions where no regulatory approval is required, all requirements go into effect twenty-four months after Board of Trustees adoption.

B. Requirements

- R1. Balancing Authorities shall have operating agreements with adjacent Balancing Authorities that shall, at a minimum, contain provisions for emergency assistance, including provisions to obtain emergency assistance from remote Balancing Authorities.
- R2. Each Transmission Operator and Balancing Authority shall:
 - R2.1. Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.
 - R2.2. Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.
 - R2.3. Develop, maintain, and implement a set of plans for load shedding.
- R3. Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:
 - R3.1. Communications protocols to be used during emergencies.
 - R3.2. A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.
 - R3.3. The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.
 - R3.4. Staffing levels for the emergency.
- R4. Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-0 when developing an emergency plan.
- R5. The Transmission Operator and Balancing Authority shall annually review and update each emergency plan. The Transmission Operator and Balancing Authority shall provide a copy of its updated emergency plans to its Reliability Coordinator and to neighboring Transmission Operators and Balancing Authorities.

R6. The Transmission Operator and Balancing Authority shall coordinate its emergency plans with other Transmission Operators and Balancing Authorities as appropriate. This coordination includes the following steps, as applicable:

R6.1. The Transmission Operator and Balancing Authority shall establish and maintain reliable communications between interconnected systems.

R6.2. The Transmission Operator and Balancing Authority shall arrange new interchange agreements to provide for emergency capacity or energy transfers if existing agreements cannot be used.

R6.3. The Transmission Operator and Balancing Authority shall coordinate transmission and generator maintenance schedules to maximize capacity or conserve the fuel in short supply. (This includes water for hydro generators.)

R6.4. The Transmission Operator and Balancing Authority shall arrange deliveries of electrical energy or fuel from remote systems through normal operating channels.

C. Measures

M1. The Transmission Operator and Balancing Authority shall have its emergency plans available for review by the Regional Reliability Organization at all times.

M2. The Transmission Operator and Balancing Authority shall have its two most recent annual self-assessments available for review by the Regional Reliability Organization at all times.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Time Frame

The Regional Reliability Organization shall review and evaluate emergency plans every three years to ensure that the plans consider the applicable elements of Attachment 1-EOP-001-0.

The Regional Reliability Organization may elect to request self-certification of the Transmission Operator and Balancing Authority in years that the full review is not done.

Reset: one calendar year.

1.3. Data Retention

Current plan available at all times.

1.4. Additional Compliance Information

Not specified.

2. Violation Severity Levels:

Requirement	Lower	Moderate	High	Severe
R1	The Balancing Authority failed to demonstrate the existence of the necessary operating agreements for less than 25% of the adjacent BAs. Or less than 25% of those agreements do not contain provisions for emergency assistance.	The Balancing Authority failed to demonstrate the existence of the necessary operating agreements for 25% to 50% of the adjacent BAs. Or 25 to 50% of those agreements do not contain provisions for emergency assistance.	The Balancing Authority failed to demonstrate the existence of the necessary operating agreements for 50% to 75% of the adjacent BAs. Or 50% to 75% of those agreements do not contain provisions for emergency assistance.	The Balancing Authority failed to demonstrate the existence of the necessary operating agreements for 75% or more of the adjacent BAs. Or more than 75% of those agreements do not contain provisions for emergency assistance.
R2	The Transmission Operator or Balancing Authority failed to comply with one (1) of the sub-components.	The Transmission Operator or Balancing Authority failed to comply with two (2) of the sub-components.	N/A	The Transmission Operator or Balancing Authority has failed to comply with three (3) of the sub-components.
R2.1	The Transmission Operator or Balancing Authority's emergency plans to mitigate insufficient generating capacity are missing minor details or minor program/procedural elements.	The Transmission Operator or Balancing Authority's has demonstrated the existence of emergency plans to mitigate insufficient generating capacity emergency plans but the plans are not maintained.	The Transmission Operator or Balancing Authority's emergency plans to mitigate insufficient generating capacity emergency plans are neither maintained nor implemented.	The Transmission Operator or Balancing Authority has failed to develop emergency mitigation plans for insufficient generating capacity.
R2.2	The Transmission Operator or Balancing Authority's plans to mitigate transmission system emergencies are missing minor details or minor program/procedural elements.	The Transmission Operator or Balancing Authority's has demonstrated the existence of transmission system emergency plans but are not maintained.	The Transmission Operator or Balancing Authority's transmission system emergency plans are neither maintained nor implemented.	The Transmission Operator or Balancing Authority has failed to develop, maintain, and implement operating emergency mitigation plans for emergencies on the transmission system.

Requirement	Lower	Moderate	High	Severe
R2.3	The Transmission Operator or Balancing Authority's load shedding plans are missing minor details or minor program/procedural elements.	The Transmission Operator or Balancing Authority's has demonstrated the existence of load shedding plans but are not maintained.	The Transmission Operator or Balancing Authority's load shedding plans are partially compliant with the requirement but are neither maintained nor implemented.	The Transmission Operator or Balancing Authority has failed to develop, maintain, and implement load shedding plans.
R3	The Transmission Operator or Balancing Authority failed to comply with one (1) of the sub-components.	The Transmission Operator or Balancing Authority failed to comply with two (2) of the sub-components.	The Transmission Operator or Balancing Authority has failed to comply with three (3) of the sub-components.	The Transmission Operator or Balancing Authority has failed to comply with all four (4) of the sub-components.
R3.1	The Transmission Operator or Balancing Authority's communication protocols included in the emergency plan are missing minor program/procedural elements.	N/A	N/A	The Transmission Operator or Balancing Authority has failed to include communication protocols in its emergency plans to mitigate operating emergencies.
R3.2	The Transmission Operator or Balancing Authority's list of controlling actions has resulted in meeting the intent of the requirement but is missing minor program/procedural elements.	N/A	The Transmission Operator or Balancing Authority provided a list of controlling actions, however the actions fail to resolve the emergency within NERC-established timelines.	The Transmission Operator or Balancing Authority has failed to provide a list of controlling actions to resolve the emergency.

Requirement	Lower	Moderate	High	Severe
R3.3	The Transmission Operator or Balancing Authority has demonstrated coordination with Transmission Operators and Balancing Authorities but is missing minor program/procedural elements.	N/A	N/A	The Transmission Operator or Balancing Authority has failed to demonstrate the tasks to be coordinated with adjacent Transmission Operator and Balancing Authorities as directed by the requirement.
R3.4	The Transmission Operator or Balancing Authority's emergency plan does not include staffing levels for the emergency	N/A	N/A	N/A
R4	The Transmission Operator and Balancing Authority's emergency plan has complied with 90% or more of the number of sub-components.	The Transmission Operator and Balancing Authority's emergency plan has complied with 70% to 90% of the number of sub-components.	The Transmission Operator and Balancing Authority's emergency plan has complied with between 50% to 70% of the number of sub-components.	The Transmission Operator and Balancing Authority's emergency plan has complied with 50% or less of the number of sub-components
R5	The Transmission Operator and Balancing Authority is missing minor program/procedural elements.	The Transmission Operator and Balancing Authority has failed to annually review one of it's emergency plans	The Transmission Operator and Balancing Authority has failed to annually review two of its emergency plans or communicate with one of it's neighboring Balancing Authorities.	The Transmission Operator and Balancing Authority has failed to annually review and/or communicate any emergency plans with its Reliability Coordinator, neighboring Transmission Operators or Balancing Authorities.
R6	The Transmission Operator and/or the Balancing Authority failed to comply with one (1) of the sub-components.	The Transmission Operator and/or the Balancing Authority failed to comply with two (2) of the sub-components.	The Transmission Operator and/or the Balancing Authority has failed to comply with three (3) of the sub-components.	The Transmission Operator and/or the Balancing Authority has failed to comply with four (4) or more of the sub-components.

Requirement	Lower	Moderate	High	Severe
R6.1	The Transmission Operator or Balancing Authority has failed to establish and maintain reliable communication between interconnected systems.	N/A	N/A	N/A
R6.2	The Transmission Operator or Balancing Authority has failed to arrange new interchange agreements to provide for emergency capacity or energy transfers with required entities when existing agreements could not be used.	N/A	N/A	N/A
R6.3	The Transmission Operator or Balancing Authority has failed to coordinate transmission and generator maintenance schedules to maximize capacity or conserve fuel in short supply.	N/A	N/A	N/A
R6.4	The Transmission Operator or Balancing Authority has failed to arrange for deliveries of electrical energy or fuel from remote systems through normal operating channels.	N/A	N/A	N/A

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	October 17, 2008	Deleted R2 Replaced Levels of Non-compliance with the February 28, 2008 BOT approved Violation Severity Levels Corrected typographical errors in BOT approved version of VSLs	Revised
2	To be determined	Removed R2.4 as redundant with EOP-005-2 Requirement R1 for the Transmission Operator; the Balancing Authority does not need a restoration plan.	
2	August 5, 2009	Adopted by NERC Board of Trustees: August 5, 2009	Revised
2	March 17, 2011	FERC Order issued approving EOP-001-2 (Clarification issued on July 13, 2011)	Revised

Attachment 1-EOP-001-0

Elements for Consideration in Development of Emergency Plans

1. Fuel supply and inventory — An adequate fuel supply and inventory plan that recognizes reasonable delays or problems in the delivery or production of fuel.
2. Fuel switching — Fuel switching plans for units for which fuel supply shortages may occur, e.g., gas and light oil.
3. Environmental constraints — Plans to seek removal of environmental constraints for generating units and plants.
4. System energy use — The reduction of the system's own energy use to a minimum.
5. Public appeals — Appeals to the public through all media for voluntary load reductions and energy conservation including educational messages on how to accomplish such load reduction and conservation.
6. Load management — Implementation of load management and voltage reductions, if appropriate.
7. Optimize fuel supply — The operation of all generating sources to optimize the availability.
8. Appeals to customers to use alternate fuels — In a fuel emergency, appeals to large industrial and commercial customers to reduce non-essential energy use and maximize the use of customer-owned generation that rely on fuels other than the one in short supply.
9. Interruptible and curtailable loads — Use of interruptible and curtailable customer load to reduce capacity requirements or to conserve the fuel in short supply.
10. Maximizing generator output and availability — The operation of all generating sources to maximize output and availability. This should include plans to winterize units and plants during extreme cold weather.
11. Notifying IPPs — Notification of cogeneration and independent power producers to maximize output and availability.
12. Requests of government — Requests to appropriate government agencies to implement programs to achieve necessary energy reductions.
13. Load curtailment — A mandatory load curtailment plan to use as a last resort. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. Address firm load curtailment.
14. Notification of government agencies — Notification of appropriate government agencies as the various steps of the emergency plan are implemented.
15. Notifications to operating entities — Notifications to other operating entities as steps in emergency plan are implemented.

A. Introduction

1. **Title:** Capacity and Energy Emergencies
2. **Number:** EOP-002-3
3. **Purpose:** To ensure Reliability Coordinators and Balancing Authorities are prepared for capacity and energy emergencies.
4. **Applicability**
 - 4.1. Balancing Authorities.
 - 4.2. Reliability Coordinators.
 - 4.3. Load-Serving Entities.
5. **(Proposed) Effective Date:** First day of the first calendar quarter six months following applicable regulatory approval; or, in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter six months following Board of Trustees adoption.

B. Requirements

- R1. Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.
- R2. Each Balancing Authority shall, when required and as appropriate, take one or more actions as described in its capacity and energy emergency plan, , to reduce risks to the interconnected system.
- R3. A Balancing Authority that is experiencing an operating capacity or energy emergency shall communicate its current and future system conditions to its Reliability Coordinator and neighboring Balancing Authorities.
- R4. A Balancing Authority anticipating an operating capacity or energy emergency shall perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, and being prepared to reduce firm load.
- R5. A deficient Balancing Authority shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. The Balancing Authority shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities.
- R6. If the Balancing Authority cannot comply with the Control Performance and Disturbance Control Standards, then it shall immediately implement remedies to do so. These remedies include, but are not limited to:
 - R6.1. Loading all available generating capacity.
 - R6.2. Deploying all available operating reserve.
 - R6.3. Interrupting interruptible load and exports.
 - R6.4. Requesting emergency assistance from other Balancing Authorities.
 - R6.5. Declaring an Energy Emergency through its Reliability Coordinator; and

Standard EOP-002-3 — Capacity and Energy Emergencies

- R6.6.** Reducing load, through procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads.
- R7.** Once the Balancing Authority has exhausted the steps listed in Requirement 6, or if these steps cannot be completed in sufficient time to resolve the emergency condition, the Balancing Authority shall:
- R7.1.** Manually shed firm load without delay to return its ACE to zero; and
- R7.2.** Request the Reliability Coordinator to declare an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.”
- R8.** A Reliability Coordinator that has any Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency shall initiate an Energy Emergency Alert as detailed in Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.” The Reliability Coordinator shall act to mitigate the emergency condition, including a request for emergency assistance if required.
- R9.** When a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources) as permitted in its transmission tariff (See Attachment 1-IRO-006-0 “Transmission Loading Relief Procedure” for explanation of Transmission Service Priorities):
- R9.1.** The deficient Load-Serving Entity shall request its Reliability Coordinator to initiate an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.
- R9.2.** The Reliability Coordinator shall submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.
- R9.3.** The Reliability Coordinator shall use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.
- R9.4.** The Reliability Coordinator shall use EEA 2 to announce the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.

C. Measures

- M1.** Each Reliability Coordinator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, job descriptions, signed agreements, authority letter signed by an appropriate officer of the company, or other equivalent evidence that will be used to confirm that it meets Requirement 1.
- M2.** If a Reliability Coordinator or Balancing Authority implements one or more actions described in its Capacity and Energy Emergency plan, that entity shall have and provide upon request evidence that could include but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications, computer printouts or other equivalent evidence that will be used to determine if the actions it took to relieve emergency conditions were in conformance with its Capacity and Energy Emergency Plan. (Requirement 2)
- M3.** If a Balancing Authority experiences an operating Capacity or Energy Emergency it shall have and provide upon request evidence that could include, but is not limited to operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence that will be used to determine if it met Requirement 3.

Standard EOP-002-3 — Capacity and Energy Emergencies

- M4.** The Balancing Authority shall have and provide upon request evidence (such as operator logs, work orders, E-Tags, or other evidence) that it took the actions described in R4 in response to anticipating a capacity or energy emergency.
- M5.** The Balancing Authority shall have and provide upon request evidence (such as operator logs, dispatch instructions, or other evidence) that it only used the assistance provided by the Interconnection frequency bias for the time needed to implement corrective actions and did not attempt to return Interconnection frequency to normal through unilateral adjustment of generation beyond that supplied through the frequency bias action and Interchange Schedule changes. (Requirement 5)
- M6.** The Balancing Authority shall have and provide upon request evidence (such as operator logs, dispatch instructions, or other evidence) that it took actions such as those listed in R6 to comply with CPS and DCS.
- M7.** The Balancing Authority shall have and provide upon request evidence (such as operator logs, voice recordings, or other evidence) that it took the actions listed in R7 when unable to resolve an emergency condition.
- M8.** If a Reliability Coordinator has any Balancing Authority within its Reliability Coordinator Area that has notified the Reliability Coordinator of a potential or actual Energy Emergency, the Reliability Coordinator involved in the event shall have and provide upon request evidence that could include, but is not limited to operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence to determine if it initiated an Energy Emergency Alert as specified in Requirement 8 and as detailed in Attachment 1-EOP-002 Energy Emergency Alert Levels.
- M9.** If a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources), the Reliability Coordinator involved in the event shall have and provide upon request evidence that could include, but is not limited to, NERC reports, EEA reports, operator logs, voice recordings or transcripts of voice recordings, electronic communications, or other equivalent evidence that will be used to determine if that Reliability Coordinator met Requirements 9.2, 9.3 and 9.4.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity

1.2. Compliance Monitoring Period and Reset Timeframe

1.3. Not Applicable. Compliance Monitoring and Enforcement Process

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

For Measure 1, each Reliability Coordinator and Balancing Authority shall keep The current in-force documents.

For Measure 2, 8 and 9 the Reliability Coordinator shall keep 90 days of historical data.

For Measure 3, 4, 5, 6, and 7 the Balancing Authority shall keep 90 days of historical data.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor.

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.5. Additional Compliance Information

None.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	September 19, 2006	Changes R7. to refer to “Requirement 6” instead of “Requirement 7”	Errata
2	November 1, 2006	Adopted by Board of Trustees	Revised
2	November 1, 2006	Corrected numbering in Section A.4. “Applicability.”	Errata
2	October 1, 2007	Added to Section 1 inadvertently omitted “4.3. Load-Serving Entities	Errata
2.1	October 29, 2008	BOT adopted errata changes; updated version number to “2.1”	Errata
2.1	May 13, 2009	FERC Approved	Revised
3	June 4, 2010	Modified to address Order No. 693 Directives contained in paragraphs 582.	Revised.

Attachment 1-EOP-002-2.1 Energy Emergency Alerts

Introduction

This Attachment provides the procedures by which a Load Serving Entity can obtain capacity and energy when it has exhausted all other options and can no longer provide its customers' expected energy requirements. NERC defines this situation as an "Energy Emergency." NERC assumes that a capacity deficiency will manifest itself as an energy emergency.

The Energy Emergency Alert Procedure is initiated by the Load Serving Entity's Reliability Coordinator, who declares various Energy Emergency Alert levels as defined in Section B, "Energy Emergency Alert Levels," to provide assistance to the Load Serving Entity.

The Load Serving Entity who requests this assistance is referred to as an "Energy Deficient Entity."

NERC recognizes that Transmission Providers are subject to obligations under FERC-approved tariffs and other agreements, and nothing in these procedures should be interpreted as changing those obligations.

A. General Requirements

1. **Initiation by Reliability Coordinator.** An Energy Emergency Alert may be initiated only by a Reliability Coordinator at 1) the Reliability Coordinator's own request, or 2) upon the request of a Balancing Authority, or 3) upon the request of a Load Serving Entity.
 - 1.1. **Situations for initiating alert.** An Energy Emergency Alert may be initiated for the following reasons:
 - When the Load Serving Entity is, or expects to be, unable to provide its customers' energy requirements, and has been unsuccessful in locating other systems with available resources from which to purchase, or
 - The Load Serving Entity cannot schedule the resources due to, for example, Available Transfer Capability (ATC) limitations or transmission loading relief limitations.
2. **Notification.** A Reliability Coordinator who declares an Energy Emergency Alert shall notify all Balancing Authorities and Transmission Providers in its Reliability Area. The Reliability Coordinator shall also notify all other Reliability Coordinators of the situation via the Reliability Coordinator Information System (RCIS). Additionally, conference calls between Reliability Coordinators shall be held as necessary to communicate system conditions. The Reliability Coordinator shall also notify the other Reliability Coordinators when the alert has ended.

B. Energy Emergency Alert Levels

Introduction

To ensure that all Reliability Coordinators clearly understand potential and actual energy emergencies in the Interconnection, NERC has established three levels of Energy Emergency Alerts. The Reliability Coordinators will use these terms when explaining energy emergencies to each other. An Energy Emergency Alert is an emergency procedure, not a daily operating practice, and is not intended as an alternative to compliance with NERC reliability standards or power supply contracts.

The Reliability Coordinator may declare whatever alert level is necessary, and need not proceed through the alerts sequentially.

1. **Alert 1 — All available resources in use.**

Circumstances:

- Balancing Authority, Reserve Sharing Group, or Load Serving Entity foresees or is experiencing conditions where all available resources are committed to meet firm load, firm transactions, and reserve commitments, and is concerned about sustaining its required Operating Reserves, and
- Non-firm wholesale energy sales (other than those that are recallable to meet reserve requirements) have been curtailed.

2. Alert 2 — Load management procedures in effect.

Circumstances:

- Balancing Authority, Reserve Sharing Group, or Load Serving Entity is no longer able to provide its customers' expected energy requirements, and is designated an Energy Deficient Entity.
- Energy Deficient Entity foresees or has implemented procedures up to, but excluding, interruption of firm load commitments. When time permits, these procedures may include, but are not limited to:
 - Public appeals to reduce demand.
 - Voltage reduction.
 - Interruption of non-firm end use loads in accordance with applicable contracts¹.
 - Demand-side management.
 - Utility load conservation measures.

During Alert 2, Reliability Coordinators, Balancing Authorities, and Energy Deficient Entities have the following responsibilities:

- 2.1 Notifying other Balancing Authorities and market participants.** The Energy Deficient Entity shall communicate its needs to other Balancing Authorities and market participants. Upon request from the Energy Deficient Entity, the respective Reliability Coordinator shall post the declaration of the alert level along with the name of the Energy Deficient Entity and, if applicable, its Balancing Authority on the NERC website.
- 2.2 Declaration period.** The Energy Deficient Entity shall update its Reliability Coordinator of the situation at a minimum of every hour until the Alert 2 is terminated. The Reliability Coordinator shall update the energy deficiency information posted on the NERC website as changes occur and pass this information on to the affected Reliability Coordinators, Balancing Authority, and Transmission Providers.
- 2.3 Sharing information on resource availability.** A Balancing Authority and market participants with available resources shall immediately contact the Energy Deficient Entity. This should include the possibility of selling non-firm (recallable) energy out of available Operating Reserves. The Energy Deficient Entity shall notify the Reliability Coordinators of the results.
- 2.4 Evaluating and mitigating transmission limitations.** The Reliability Coordinators shall review all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs) and transmission loading relief procedures in effect that may limit the Energy Deficient Entity's scheduling capabilities. Where appropriate, the Reliability Coordinators shall inform

¹ For emergency, not economic, reasons.

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the Transmission Providers under their purview of the pending Energy Emergency and request that they increase their ATC by actions such as restoring transmission elements that are out of service, reconfiguring their transmission system, adjusting phase angle regulator tap positions, implementing emergency operating procedures, and reviewing generation redispatch options.

2.4.1 Notification of ATC adjustments. Resulting increases in ATCs shall be simultaneously communicated to the Energy Deficient Entity and the market via posting on the appropriate OASIS websites by the Transmission Providers.

2.4.2 Availability of generation redispatch options. Available generation redispatch options shall be immediately communicated to the Energy Deficient Entity by its Reliability Coordinator.

2.4.3 Evaluating impact of current transmission loading relief events. The Reliability Coordinators shall evaluate the impact of any current transmission loading relief events on the ability to supply emergency assistance to the Energy Deficient Entity. This evaluation shall include analysis of system reliability and involve close communication among Reliability Coordinators and the Energy Deficient Entity.

2.4.4 Initiating inquiries on reevaluating SOLs and IROLs. The Reliability Coordinators shall consult with the Balancing Authorities and Transmission Providers in their Reliability Areas about the possibility of reevaluating and revising SOLs or IROLs.

2.5 Coordination of emergency responses. The Reliability Coordinator shall communicate and coordinate the implementation of emergency operating responses.

2.6 Energy Deficient Entity actions. Before declaring an Alert 3, the Energy Deficient Entity must make use of all available resources. This includes but is not limited to:

2.6.1 All available generation units are on line. All generation capable of being on line in the time frame of the emergency is on line including quick-start and peaking units, regardless of cost.

2.6.2 Purchases made regardless of cost. All firm and non-firm purchases have been made, regardless of cost.

2.6.3 Non-firm sales recalled and contractually interruptible loads and demand-side management curtailed. All non-firm sales have been recalled, contractually interruptible retail loads curtailed, and demand-side management activated within provisions of the agreements.

2.6.4 Operating Reserves. Operating reserves are being utilized such that the Energy Deficient Entity is carrying reserves below the required minimum or has initiated emergency assistance through its operating reserve sharing program.

3. Alert 3 — Firm load interruption imminent or in progress.

Circumstances:

- Balancing Authority or Load Serving Entity foresees or has implemented firm load obligation interruption. The available energy to the Energy Deficient Entity, as determined from Alert 2, is only accessible with actions taken to increase transmission transfer capabilities.

3.1 Continue actions from Alert 2. The Reliability Coordinators and the Energy Deficient Entity shall continue to take all actions initiated during Alert 2. If the emergency has not already been posted on the NERC website (see paragraph 2.1), the respective Reliability Coordinators will, at this time, post on the website information concerning the emergency.

- 3.2 Declaration Period.** The Energy Deficient Entity shall update its Reliability Coordinator of the situation at a minimum of every hour until the Alert 3 is terminated. The Reliability Coordinator shall update the energy deficiency information posted on the NERC website as changes occur and pass this information on to the affected Reliability Coordinators (via the RCIS), Balancing Authorities, and Transmission Providers.
- 3.3 Use of Transmission short-time limits.** The Reliability Coordinators shall request the appropriate Transmission Providers within their Reliability Area to utilize available short-time transmission limits or other emergency operating procedures in order to increase transfer capabilities into the Energy Deficient Entity.
- 3.4 Reevaluating and revising SOLs and IROLs.** The Reliability Coordinator of the Energy Deficient Entity shall evaluate the risks of revising SOLs and IROLs on the reliability of the overall transmission system. Reevaluation of SOLs and IROLs shall be coordinated with other Reliability Coordinators and only with the agreement of the Balancing Authority or Transmission Operator whose equipment would be affected. The resulting increases in transfer capabilities shall only be made available to the Energy Deficient Entity who has requested an Energy Emergency Alert 3 condition. SOLs and IROLs shall only be revised as long as an Alert 3 condition exists or as allowed by the Balancing Authority or Transmission Operator whose equipment is at risk. The following are minimum requirements that must be met before SOLs or IROLs are revised:
- 3.4.1 Energy Deficient Entity obligations.** The deficient Balancing Authority or Load Serving Entity must agree that, upon notification from its Reliability Coordinator of the situation, it will immediately take whatever actions are necessary to mitigate any undue risk to the Interconnection. These actions may include load shedding.
- 3.4.2 Mitigation of cascading failures.** The Reliability Coordinator shall use its best efforts to ensure that revising SOLs or IROLs would not result in any cascading failures within the Interconnection.
- 3.5 Returning to pre-emergency Operating Security Limits.** Whenever energy is made available to an Energy Deficient Entity such that the transmission systems can be returned to their pre-emergency SOLs or IROLs, the Energy Deficient Entity shall notify its respective Reliability Coordinator and downgrade the alert.
- 3.5.1 Notification of other parties.** Upon notification from the Energy Deficient Entity that an alert has been downgraded, the Reliability Coordinator shall notify the affected Reliability Coordinators (via the RCIS), Balancing Authorities, and Transmission Providers that their systems can be returned to their normal limits.
- 3.6 Reporting.** Any time an Alert 3 is declared, the Energy Deficient Entity shall submit the report enclosed in this Attachment to its respective Reliability Coordinator within two business days of downgrading or termination of the alert. Upon receiving the report, the Reliability Coordinator shall review it for completeness and immediately forward it to the NERC staff for posting on the NERC website. The Reliability Coordinator shall present this report to the Reliability Coordinator Working Group at its next scheduled meeting.
- 4. Alert 0 - Termination.** When the Energy Deficient Entity believes it will be able to supply its customers' energy requirements, it shall request of its Reliability Coordinator that the EEA be terminated.
- 4.1. Notification.** The Reliability Coordinator shall notify all other Reliability Coordinators via the RCIS of the termination. The Reliability Coordinator shall also notify the

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affected Balancing Authorities and Transmission Operators. The Alert 0 shall also be posted on the NERC website if the original alert was so posted.

C. Energy Emergency Alert 3 Report

A Deficient Balancing Authority or Load Serving Entity declaring an Energy Emergency Alert 3 must complete the following report. Upon completion of this report, it is to be sent to the Reliability Coordinator for review within two business days of the incident.

Requesting Balancing Authority:

Entity experiencing energy deficiency (if different from Balancing Authority):

Date/Time Implemented:

Date/Time Released:

Declared Deficiency Amount (MW):

Total energy supplied by other Balancing Authority during the Alert 3 period:

Conditions that precipitated call for “Energy Deficiency Alert 3”:

If “Energy Deficiency Alert 3” had not been called, would firm load be cut? If no, explain:

Explain what action was taken in each step to avoid calling for “Energy Deficiency Alert 3”:

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- 1. All generation capable of being on line in the time frame of the energy deficiency was on line (including quick start and peaking units) without regard to cost.**

- 2. All firm and nonfirm purchases were made regardless of cost.**

- 3. All nonfirm sales were recalled within provisions of the sale agreement.**

- 4. Interruptible load was curtailed where either advance notice restrictions were met or the interruptible load was considered part of spinning reserve.**

- 5. Available load reduction programs were exercised (public appeals, voltage reductions, etc.).**

- 6. Operating Reserves being utilized.**

Comments:

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Reported By:

Organization:

Title:

A. Introduction

1. **Title:** System Restoration from Blackstart Resources
2. **Number:** EOP-005-2
3. **Purpose:** Ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to assure reliability is maintained during restoration and priority is placed on restoring the Interconnection.
4. **Applicability:**
 - 4.1. Transmission Operators.
 - 4.2. Generator Operators.
 - 4.3. Transmission Owners identified in the Transmission Operators restoration plan.
 - 4.4. Distribution Providers identified in the Transmission Operators restoration plan.
5. **Proposed Effective Date:** Twenty-four months after the first day of the first calendar quarter following applicable regulatory approval. In those jurisdictions where no regulatory approval is required, all requirements go into effect twenty-four months after Board of Trustees adoption.

B. Requirements

- R1. Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include: *[Violation Risk Factor = High] [Time Horizon = Operations Planning]*
 - R1.1. Strategies for system restoration that are coordinated with the Reliability Coordinator's high level strategy for restoring the Interconnection.
 - R1.2. A description of how all Agreements or mutually agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.
 - R1.3. Procedures for restoring interconnections with other Transmission Operators under the direction of the Reliability Coordinator.
 - R1.4. Identification of each Blackstart Resource and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit.
 - R1.5. Identification of Cranking Paths and initial switching requirements between each Blackstart Resource and the unit(s) to be started.
 - R1.6. Identification of acceptable operating voltage and frequency limits during restoration.

- R1.7.** Operating Processes to reestablish connections within the Transmission Operator's System for areas that have been restored and are prepared for reconnection.
- R1.8.** Operating Processes to restore Loads required to restore the System, such as station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency, and provide voltage control.
- R1.9.** Operating Processes for transferring authority back to the Balancing Authority in accordance with the Reliability Coordinator's criteria.
- R2.** Each Transmission Operator shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. [*Violation Risk Factor = Lower*] [*Time Horizon = Operations Planning*]
- R3.** Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually agreed predetermined schedule. [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]
 - R3.1.** If there are no changes to the previously submitted restoration plan, the Transmission Operator shall confirm annually on a predetermined schedule to its Reliability Coordinator that it has reviewed its restoration plan and no changes were necessary.
- R4.** Each Transmission Operator shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]
 - R4.1.** Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval within the same 90 calendar day period.
- R5.** Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its implementation date. [*Violation Risk Factor = Lower*] [*Time Horizon = Operations Planning*]
- R6.** Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed every five years at a minimum. Such analysis, simulations or testing shall verify: [*Violation Risk Factor = Medium*] [*Time Horizon = Long-term Planning*]
 - R6.1.** The capability of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.
 - R6.2.** The location and magnitude of Loads required to control voltages and frequency within acceptable operating limits.

- R6.3.** The capability of generating resources required to control voltages and frequency within acceptable operating limits.
- R7.** Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operator shall implement its restoration plan. If the restoration plan cannot be executed as expected the Transmission Operator shall utilize its restoration strategies to facilitate restoration. [*Violation Risk Factor = High*] [*Time Horizon = Real-time Operations*]
- R8.** Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Transmission Operator shall resynchronize area(s) with neighboring Transmission Operator area(s) only with the authorization of the Reliability Coordinator or in accordance with the established procedures of the Reliability Coordinator. [*Violation Risk Factor = High*] [*Time Horizon = Real-time Operations*]
- R9.** Each Transmission Operator shall have Blackstart Resource testing requirements to verify that each Blackstart Resource is capable of meeting the requirements of its restoration plan. These Blackstart Resource testing requirements shall include: [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]
- R9.1.** The frequency of testing such that each Blackstart Resource is tested at least once every three calendar years.
- R9.2.** A list of required tests including:
- R9.2.1.** The ability to start the unit when isolated with no support from the BES or when designed to remain energized without connection to the remainder of the System.
- R9.2.2.** The ability to energize a bus. If it is not possible to energize a bus during the test, the testing entity must affirm that the unit has the capability to energize a bus such as verifying that the breaker close coil relay can be energized with the voltage and frequency monitor controls disconnected from the synchronizing circuits.
- R9.3.** The minimum duration of each of the required tests.
- R10.** Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following: [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]
- R10.1.** System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.
- R10.2.** Restoration priorities.
- R10.3.** Building of cranking paths.
- R10.4.** Synchronizing (re-energized sections of the System).

- R11.** Each Transmission Operator, each applicable Transmission Owner, and each applicable Distribution Provider shall provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator’s restoration plan that are outside of their normal tasks. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R12.** Each Transmission Operator shall participate in its Reliability Coordinator’s restoration drills, exercises, or simulations as requested by its Reliability Coordinator. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R13.** Each Transmission Operator and each Generator Operator with a Blackstart Resource shall have written Blackstart Resource Agreements or mutually agreed upon procedures or protocols, specifying the terms and conditions of their arrangement. Such Agreements shall include references to the Blackstart Resource testing requirements. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R14.** Each Generator Operator with a Blackstart Resource shall have documented procedures for starting each Blackstart Resource and energizing a bus. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R15.** Each Generator Operator with a Blackstart Resource shall notify its Transmission Operator of any known changes to the capabilities of that Blackstart Resource affecting the ability to meet the Transmission Operator’s restoration plan within 24 hours following such change. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R16.** Each Generator Operator with a Blackstart Resource shall perform Blackstart Resource tests, and maintain records of such testing, in accordance with the testing requirements set by the Transmission Operator to verify that the Blackstart Resource can perform as specified in the restoration plan. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R16.1.** Testing records shall include at a minimum: name of the Blackstart Resource, unit tested, date of the test, duration of the test, time required to start the unit, an indication of any testing requirements not met under Requirement R9.
- R16.2.** Each Generator Operator shall provide the blackstart test results within 30 calendar days following a request from its Reliability Coordinator or Transmission Operator.
- R17.** Each Generator Operator with a Blackstart Resource shall provide a minimum of two hours of training every two calendar years to each of its operating personnel responsible for the startup of its Blackstart Resource generation units and energizing a bus. The training program shall include training on the following: *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R17.1.** System restoration plan including coordination with the Transmission Operator.
- R17.2.** The procedures documented in Requirement R14.

- R18.** Each Generator Operator shall participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator. [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]

C. Measures

- M1.** Each Transmission Operator shall have a dated, documented System restoration plan developed in accordance with Requirement R1 that has been approved by its Reliability Coordinator as shown with the documented approval from its Reliability Coordinator.
- M2.** Each Transmission Operator shall have evidence such as e-mails with receipts or registered mail receipts that it provided the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan in accordance with Requirement R2.
- M3.** Each Transmission Operator shall have documentation such as a dated review signature sheet, revision histories, e-mails with receipts, or registered mail receipts, that it has annually reviewed and submitted the Transmission Operator's restoration plan to its Reliability Coordinator in accordance with Requirement R3.
- M4.** Each Transmission Operator shall have documentation such as dated review signature sheets, revision histories, e-mails with receipts, or registered mail receipts, that it has updated its restoration plan and submitted it to its Reliability Coordinator in accordance with Requirement R4.
- M5.** Each Transmission Operator shall have documentation that it has made the latest Reliability Coordinator approved copy of its restoration plan available in its primary and backup control rooms and its System Operators prior to its implementation date in accordance with Requirement R5.
- M6.** Each Transmission Operator shall have documentation such as power flow outputs, that it has verified that its latest restoration plan will accomplish its intended function in accordance with Requirement R6.
- M7.** If there has been a Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the BES to service, each Transmission Operator involved shall have evidence such as voice recordings, e-mail, dated computer printouts, or operator logs, that it implemented its restoration plan or restoration plan strategies in accordance with Requirement R7.
- M8.** If there has been a Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the BES to service, each Transmission Operator involved in such an event shall have evidence, such as voice recordings, e-mail, dated computer printouts, or operator logs, that it resynchronized shut down areas in accordance with Requirement R8.
- M9.** Each Transmission Operator shall have documented Blackstart Resource testing requirements in accordance with Requirement R9.
- M10.** Each Transmission Operator shall have an electronic or hard copy of the training program material provided for its System Operators for System restoration training in accordance with Requirement R10.

- M11.** Each Transmission Operator, each applicable Transmission Owner, and each applicable Distribution Provider shall have an electronic or hard copy of the training program material provided to their field switching personnel for System restoration training and the corresponding training records including training dates and duration in accordance with Requirement R11.
- M12.** Each Transmission Operator shall have evidence, such as training records, that it participated in the Reliability Coordinator's restoration drills, exercises, or simulations as requested in accordance with Requirement R12.
- M13.** Each Transmission Operator and Generator Operator with a Blackstart Resource shall have the dated Blackstart Resource Agreements or mutually agreed upon procedures or protocols in accordance with Requirement R13.
- M14.** Each Generator Operator with a Blackstart Resource shall have dated documented procedures on file for starting each unit and energizing a bus in accordance with Requirement R14.
- M15.** Each Generator Operator with a Blackstart Resource shall provide evidence, such as e-mails with receipts or registered mail receipts, showing that it notified its Transmission Operator of any known changes to its Blackstart Resource capabilities within twenty-four hours of such changes in accordance with Requirement R15.
- M16.** Each Generator Operator with a Blackstart Resource shall maintain dated documentation of its Blackstart Resource test results and shall have evidence such as e-mails with receipts or registered mail receipts, that it provided these records to its Reliability Coordinator and Transmission Operator when requested in accordance with Requirement R16.
- M17.** Each Generator Operator with a Blackstart Resource shall have an electronic or hard copy of the training program material provided to its operating personnel responsible for the startup and synchronization of its Blackstart Resource generation units and a copy of its dated training records including training dates and durations showing that it has provided training in accordance with Requirement R17.
- M18.** Each Generator Operator shall have evidence, such as dated training records, that it participated in the Reliability Coordinator's restoration drills, exercises, or simulations if requested to do so in accordance with Requirement R18.

D. Compliance

- 1. Compliance Monitoring Process**
 - 1.1. Compliance Enforcement Authority**

Regional Entity.
 - 1.2. Compliance Monitoring Period and Reset Time Frame**

Not applicable.
 - 1.3. Compliance Monitoring and Enforcement Processes:**
 - Compliance Audits
 - Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The Transmission Operator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Approved restoration plan and any restoration plans in force since the last compliance audit for Requirement R1, Measure M1.
- Provided the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan for the current calendar year and three prior calendar years for Requirement R2, Measure M2.
- Submission of the Transmission Operator's annually reviewed restoration plan to its Reliability Coordinator for the current calendar year and three prior calendar years for Requirement R3, Measure M3.
- Submission of an updated restoration plan to its Reliability Coordinator for all versions for the current calendar year and the prior three years for Requirement R4, Measure M4.
- The current, restoration plan approved by the Reliability Coordinator and any restoration plans for the last three calendar years that was made available in its control rooms for Requirement R5, Measure M5.
- The verification results for the current, approved restoration plan and the previous approved restoration plan for Requirement R6, Measure M6.
- Implementation of its restoration plan or restoration plan strategies on any occasion for three calendar years if there has been a Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the BES to service for Requirement R7, Measure M7.
- Resynchronization of shut down areas on any occasion over three calendar years if there has been a Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the BES to service for Requirement R8, Measure M8.
- The verification process and results for the current Blackstart Resource testing requirements and the last previous Blackstart Resource testing requirements for Requirement R9, Measure M9.
- Actual training program materials or descriptions for three calendar years for Requirement R10, Measure M10.
- Records of participation in all requested Reliability Coordinator restoration drills, exercises, or simulations since its last compliance audit

as well as one previous compliance audit period for Requirement R12, Measure M12.

If a Transmission Operator is found non-compliant for any requirement, it shall keep information related to the non-compliance until found compliant.

The Transmission Operator, applicable Transmission Owner, and applicable Distribution provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Actual training program materials or descriptions and actual training records for three calendar years for Requirement R11, Measure M11.

If a Transmission Operator, applicable Transmission owner, or applicable Distribution Provider is found non-compliant for any requirement, it shall keep information related to the non-compliance until found compliant.

The Transmission Operator and Generator Operator with a Blackstart Resource shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Current Blackstart Resource Agreements and any Blackstart Resource Agreements or mutually agreed upon procedures or protocols in force since its last compliance audit for Requirement R13, Measure M13.

The Generator Operator with a Blackstart Resource shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Current documentation and any documentation in force since its last compliance audit on procedures to start each Blackstart Resources and for energizing a bus for Requirement R14, Measure M14.
- Notification to its Transmission Operator of any known changes to its Blackstart Resource capabilities over the last three calendar years for Requirement R15, Measure M15.
- The verification test results for the current set of requirements and one previous set for its Blackstart Resources for Requirement R16, Measure M16.
- Actual training program materials and actual training records for three calendar years for Requirement R17, Measure M17.

If a Generation Operator with a Blackstart Resource is found non-compliant for any requirement, it shall keep information related to the non-compliance until found compliant.

The Generator Operator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Records of participation in all requested Reliability Coordinator restoration drills, exercises, or simulations since its last compliance audit for Requirement R18, Measure M18.

If a Generation Operator is found non-compliant for any requirement, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	The Transmission Operator has an approved plan but failed to comply with one of the sub-requirements within the requirement.	The Transmission Operator has an approved plan but failed to comply with two of the sub-requirements within the requirement.	The Transmission Operator has an approved plan but failed to comply with three of the sub-requirements within the requirement.	The Transmission Operator does not have an approved restoration plan.
R2.	The Transmission Operator failed to provide one of the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. OR The Transmission Operator provided the information to all entities but was up to 30 calendar days late in doing so-	The Transmission Operator failed to provide two of the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. OR The Transmission Operator provided the information to all entities but was more than 30 and less than or equal to 60 calendar days late in doing so-	The Transmission Operator failed to provide three of the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. OR The Transmission Operator provided the information to all entities but was more than 60 and less than or equal to 90 calendar days late in doing so.	The Transmission Operator failed to provide four or more of the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. OR The Transmission Operator provided the information to all entities but was more than 90 calendar days late in doing so.
R3.	The Transmission Operator submitted the reviewed restoration plan or confirmation of no change within 30 calendar days after the pre-determined schedule.	The Transmission Operator submitted the reviewed restoration plan or confirmation of no change more than 30 and less than or equal to 60 calendar days after the pre-determined schedule.	The Transmission Operator submitted the reviewed restoration plan or confirmation of no change more than 60 and less than or equal to 90 calendar days after the pre-determined schedule.	The Transmission Operator submitted the reviewed restoration plan or confirmation of no change more than 90 calendar days after the pre-determined schedule.
R4.	The Transmission Operator failed to update and submit its restoration plan to the Reliability Coordinator within 90 calendar days of an unplanned change.	The Transmission Operator failed to update and submit its restoration plan to the Reliability Coordinator within more than 90 calendar days but less than 120 calendar days of an unplanned change.	The Transmission Operator has failed to update and submit its restoration plan to the Reliability Coordinator within more than 120 calendar days but less than 150 calendar days of unplanned change.	The Transmission Operator has failed to update and submit its restoration plan to the Reliability Coordinator within more than 150 calendar days of an unplanned change. OR The Transmission Operator failed to update and submit its restoration plan

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R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
				to the Reliability Coordinator prior to a planned BES modification.
R5.	N/A	N/A	N/A	The Transmission Operator did not make the latest Reliability Coordinator approved restoration plan available in its primary and backup control rooms prior to its implementation date.
R6.	The Transmission Operator performed the verification within the required timeframe but did not comply with one of the sub-requirements.	The Transmission Operator performed the verification within the required timeframe but did not comply with two of the sub-requirements.	The Transmission Operator performed the verification but did not complete it within the five calendar year period.	The Transmission Operator did not perform the verification or it took more than six calendar years to complete the verification. OR The Transmission Operator performed the verification within the required timeframe but did not comply with any of the sub-requirements.
R7.	N/A	N/A	N/A	The Transmission Operator did not implement its restoration plan following a Disturbance in which Blackstart Resources have been utilized in restoring the shut down area of the BES. Or, if the restoration plan cannot be executed as expected, the Transmission Operator did not utilize its restoration plan strategies to facilitate restoration.
R8.	N/A	N/A	N/A	The Transmission Operator resynchronized without approval of the Reliability Coordinator or not in accordance with the established procedures of the Reliability Coordinator following a Disturbance in

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R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
				which Blackstart Resources have been utilized in restoring the shut down area of the BES to service.
R9.	N/A	N/A	N/A	The Transmission Operator's Blackstart Resource testing requirements do not address one or more of the sub-requirements of Requirement R9.
R10.	The Transmission Operator's training does not address one of the sub-requirements of Requirement R10.	The Transmission Operator's training does not address two of the sub-requirements of Requirement R10.	The Transmission Operator's training does not address three or more of the sub-requirements of Requirement R10.	The Transmission Operator has not included System restoration training in its operations training program.
R11.	The Transmission Operator, applicable Transmission Owner, or applicable Distribution Provider did not train less than or equal to 10% of the personnel required by Requirement R11 within a two calendar year period.	The Transmission Operator, applicable Transmission Owner, or applicable Distribution Provider did not train more than 10% and less than or equal to 25% of the personnel required by Requirement R11 within a two calendar year period.	The Transmission Operator, applicable Transmission Owner, or applicable Distribution Provider did not train more than 25% and less than or equal to 50% of the personnel required by Requirement R11 within a two calendar year period.	The Transmission Operator, applicable Transmission Owner, or applicable Distribution Provider did not train more than 50 % of the personnel required by Requirement R11 within a two calendar year period.
R12.	N/A.	N/A	N/A	The Transmission Operator has failed to comply with a request for their participation from the Reliability Coordinator.
R13.	N/A	The Transmission Operator and Generator Operator with a Blackstart Resource do not reference Blackstart Resource Testing requirements in their written Blackstart Resource Agreements or mutually agreed upon procedures or protocols.	N/A	The Transmission Operator and Generator Operator with a Blackstart resource do not have a written Blackstart Resource Agreement or mutually agreed upon procedure or protocol.

Standard EOP-005-2 — System Restoration from Blackstart Resources

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R14.	N/A	N/A	N/A	The Generator Operator does not have documented starting and bus energizing procedures for each Blackstart Resource.
R15.	The Generator Operator with a Blackstart Resource did not notify the Transmission Operator of a change in Blackstart Resource capability affecting the ability to meet the Transmission Operator’s restoration plan within 24 hours but did make the notification within 48 hours.	The Generator Operator with a Blackstart Resource did not notify the Transmission Operator of a change in Blackstart Resource capability affecting the ability to meet the Transmission Operator’s restoration plan within 24 hours but did make the notification within 72 hours.	The Generator Operator with a Blackstart Resource did not notify the Transmission Operator of a change in Blackstart Resource capability affecting the ability to meet the Transmission Operator’s restoration plan within 24 hours but did make the notification within 96 hours.	The Generator Operator with a Blackstart Resource did not notify the Transmission Operator of a change in Blackstart Resource capability affecting the ability to meet the Transmission Operator’s restoration plan for more than 96 hours.
R16.	The Generator Operator with a Blackstart Resource did not maintain testing records for one of the requirements for a Blackstart Resource. Or did not supply the Blackstart Resource testing records as requested within 59 calendar days of the request.	The Generator Operator with a Blackstart Resource did not maintain testing records for two of the requirements for a Blackstart Resource. Or did not supply the Blackstart Resource testing records as requested for 60 days to 89 calendar days after the request.	The Generator Operator with a Blackstart Resource did not maintain testing records for three of the requirements for a Blackstart Resource. Or did not supply the Blackstart Resource testing records as requested for 90 to 119 calendar days after the request.	The Generator Operator with a Blackstart Resource did not maintain testing records for a Blackstart Resource. Or did not supply the Blackstart Resource testing records as requested for 120 days or more after the request.
R17.	The Generator Operator with a Blackstart Resource did not train less than or equal to 10% of the personnel required by Requirement R17 within a two calendar year period.	The Generator Operator with a Blackstart Resource did not train more than 10% and less than or equal to 25% of the personnel required by Requirement R17 within a two calendar year period.	The Generator Operator with a Blackstart Resource did not train more than 25% and less than or equal to 50% of the personnel required by Requirement R17 within a two calendar year period.	The Generator Operator with a Blackstart Resource did not train more than 50% of the personnel required by Requirement R17 within a two calendar year period.
R18.	N/A.	N/A	N/A	The Generator Operator has failed to comply with a request for their participation from the Reliability Coordinator.

E. Regional Variances

None.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	May 2, 2007	Approved by Board of Trustees	Revised
2	TBD	Revisions pursuant to Project 2006-03	Updated testing requirements Incorporated Attachment 1 into the requirements Updated Measures and Compliance to match new Requirements
2	August 5, 2009	Adopted by Board of Trustees	Revised

A. Introduction

1. **Title:** System Restoration Coordination
2. **Number:** EOP-006-2
3. **Purpose:** Ensure plans are established and personnel are prepared to enable effective coordination of the System restoration process to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.
4. **Applicability:**
 - 4.1. Reliability Coordinators.
5. **Proposed Effective Date:** Twenty-four months after the first day of the first calendar quarter following applicable regulatory approval. In those jurisdictions where no regulatory approval is required, all requirements go into effect twenty-four months after Board of Trustees adoption.

B. Requirements

- R1.** Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan. The scope of the Reliability Coordinator's restoration plan starts when Blackstart Resources are utilized to re-energize a shut down area of the Bulk Electric System (BES), or separation has occurred between neighboring Reliability Coordinators, or an energized island has been formed on the BES within the Reliability Coordinator Area. The scope of the Reliability Coordinator's restoration plan ends when all of its Transmission Operators are interconnected and ~~it~~ its Reliability Coordinator Area is connected to all of its neighboring Reliability Coordinator Areas. The restoration plan shall include: *[Violation Risk Factor = High] [Time Horizon = Operations Planning]*
 - R1.1.** A description of the high level strategy to be employed during restoration events for restoring the Interconnection including minimum criteria for meeting the objectives of the Reliability Coordinator's restoration plan.
 - R1.2.** Operating Processes for restoring the Interconnection.
 - R1.3.** Descriptions of the elements of coordination between individual Transmission Operator restoration plans.
 - R1.4.** Descriptions of the elements of coordination of restoration plans with neighboring Reliability Coordinators.
 - R1.5.** Criteria and conditions for reestablishing interconnections with other Transmission Operators within its Reliability Coordinator Area, with Transmission Operators in other Reliability Coordinator Areas, and with other Reliability Coordinators.
 - R1.6.** Reporting requirements for the entities within the Reliability Coordinator Area during a restoration event.
 - R1.7.** Criteria for sharing information regarding restoration with neighboring Reliability Coordinators and with Transmission Operators and Balancing Authorities within its Reliability Coordinator Area.

- R1.8.** Identification of the Reliability Coordinator as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, and to Transmission Operators, and Balancing Authorities within its Reliability Coordinator Area.
- R1.9.** Criteria for transferring operations and authority back to the Balancing Authority.
- R2.** The Reliability Coordinator shall distribute its most recent Reliability Coordinator Area restoration plan to each of its Transmission Operators and neighboring Reliability Coordinators within 30 calendar days of creation or revision. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*
- R3.** Each Reliability Coordinator shall review its restoration plan within 13 calendar months of the last review. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
- R4.** Each Reliability Coordinator shall review their neighboring Reliability Coordinator's restoration plans. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
 - R4.1.** If the Reliability Coordinator finds conflicts between its restoration plans and any of its neighbors, the conflicts shall be resolved in 30 calendar days.
- R5.** Each Reliability Coordinator shall review the restoration plans required by EOP-005 of the Transmission Operators within its Reliability Coordinator Area. *[Violation Risk Factor = Medium] [Time Horizon = Operations Planning]*
 - R5.1.** The Reliability Coordinator shall determine whether the Transmission Operator's restoration plan is coordinated and compatible with the Reliability Coordinator's restoration plan and other Transmission Operators' restoration plans within its Reliability Coordinator Area. The Reliability Coordinator shall approve or disapprove, with stated reasons, the Transmission Operator's submitted restoration plan within 30 calendar days following the receipt of the restoration plan from the Transmission Operator.
- R6.** Each Reliability Coordinator shall have a copy of its latest restoration plan and copies of the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area within its primary and backup control rooms so that it is available to all of its System Operators prior to the implementation date. *[Violation Risk Factor = Lower] [Time Horizon = Operations Planning]*
- R7.** Each Reliability Coordinator shall work with its affected Generator Operators, and Transmission Operators as well as neighboring Reliability Coordinators to monitor restoration progress, coordinate restoration, and take actions to restore the BES frequency within acceptable operating limits. If the restoration plan cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate System restoration. *[Violation Risk Factor = High] [Time Horizon = Real-time Operations]*
- R8.** The Reliability Coordinator shall coordinate or authorize resynchronizing islanded areas that bridge boundaries between Transmission Operators or Reliability

Coordinators. If the resynchronization cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate resynchronization. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]

R9. Each Reliability Coordinator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall address the following: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

R9.1. The coordination role of the Reliability Coordinator.

R9.2. Reestablishing the Interconnection.

R10. Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]

R10.1. Each Reliability Coordinator shall request each Transmission Operator identified in its restoration plan and each Generator Operator identified in the Transmission Operators' restoration plans to participate in a drill, exercise, or simulation at least every two calendar years.

C. Measures

M1. Each Reliability Coordinator shall have available a dated copy of its restoration plan in accordance with Requirement R1.

M2. Each Reliability Coordinator shall provide evidence such as e-mails with receipts, posting to a secure web site with notification to affected entities, or registered mail receipts, that its most recent restoration plan has been distributed in accordance with Requirement R2.

M3. Each Reliability Coordinator shall provide evidence such as a review signature sheet, or revision histories, that it has reviewed its restoration plan within 13 calendar months of the last review in accordance with Requirement R3.

M4. Each Reliability Coordinator shall provide evidence such as dated review signature sheets that it has reviewed its neighboring Reliability Coordinator's restoration plans and resolved any conflicts within 30 calendar days in accordance with Requirement R4.

M5. Each Reliability Coordinator shall provide evidence, such as a review signature sheet or emails, that it has reviewed, approved or disapproved, and notified its Transmission Operator's within 30 calendar days following the receipt of the restoration plan from the Transmission Operator in accordance with Requirement R5.

M6. Each Reliability Coordinator shall have documentation such as e-mail receipts that it has made the latest copy of its restoration plan and copies of the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area available in its primary and backup control rooms and to each of its System Operators prior to the implementation date in accordance with Requirement R6.

- M7.** Each Reliability Coordinator involved shall have evidence such as voice recordings, e-mail, dated computer printouts, or operator logs, that it monitored and coordinated restoration progress in accordance with Requirement R7.
- M8.** If there has been a resynchronizing of an islanded area, each Reliability Coordinator involved shall have evidence such as voice recordings, e-mail, or operator logs, that it coordinated or authorized resynchronizing in accordance with Requirement R8.
- M9.** Each Reliability Coordinator shall have an electronic or hard copy of its training records available showing that it has provided training in accordance with Requirement R9.
- M10.** Each Reliability Coordinator shall have evidence that it conducted two System restoration drills, exercises, or simulations per calendar year and that Transmission Operators and Generator Operators included in the Reliability Coordinator's restoration plan were invited in accordance with Requirement R10.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The Reliability Coordinator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The current restoration plan and any restoration plans in force since the last compliance audit for Requirement R1, Measure M1.
- Distribution of its most recent restoration plan and any restoration plans in force for the current calendar year and three prior calendar years for Requirement R2, Measure M2.
- Its reviewed restoration plan for the current review period and the last three prior review periods for Requirement R3, Measure M3.

- Reviewed copies of neighboring Reliability Coordinator restoration plans for the current calendar year and the three prior calendar years for Requirement R4, Measure M4.
- The reviewed restoration plans for the current calendar year and the last three prior calendar years for Requirement R5, Measure M5.
- The current, approved restoration plan and any restoration plans in force for the last three calendar years was made available in its control rooms for Requirement R6, Measure M6.
- If there has been a restoration event, implementation of its restoration plan on any occasion over a rolling 12 month period for Requirement R7, Measure M7.
- If there has been a resynchronization of an islanded area, implementation of its restoration plan on any occasion over a rolling 12 month period for Requirement R8, Measure M8.
- Actual training program materials or descriptions for three calendar years for Requirements R9, Measure M9.
- Records of all Reliability Coordinator restoration drills, exercises, or simulations since its last compliance audit as well as one previous compliance audit period for Requirement R10, Measure M10.

If a Reliability Coordinator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	The Reliability Coordinator failed to include one sub-requirement of Requirement R1 within its restoration plan.	The Reliability Coordinator failed to include two sub-requirements of Requirement R1 within its restoration plan.	The Reliability Coordinator failed to include three of the sub-requirements of Requirement R1 within its restoration plan.	The Reliability Coordinator failed to include four or more of the sub-requirements within its restoration plan.
R2.	The Reliability Coordinator distributed the most recent Reliability Coordinator Area restoration plan to the entities identified in Requirement R2 but was more than 30 calendar days late but less than 60 calendar days late.	The Reliability Coordinator distributed the most recent Reliability Coordinator Area restoration plan to the entities identified in Requirement R2 but was 60 calendar days or more late, but less than 90 calendar days late.	The Reliability Coordinator distributed the most recent Reliability Coordinator Area restoration plan to the entities identified in Requirement R2 but was 90 or more calendar days late but less than 120 calendar days late.	The Reliability Coordinator distributed the most recent Reliability Coordinator Area restoration plan to entities identified in Requirement R2 but was 120 calendar days or more late.
R3.	N/A	N/A	N/A	The Reliability Coordinator did not review its restoration plan within 13 calendar months of the last review.
R4.	The Reliability Coordinator did not review and resolve conflicts with the submitted restoration plans from its neighboring Reliability Coordinators within 30 calendar days but did resolve conflicts within 60 calendar days.	The Reliability Coordinator did not review and resolve conflicts with the submitted restoration plans from its neighboring Reliability Coordinators within 30 calendar days but did resolve conflicts within 90 calendar days.	–The Reliability Coordinator did not review and resolve conflicts with the submitted restoration plans from its neighboring Reliability Coordinators within 30 calendar days but did resolve conflicts within 120 calendar days.	The Reliability Coordinator did not review and resolve conflicts with the submitted restoration plans from its neighboring Reliability Coordinators within 120 calendar days.

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<p>R5.</p>	<p>The Reliability Coordinator did not review and approve/disapprove the submitted restoration plans from its Transmission Operators and neighboring Reliability Coordinators within 30 calendar days of receipt but did review and approve/disapprove the plans within 45 calendar days of receipt. OR The Reliability Coordinator failed to notify the Transmission Operator of its approval or disapproval with stated reasons for disapproval within 30 calendar days of receipt but did notify the Transmission Operator of its approval or disapproval with reasons within 45 calendar days of receipt.</p>	<p>The Reliability Coordinator did not review and approve/disapprove the submitted restoration plans from its Transmission Operators and neighboring Reliability Coordinators within 30 calendar days of receipt but did review and approve/disapprove the plans within 60 calendar days of receipt. OR The Reliability Coordinator failed to notify the Transmission Operator of its approval or disapproval with stated reasons for disapproval within 30 calendar days of receipt, but did notify the Transmission Operator of its approval or disapproval with reasons within 60 calendar days of receipt</p>	<p>The Reliability Coordinator did not review and approve/disapprove the submitted restoration plans from its Transmission Operators and neighboring Reliability Coordinators within 30 calendar days of receipt but did review and approve/disapprove the plans within 90 calendar days of receipt. OR The Reliability Coordinator failed to notify the Transmission Operator of its approval or disapproval with stated reasons for disapproval within 30 calendar days of receipt but did notify the Transmission Operator of its approval or disapproval with reasons within 90 calendar days of receipt.</p>	<p>The Reliability Coordinator did not review and approve/disapprove the submitted restoration plans from its Transmission Operators and neighboring Reliability Coordinators for more than 90 calendar days of receipt. OR The Reliability Coordinator failed to notify the Transmission Operator of its approval or disapproval with stated reasons for disapproval for more than 90 calendar days of receipt. .</p>
<p>R6.</p>	<p>The Reliability Coordinator did not make its latest restoration plan and the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area available to all of its System Operators in its primary and backup control rooms prior to the implementation date within 15 calendar days of the implementation date.</p>	<p>The Reliability Coordinator did not make its latest restoration plan and the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area available to all of its System Operators in its primary and backup control rooms within 20 calendar days of the implementation date.</p>	<p>The Reliability Coordinator did not make its latest restoration plan and the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area available to all of its System Operators in its primary and backup control rooms within 25 calendar days of the implementation date.</p>	<p>The Reliability Coordinator did not make its latest restoration plan and the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area available to all of its System Operators in its primary and backup control rooms for more than 25 calendar days after its implementation date.</p>
<p>R7.</p>	<p>N/A</p>	<p>N/A</p>	<p>N/A</p>	<p>The Reliability Coordinator did not work with its affected Generator Operators and Transmission</p>

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				Operators as well as neighboring Reliability Coordinators to monitor restoration progress, coordinate restoration, and take actions to restore the BES frequency within acceptable operating limits.
R8.	N/A	N/A	N/A	The Reliability Coordinator did not coordinate or authorize resynchronizing islanded areas that bridge boundaries between Transmission Operators or Reliability Coordinators.
R9.	N/A	. N/A	N/A	The Reliability Coordinator supplied annual System restoration training but did not address both of the sub-requirements. OR The Reliability Coordinator supplied the required System restoration training but it was over two calendar years from the last training offered.
R10.	The Reliability Coordinator only held one restoration drill, exercise, or simulation during the calendar year.	The Reliability Coordinator did not invite a Transmission Operator or Generator Operator identified in its restoration plan to participate in a drill, exercise, or simulation within two calendar years.	N/A	The Reliability Coordinator did not hold a restoration drill, exercise, or simulation during the calendar year.

E. Regional Variances

None.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Revised
2	TBD	Revisions pursuant to Project 2006-03	Updated Measures and Compliance to match new Requirements
2	August 5, 2009	Adopted by Board of Trustees	Revised

A. Introduction

- 1. Title:** Loss of Control Center Functionality
- 2. Number:** EOP-008-1
- 3. Purpose:** Ensure continued reliable operations of the Bulk Electric System (BES) in the event that a control center becomes inoperable.
- 4. Applicability:**
 - 4.1. Functional Entity**
 - 4.1.1.** Reliability Coordinator.
 - 4.1.2.** Transmission Operator.
 - 4.1.3.** Balancing Authority.
- 5. Effective Date:** The first day of the first calendar quarter twenty-four months after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, the standard shall become effective on the first day of the first calendar quarter twenty-four months after Board of Trustees adoption.

B. Requirements

- R1.** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. This Operating Plan for backup functionality shall include the following, at a minimum: [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]
 - 1.1.** The location and method of implementation for providing backup functionality for the time it takes to restore the primary control center functionality.
 - 1.2.** A summary description of the elements required to support the backup functionality. These elements shall include, at a minimum:
 - 1.2.1.** Tools and applications to ensure that System Operators have situational awareness of the BES.
 - 1.2.2.** Data communications.
 - 1.2.3.** Voice communications.
 - 1.2.4.** Power source(s).
 - 1.2.5.** Physical and cyber security.
 - 1.3.** An Operating Process for keeping the backup functionality consistent with the primary control center.
 - 1.4.** Operating Procedures, including decision authority, for use in determining when to implement the Operating Plan for backup functionality.
 - 1.5.** A transition period between the loss of primary control center functionality and the time to fully implement the backup functionality that is less than or equal to two hours.
 - 1.6.** An Operating Process describing the actions to be taken during the transition period between the loss of primary control center functionality and the time to fully implement backup functionality elements identified in Requirement R1, Part 1.2. The Operating Process shall include at a minimum:

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- 1.6.1. A list of all entities to notify when there is a change in operating locations.
 - 1.6.2. Actions to manage the risk to the BES during the transition from primary to backup functionality as well as during outages of the primary or backup functionality.
 - 1.6.3. Identification of the roles for personnel involved during the initiation and implementation of the Operating Plan for backup functionality.
- R2. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality. *[Violation Risk Factor = Lower]* *[Time Horizon = Operations Planning]*
- R3. Each Reliability Coordinator shall have a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) that provides the functionality required for maintaining compliance with all Reliability Standards that depend on primary control center functionality. To avoid requiring a tertiary facility, a backup facility is not required during: *[Violation Risk Factor = Medium]* *[Time Horizon = Operations Planning]*
 - Planned outages of the primary or backup facilities of two weeks or less
 - Unplanned outages of the primary or backup facilities
- R4. Each Balancing Authority and Transmission Operator shall have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority and Transmission Operator's primary control center functionality respectively. To avoid requiring tertiary functionality, backup functionality is not required during: *[Violation Risk Factor = Medium]* *[Time Horizon = Operations Planning]*
 - Planned outages of the primary or backup functionality of two weeks or less
 - Unplanned outages of the primary or backup functionality
- R5. Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall annually review and approve its Operating Plan for backup functionality. *[Violation Risk Factor = Lower]* *[Time Horizon = Operations Planning]*
 - 5.1. An update and approval of the Operating Plan for backup functionality shall take place within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1.
- R6. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have primary and backup functionality that do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards. *[Violation Risk Factor = Medium]* *[Time Horizon = Operations Planning]*
- R7. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates: *[Violation Risk Factor = Medium]* *[Time Horizon = Operations Planning]*
 - 7.1. The transition time between the simulated loss of primary control center functionality and the time to fully implement the backup functionality.
 - 7.2. The backup functionality for a minimum of two continuous hours.

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R8. Each Reliability Coordinator, Balancing Authority, and Transmission Operator that has experienced a loss of its primary or backup functionality and that anticipates that the loss of primary or backup functionality will last for more than six calendar months shall provide a plan to its Regional Entity within six calendar months of the date when the functionality is lost, showing how it will re-establish primary or backup functionality. [*Violation Risk Factor = Medium*] [*Time Horizon = Operations Planning*]

C. Measures

M1. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a dated, current, in force Operating Plan for backup functionality in accordance with Requirement R1, in electronic or hardcopy format.

M2. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a dated, current, in force copy of its Operating Plan for backup functionality in accordance with Requirement R2, in electronic or hardcopy format, available at its primary control center and at the location providing backup functionality.

M3. Each Reliability Coordinator shall provide dated evidence that it has a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) that provides the functionality required for maintaining compliance with all Reliability Standards that depend on primary control center functionality in accordance with Requirement R3.

M4. Each Balancing Authority and Transmission Operator shall provide dated evidence that its backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority or Transmission Operator's primary control center functionality respectively in accordance with Requirement R4.

M5. Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall have evidence that its dated, current, in force Operating Plan for backup functionality, in electronic or hardcopy format, has been reviewed and approved annually and that it has been updated within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1 in accordance with Requirement R5.

M6. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have dated evidence that its primary and backup functionality do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards in accordance with Requirement R6.

M7. Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall provide evidence such as dated records, that it has completed and documented its annual test of its Operating Plan for backup functionality, in accordance with Requirement R7.

M8. Each Reliability Coordinator, Balancing Authority, and Transmission Operator that has experienced a loss of their primary or backup functionality and that anticipates that the loss of primary or backup functionality will last for more than six calendar months shall provide evidence that a plan has been submitted to its Regional Entity within six calendar months of the date when the functionality is lost showing how it will re-establish primary or backup functionality in accordance with Requirement R8.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.3. Data Retention

The Reliability Coordinator, Balancing Authority, and Transmission Operator shall retain data or evidence to show compliance as identified unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall retain its dated, current, in force Operating Plan for backup functionality plus all issuances of the Operating Plan for backup functionality since its last compliance audit in accordance with Measurement M1.
- Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall retain a dated, current, in force copy of its Operating Plan for backup functionality, with evidence of its last issue, available at its primary control center and at the location providing backup functionality, for the current year, in accordance with Measurement M2.
- Each Reliability Coordinator shall retain dated evidence for the time period since its last compliance audit, that it has demonstrated that it has a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) in accordance with Requirement R3 that provides the functionality required for maintaining compliance with all Reliability Standards that depend on primary control center functionality in accordance with Measurement M3.
- Each Balancing Authority and Transmission Operator shall retain dated evidence for the time period since its last compliance audit, that it has demonstrated that its backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) in accordance with Requirement R4 includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority and Transmission Operator's primary control center functionality respectively in accordance with Measurement M4.
- Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall retain evidence for the time period since its last compliance audit, that its dated, current, in force Operating Plan for backup functionality, has been reviewed and approved annually and that it has been updated within sixty calendar days of any changes to any part of the Operating Plan described in Requirement R1 in accordance with Measurement M5.

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- Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall retain dated evidence for the current year and for any Operating Plan for backup functionality in force since its last compliance audit, that its primary and backup functionality do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards in accordance with Measurement M6.
- Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall retain evidence for the current year and one previous year, such as dated records, that it has tested its Operating Plan for backup functionality, in accordance with Measurement M7.
- Each Reliability Coordinator, Balancing Authority, and Transmission Operator that has experienced a loss of their primary or backup functionality and that anticipates that the loss of primary or backup functionality would last for more than six calendar months shall retain evidence for the current in force document and any such documents in force since its last compliance audit that a plan has been submitted to its Regional Entity within six calendar months of the date when the functionality is lost showing how it will re-establish primary or backup functionality in accordance with Measurement M8.

1.4. Additional Compliance Information

None.

Standard EOP-008-1 — Loss of Control Center Functionality

2. Violation Severity Levels

R#	Lower	Moderate	High	Severe
R1.	The responsible entity had a current Operating Plan for backup functionality but the plan was missing one of the requirement's six Parts (1.1 through 1.6).	The responsible entity had a current Operating Plan for backup functionality but the plan was missing two of the requirement's six Parts (1.1 through 1.6).	The responsible entity had a current Operating Plan for backup functionality but the plan was missing three or more of the requirement's six Parts (1.1 through 1.6).	The responsible entity did not have a current Operating Plan for backup functionality.
R2	N/A	The responsible entity did not have a copy of its current Operating Plan for backup functionality available in at least one of its control locations.	N/A	The responsible entity did not have a copy of its current Operating Plan for backup functionality at any of its locations.
R3.	The Reliability Coordinator has a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) in accordance with Requirement R3 but it did not provide the functionality required for maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the Reliability Coordinator that depend on the primary control center functionality and which have a Lower VRF.	The Reliability Coordinator has a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) in accordance with Requirement R3 but it did not provide the functionality required for maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the Reliability Coordinator that depend on the primary control center functionality and which have a Medium VRF.	The Reliability Coordinator has a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) in accordance with Requirement R3 but it did not provide the functionality required for maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the Reliability Coordinator that depend on the primary control center functionality and which have a High VRF.	The Reliability Coordinator does not have a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) in accordance with Requirement R3.
R4.	The responsible entity has backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) in accordance with Requirement R4 but it did not include monitoring, control, logging, and alarming sufficient for	The responsible entity has backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) in accordance with Requirement R4 but it did not include monitoring, control, logging, and alarming sufficient for	The responsible entity has backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) in accordance with Requirement R4 but it did not include monitoring, control, logging, and alarming sufficient for	The responsible entity does not have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) in accordance with Requirement R4.

Standard EOP-008-1 — Loss of Control Center Functionality

R#	Lower	Moderate	High	Severe
	maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the responsible entity that depend on the primary control center functionality and which have a Lower VRF.	maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the responsible entity that depend on the primary control center functionality and which have a Medium VRF.	maintaining compliance with one or more of the Requirements in the Reliability Standards applicable to the responsible entity that depend on the primary control center functionality and which have a High VRF.	
R5.	The responsible entity did not update and approve its Operating Plan for backup functionality for more than 60 calendar days and less than or equal to 70 calendar days after a change to any part of the Operating Plan described in Requirement R1.	The responsible entity did not update and approve its Operating Plan for backup functionality for more than 70 calendar days and less than or equal to 80 calendar days after a change to any part of the Operating Plan described in Requirement R1.	The responsible entity did not update and approve its Operating Plan for backup functionality for more than 80 calendar days and less than or equal to 90 calendar days after a change to any part of the Operating Plan described in Requirement R1.	The responsible entity did not have evidence that its dated, current, in force Operating Plan for backup functionality was annually reviewed and approved. OR, The responsible entity did not update and approve its Operating Plan for backup functionality for more than 90 calendar days after a change to any part of the Operating Plan described in Requirement R1.
R6.	N/A	The responsible entity has primary and backup functionality that do depend on each other for the control center functionality required to maintain compliance with Reliability Standards applicable for the entity that have a Lower VRF.	The responsible entity has primary and backup functionality that do depend on each other for the control center functionality required to maintain compliance with Reliability Standards applicable for the entity that have a Medium VRF.	The responsible entity has primary and backup functionality that do depend on each other for the control center functionality required to maintain compliance with Reliability Standards applicable for the entity that have a High VRF.
R7.	The responsible entity conducted an annual test of its Operating Plan for backup functionality but it did not document the results. OR, The responsible entity conducted an annual test of its Operating Plan for backup functionality but the test was for less than two continuous hours but more than or equal to 1.5 continuous hours.	The responsible entity conducted an annual test of its Operating Plan for backup functionality but the test was for less than 1.5 continuous hours but more than or equal to 1 continuous hour.	The responsible entity conducted an annual test of its Operating Plan for backup functionality but the test did not assess the transition time between the simulated loss of its primary control center and the time to fully implement the backup functionality OR, The responsible entity conducted an annual test of its Operating Plan for backup functionality but the test was	The responsible entity did not conduct an annual test of its Operating Plan for backup functionality. OR, The responsible entity conducted an annual test of its Operating Plan for backup functionality but the test was for less than 0.5 continuous hours.

Standard EOP-008-1 — Loss of Control Center Functionality

R#	Lower	Moderate	High	Severe
			for less than 1 continuous hour but more than or equal to 0.5 continuous hours.	
R8.	The responsible entity experienced a loss of its primary or backup functionality and anticipated that the loss of primary or backup functionality would last for more than six calendar months and provided a plan to its Regional Entity showing how it will re-establish primary or backup functionality but the plan was submitted more than six calendar months but less than or equal to seven calendar months after the date when the functionality was lost.	The responsible entity experienced a loss of its primary or backup functionality and anticipated that the loss of primary or backup functionality would last for more than six calendar months provided a plan to its Regional Entity showing how it will re-establish primary or backup functionality but the plan was submitted in more than seven calendar months but less than or equal to eight calendar months after the date when the functionality was lost.	The responsible entity experienced a loss of its primary or backup functionality and anticipated that the loss of primary or backup functionality would last for more than six calendar months provided a plan to its Regional Entity showing how it will re-establish primary or backup functionality but the plan was submitted in more than eight calendar months but less than or equal to nine calendar months after the date when the functionality was lost.	The responsible entity experienced a loss of its primary or backup functionality and anticipated that the loss of primary or backup functionality would last for more than six calendar months, but did not submit a plan to its Regional Entity showing how it will re-establish primary or backup functionality for more than nine calendar months after the date when the functionality was lost.

E. Regional Variances

None.

Version History

Version	Date	Action	Change Tracking
1	TBD	Revisions for Project 2006-04	Major re-write to accommodate changes noted in project file
1	April 21, 2011	FERC Order issued approving EOP-008-1 (approval effective June 27, 2011)	

A. Introduction

1. **Title:** Coordination of Plans For New Generation, Transmission, and End-User Facilities
2. **Number:** FAC-002-1
3. **Purpose:** To avoid adverse impacts on reliability, Generator Owners and Transmission Owners and electricity end-users must meet facility connection and performance requirements.
4. **Applicability:**
 - 4.1. Generator Owner
 - 4.2. Transmission Owner
 - 4.3. Distribution Provider
 - 4.4. Load-Serving Entity
 - 4.5. Transmission Planner
 - 4.6. Planning Authority
5. **(Proposed) Effective Date:** The first day of the first calendar quarter six months after applicable regulatory approval; or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter six months after Board of Trustees' adoption.

B. Requirements

- R1.** The Generator Owner, Transmission Owner, Distribution Provider, and Load-Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall each coordinate and cooperate on its assessments with its Transmission Planner and Planning Authority. The assessment shall include:
 - 1.1. Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.
 - 1.2. Ensurance of compliance with NERC Reliability Standards and applicable Regional, subregional, Power Pool, and individual system planning criteria and facility connection requirements.
 - 1.3. Evidence that the parties involved in the assessment have coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.
 - 1.4. Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance under both normal and contingency conditions in accordance with Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.
 - 1.5. Documentation that the assessment included study assumptions, system performance, alternatives considered, and jointly coordinated recommendations.
- R2.** The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected

transmission systems) for three years and shall provide the documentation to the Regional Reliability Organization(s) and NERC on request (within 30 calendar days).

C. Measures

- M1.** The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider’s documentation of its assessment of the reliability impacts of new facilities shall address all items in Reliability Standard FAC-002-0_R1.
- M2.** The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each have evidence of its assessment of the reliability impacts of new facilities and their connections on the interconnected transmission systems is retained and provided to other entities in accordance with Reliability Standard FAC-002-0_R2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Timeframe

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.4. Data Retention

Evidence of the assessment of the reliability impacts of new facilities and their connections on the interconnected transmission systems: Three years.

1.5. Additional Compliance Information

None

2. Violation Severity Levels (no changes)

E. Regional Differences

- 1. None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	January 13, 2006	Removed duplication of “Regional Reliability Organizations(s).	Errata
1	TBD	Modified to address Order No. 693 Directives contained in paragraph 693.	Revised.

A. Introduction

1. Title: Interchange Transaction Implementation

2. Number: INT-003-3

3. Purpose:

To ensure Balancing Authorities confirm Interchange Schedules with Adjacent Balancing Authorities prior to implementing the schedules in their Area Control Error (ACE) equations.

4. Applicability

4.1. Balancing Authorities.

5. Effective Date: First day of first calendar quarter after applicable regulatory approval, or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter after Board of Trustees adoption.

B. Requirements

R1. Each Receiving Balancing Authority shall confirm Interchange Schedules with the Sending Balancing Authority prior to implementation in the Balancing Authority's ACE equation. *(Violation Risk Factor: Medium)*

R1.1. The Sending Balancing Authority and Receiving Balancing Authority shall agree on Interchange as received from the Interchange Authority, including: *(Violation Risk Factor: Lower)*

R1.1.1. Interchange Schedule start and end time. *(Violation Risk Factor: Lower)*

R1.1.2. Energy profile. *(Violation Risk Factor: Lower)*

R1.2. If a high voltage direct current (HVDC) tie is on the Scheduling Path, then the Sending Balancing Authorities and Receiving Balancing Authorities shall coordinate the Interchange Schedule with the Transmission Operator of the HVDC tie. *(Violation Risk Factor: Medium)*

C. Measures

M1. Each Receiving and Sending Balancing Authority shall have and provide upon request evidence that could include, but is not limited to, interchange transaction tags, operator logs, voice recordings or transcripts of voice recordings, electronic communications, computer printouts, or other equivalent evidence that will be used to confirm that each Interchange Schedule's start and end time, and energy profile were confirmed prior to implementation in the Balancing Authority's ACE equation. (Requirement R1, R1.1, R1.1.1 & R1.1.2)

M2. Each Receiving and Sending Balancing Authority shall have and provide upon request evidence that could include, but is not limited to, interchange transaction tags, operator logs, voice recordings or transcripts of voice recordings, electronic communications, computer printouts, or other equivalent evidence that will be used to confirm that it coordinated the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in Requirement 1.2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Balancing Authority shall keep 90 days of historical data (evidence).

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Violation Severity Levels:

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	There shall be a separate Lower VSL, if either of the following conditions exists: One instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. One instance of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	There shall be a separate Moderate VSL, if either of the following conditions exists: Two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. Two instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	There shall be a separate High VSL, if either of the following conditions exists: Three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. Three instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	There shall be a separate Severe VSL, if either of the following conditions exists: Four or more instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. Four or more instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2
R1.1	The Balancing Authority experienced one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
R1.1.1	The Balancing Authority experienced one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
R1.1.2	The Balancing Authority experienced one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
R1.2	The sending or receiving Balancing Authority experienced	The sending or receiving Balancing Authority experienced	The sending or receiving Balancing Authority experienced	The sending or receiving Balancing Authority experienced

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
	one instance of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	two instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	three instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	four instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2

E. Regional Differences

[MISO Energy Flow Information Waiver](#) dated July 16, 2003.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
1	May 2, 2006	Adopted by Board of Trustees	Revised
2	November 1, 2006	Adopted by Board of Trustees	Revised
3	November 5, 2009	Added approved VRFs and VSLs to document. Removed MISO Scheduling Agent Waiver, and MISO Enhanced Scheduling Agent Waiver (Project 2009-18).	Revised
3	November 5, 2009	Approved by the Board of Trustees	
3	January 6, 2011	Approved by FERC	

A. Introduction

1. **Title:** **Interchange Authority Distributes Arranged Interchange**
2. **Number:** INT-005-3
3. **Purpose:** To ensure that the implementation of Interchange between Source and Sink Balancing Authorities is distributed by an Interchange Authority such that Interchange information is available for reliability assessments.
4. **Applicability:**
 - 4.1. Interchange Authority.
5. **Effective Date:** July 1, 2010

B. Requirements

- R1. Prior to the expiration of the time period defined in the timing requirements tables in this standard, Column A, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment to all reliability entities involved in the Interchange.
 - R1.1. When a Balancing Authority or Reliability Coordinator initiates a Curtailment to Confirmed or Implemented Interchange for reliability, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment only to the Source Balancing Authority and the Sink Balancing Authority.

C. Measures

- M1. For each Arranged Interchange, the Interchange Authority shall be able to provide evidence that it has distributed the Arranged Interchange information to all reliability entities involved in the Interchange within the applicable time frame.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Time Frame

The Performance-Reset Period shall be twelve months from the last non-compliance to Requirement 1.

1.3. Data Retention

The Interchange Authority shall keep 90 days of historical data. The Compliance Monitor shall keep audit records for a minimum of three calendar years.

1.4. Additional Compliance Information

Each Interchange Authority shall demonstrate compliance to the Compliance Monitor within the first year that this standard becomes effective or the first year the entity commences operation by self-certification to the Compliance Monitor.

Subsequent to the initial compliance review, compliance may be:

1.4.1 Verified by audit at least once every three years.

1.4.2 Verified by spot checks in years between audits.

1.4.3 Verified by annual audits of noncompliant Interchange Authorities, until compliance is demonstrated.

1.4.4 Verified at any time as the result of a specific complaint of failure to perform R1. Complaints must be lodged within 60 days of the incident. The Compliance Monitor will evaluate complaints.

Each Interchange Authority shall make the following available for inspection by the Compliance Monitor upon request:

1.4.5 For compliance audits and spot checks, relevant data and system log records for the audit period which indicate the Interchange Authority’s distribution of all Arranged Interchange information to all reliability entities involved in an Interchange. The Compliance Monitor may request up to a three month period of historical data ending with the date the request is received by the Interchange Authority.

1.4.6 For specific complaints, only those data and system log records associated with the specific Interchange event contained in the complaint which indicate that the Interchange Authority distributed the Arranged Interchange information to all reliability entities involved in that specific Interchange.

2. Levels of Non-Compliance

2.1. Level 1: One occurrence¹ of not distributing information to all involved reliability entities as described in R1.

2.2. Level 2: Two occurrences¹ of not distributing information to all involved reliability entities as described in R1.

2.3. Level 3: Three occurrences¹ of not distributing information to all involved reliability entities as described in R1.

2.4. Level 4: Four or more occurrences¹ of not distributing information to all involved reliability entities as described in R1 or no evidence provided.

E. Regional Differences

None

Version History

Version	Date	Action	Change Tracking
1	May 2, 2006	Approved by BOT	New
2	May 2, 2007	Approved by BOT	Revised
3	April 8, 2010	Approved by FERC, Effective July 1, 2010	

¹ This does not include instances of not distributing information due to extenuating circumstances approved by the Compliance Monitor.

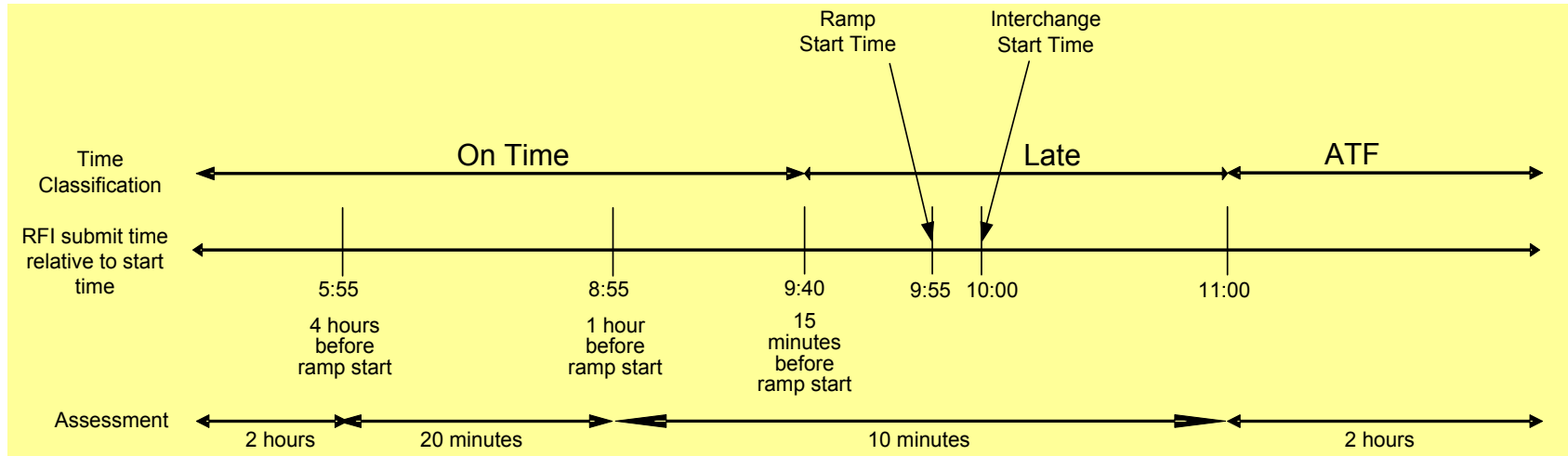
Timing Requirements for all Interconnections except WECC



		A	B	C	D
If Arranged Interchange (RFI) ² is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the RFI start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<15 minutes prior to ramp start and ≤1 hour after the RFI start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥1 hour to < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 20 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

² Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for all Interconnections except WECC

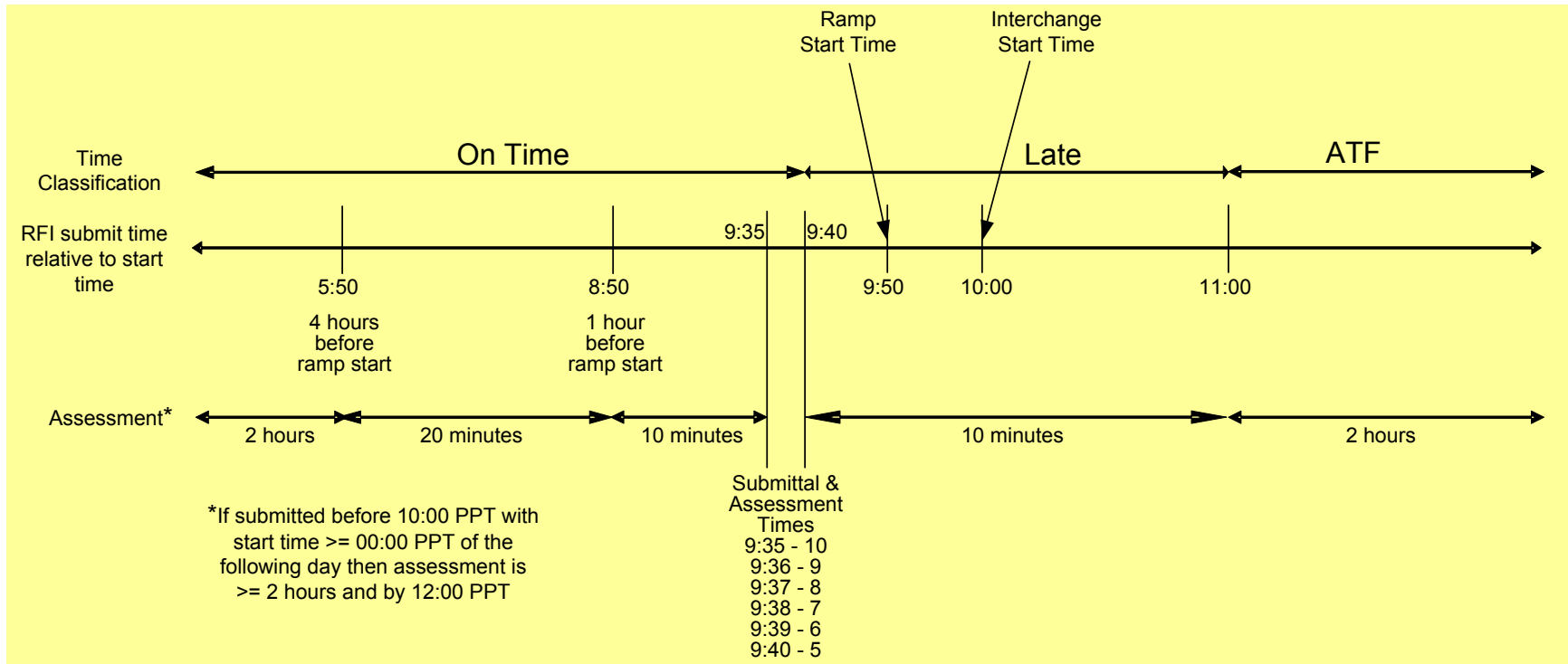


Timing Requirements for WECC

		A	B	C	D
If Arranged Interchange (RFI)³ is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<10 minutes prior to ramp start and ≤1 hour after the start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
10 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 5 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
11 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 6 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
12 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 7 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
13 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 8 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
14 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 9 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥ 1 hour and < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	< 20 minutes from Arranged interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start
Submitted before 10:00 PPT with start time ≥ 00:00 PPT of following day	On-time	≤ 1 minute from RFI submission	By 12:00 PPT of day the Arranged Interchange was received by the IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

³ Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for WECC



A. Introduction

1. **Title:** **Response to Interchange Authority**
2. **Number:** INT-006-3
3. **Purpose:** To ensure that each Arranged Interchange is checked for reliability before it is implemented.
4. **Applicability:**
 - 4.1. Balancing Authority.
 - 4.2. Transmission Service Provider.
5. **Effective Date:** July 1, 2010

B. Requirements

- R1. Prior to the expiration of the reliability assessment period defined in the timing requirements tables in this standard, Column B, the Balancing Authority and Transmission Service Provider shall respond to each On-time Request for Interchange (RFI), and to each Emergency RFI and Reliability Adjustment RFI from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.¹
 - R1.1. Each involved Balancing Authority shall evaluate the Arranged Interchange with respect to:
 - R1.1.1. Energy profile (ability to support the magnitude of the Interchange).
 - R1.1.2. Ramp (ability of generation maneuverability to accommodate).
 - R1.1.3. Scheduling path (proper connectivity of Adjacent Balancing Authorities).
 - R1.2. Each involved Transmission Service Provider shall confirm that the transmission service arrangements associated with the Arranged Interchange have adjacent Transmission Service Provider connectivity, are valid and prevailing transmission system limits will not be violated.

C. Measures

- M1. The Balancing Authority and Transmission Service Provider shall each provide evidence that it responded, relative to transitioning an Arranged Interchange to a Confirmed Interchange, to each On-time Request for Interchange (RFI), and to each Emergency RFI or Reliability Adjustment RFI from an Interchange Authority within the reliability assessment period defined in the Timing Table, Column B. The Balancing Authority and Transmission Service Provider need not provide evidence that it responded to any other requests.

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**
Regional Reliability Organization.
 - 1.2. **Compliance Monitoring Period and Reset Time Frame**
The Performance-Reset Period shall be twelve months from the last non-compliance to Requirement 1.

¹ The Balancing Authority and Transmission Service Provider need not provide responses to any other requests.

1.3. Data Retention

The Balancing Authority and Transmission Service Provider shall each keep 90 days of historical data. The Compliance Monitor shall keep audit records for a minimum of three calendar years.

1.4. Additional Compliance Information

The Balancing Authority and Transmission Service Provider shall demonstrate compliance to the Compliance Monitor within the first year that this standard becomes effective or the first year the entity commences operation by self-certification to the Compliance Monitor.

Subsequent to the initial compliance review, compliance may be:

- 1.4.1 Verified by audit at least once every three years.
- 1.4.2 Verified by spot checks in years between audits.
- 1.4.3 Verified by annual audits of non-compliant Interchange Authorities, until compliance is demonstrated.
- 1.4.4 Verified at any time as the result of a complaint. Complaints must be lodged within 60 days of the incident. The Compliance Monitor will evaluate complaints.

The Balancing Authority, and Transmission Service Provider shall make the following available for inspection by the Compliance Monitor upon request:

- 1.4.5 For compliance audits and spot checks, relevant data and system log records and agreements for the audit period which indicate a reliability entity identified in R1 responded to all instances of the Interchange Authority's communication under Reliability Standard INT-005 Requirement 1 concerning the pending transition of an Arranged Interchange to Confirmed Interchange. The Compliance Monitor may request up to a three month period of historical data ending with the date the request is received by the Balancing Authority, or Transmission Service Provider.
- 1.4.6 For specific complaints, agreements and those data and system log records associated with the specific Interchange event contained in the complaint which indicates a reliability entity identified in R1 has responded to the Interchange Authority's communication under INT-005 R1 concerning the pending transition of Arranged Interchange to Confirmed Interchange for that specific Interchange.

2. Levels of Non-Compliance

- 2.1. **Level 1:** One occurrence² of not responding to the Interchange Authority as described in R1.
- 2.2. **Level 2:** Two occurrences¹ of not responding to the Interchange Authority as described in R1.
- 2.3. **Level 3:** Three occurrences¹ of not responding to the Interchange Authority as described in R1.

² This does not include instances of not responding due to extenuating circumstances approved by the Compliance Monitor.

- 2.4. Level 4:** Four or more occurrences¹ of not responding to the Interchange Authority as described in R1 or no evidence provided.

E. Regional Differences

None.

Version History

Version	Date	Action	Change Tracking
1	May 2, 2006	Approved by BOT	New
2	May 2, 2007	Approved by BOT	Revised
3	April 8, 2010	Approved by FERC, Effective July 1, 2010	

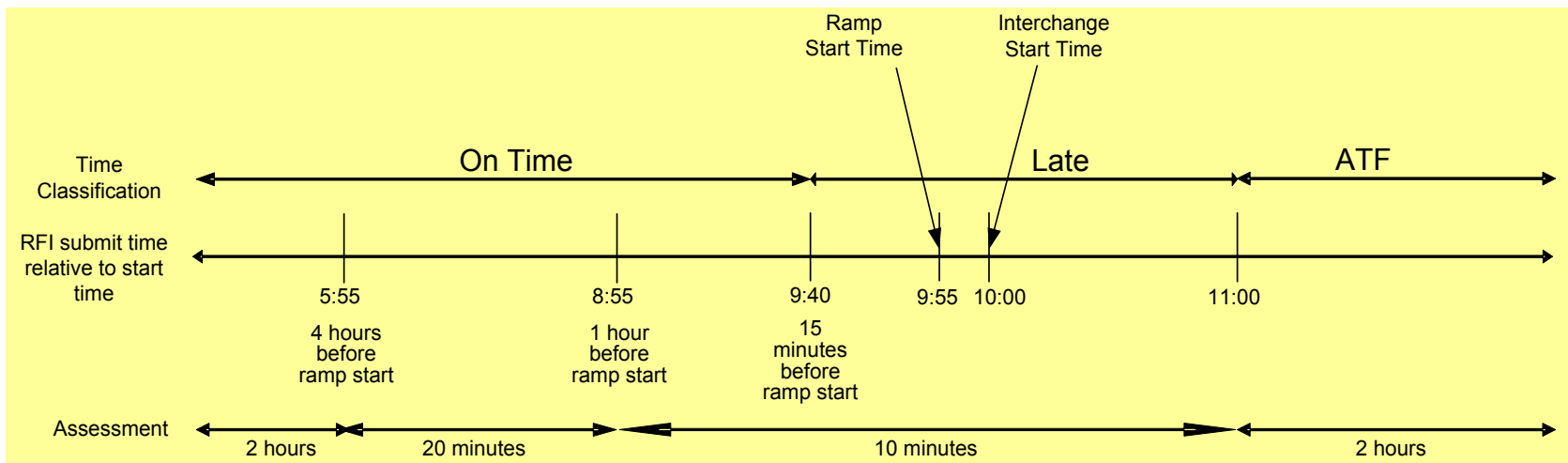
Timing Requirements for all Interconnections except WECC



		A	B	C	D
If Arranged Interchange (RFI) ³ is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the RFI start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<15 minutes prior to ramp start and ≤1 hour after the RFI start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥1 hour to < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 20 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

³ Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for all Interconnections except WECC

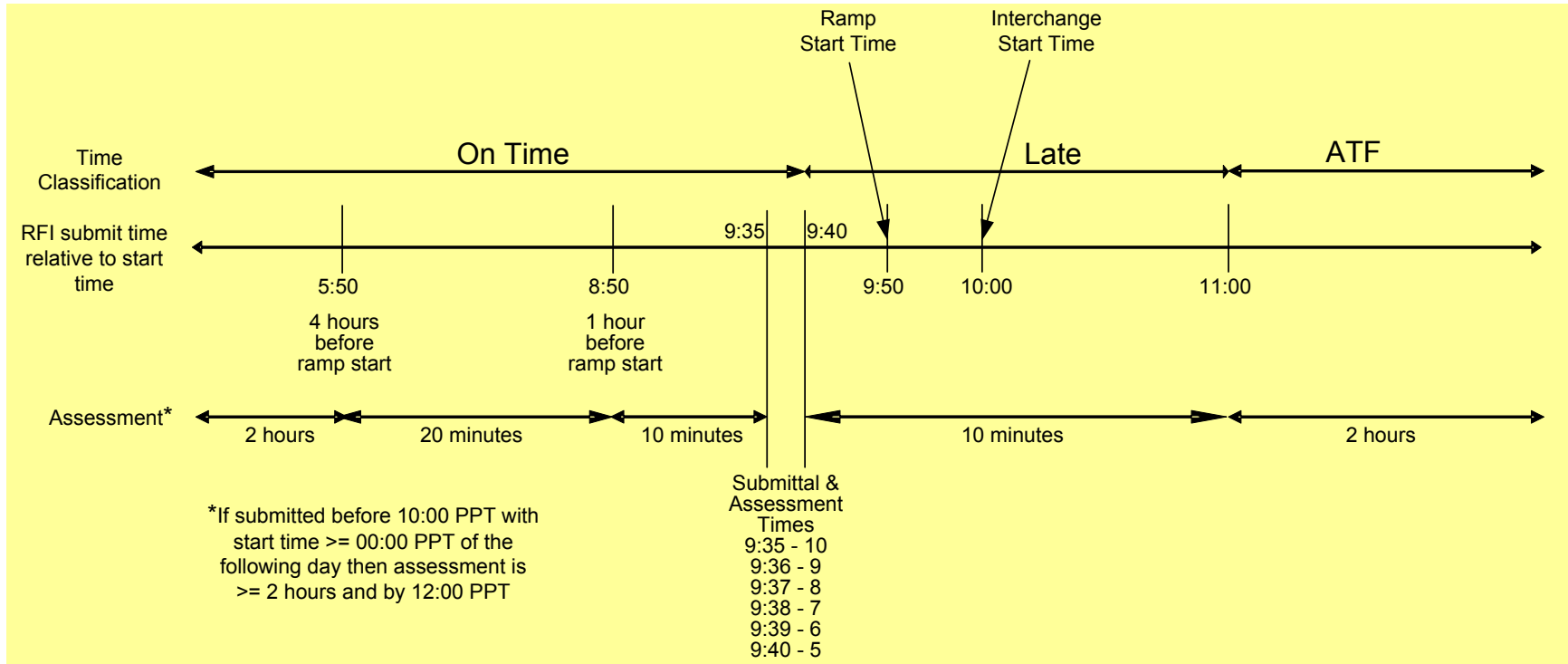


Timing Requirements for WECC

		A	B	C	D
If Arranged Interchange (RFI)⁴ is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<10 minutes prior to ramp start and ≤1 hour after the start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
10 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 5 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
11 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 6 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
12 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 7 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
13 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 8 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
14 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 9 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥ 1 hour and < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	< 20 minutes from Arranged interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start
Submitted before 10:00 PPT with start time ≥ 00:00 PPT of following day	On-time	≤ 1 minute from RFI submission	By 12:00 PPT of day the Arranged Interchange was received by the IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

⁴ Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for WECC



A. Introduction

1. **Title:** **Interchange Authority Distributes Status**
2. **Number:** INT-008-3
3. **Purpose:** To ensure that the implementation of Interchange between Source and Sink Balancing Authorities is coordinated by an Interchange Authority.
4. **Applicability:**
 - 4.1. Interchange Authority.
5. **Effective Date:** July 1, 2010

B. Requirements

- R1. Prior to the expiration of the time period defined in the Timing Table, Column C, the Interchange Authority shall distribute to all Balancing Authorities (including Balancing Authorities on both sides of a direct current tie), Transmission Service Providers and Purchasing-Selling Entities involved in the Arranged Interchange whether or not the Arranged Interchange has transitioned to a Confirmed Interchange.
 - R1.1. For Confirmed Interchange, the Interchange Authority shall also communicate:
 - R1.1.1. Start and stop times, ramps, and megawatt profile to Balancing Authorities.
 - R1.1.2. Necessary Interchange information to NERC-identified reliability analysis services.

C. Measures

- M1. For each Arranged Interchange, the Interchange Authority shall provide evidence that it has distributed the final status and Confirmed Interchange information specified in Requirement 1 to all Balancing Authorities, Transmission Service Providers and Purchasing-Selling Entities involved in the Arranged Interchange within the time period defined in the Timing Table, Column C. If denied, the Interchange Authority shall tell all involved parties that approval has been denied.
 - M1.1 For each Arranged Interchange that includes a direct current tie, the Interchange Authority shall provide evidence that it has communicated the final status to the Balancing Authorities on both sides of the direct current tie, even if the Balancing Authorities are neither the Source nor Sink for the Interchange.

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**

Regional Reliability Organization.
 - 1.2. **Compliance Monitoring Period and Reset Time Frame**

The Performance-Reset Period shall be twelve months from the last non-compliance to R1.
 - 1.3. **Data Retention**

The Interchange Authority shall keep 90 days of historical data. The Compliance Monitor shall keep audit records for a minimum of three calendar years.

1.4. Additional Compliance Information

Each Interchange Authority shall demonstrate compliance to the Compliance Monitor within the first year that this standard becomes effective or the first year the entity commences operation by self-certification to the Compliance Monitor.

Subsequent to the initial compliance review, compliance will be:

- 1.4.1** Verified by audit at least once every three years.
- 1.4.2** Verified by spot checks in years between audits.
- 1.4.3** Verified by annual audits of noncompliant Interchange Authorities, until compliance is demonstrated.
- 1.4.4** Verified at any time as the result of a complaint. Complaints must be lodged within 60 days of the incident. Complaints will be evaluated by the Compliance Monitor.

Each Interchange Authority shall make the following available for inspection by the Compliance Monitor upon request:

- 1.4.5** For compliance audits and spot checks, relevant data and system log records for the audit period which indicate the Interchange Authority's distribution of all Arranged Interchange final status and Confirmed Interchange information to all entities involved in an Interchange per R1. The Compliance Monitor may request up to a three-month period of historical data ending with the date the request is received by the Interchange Authority
- 1.4.6** For specific complaints, only those data and system log records associated with the specific Interchange event contained in the complaint which indicate that the Interchange Authority distributed the Arranged Interchange final status and Confirmed Interchange information to all entities involved in that specific Interchange.

2. Levels of Non-Compliance

- 2.1. Level 1:** One occurrence¹ of not distributing final status and information as described in R1.
- 2.2. Level 2:** Two occurrences¹ of not distributing final status and information as described in R1.
- 2.3. Level 3:** Three occurrences¹ of not distributing final status and information as described in R1.

¹ This does not include instances of not distributing information due to extenuating circumstances approved by the Compliance Monitor.

2.4. Level 4: Four or more occurrences¹ of not distributing final status and information as described in R1 or no evidence provided.

E. Regional Differences

None.

Version History

Version	Date	Action	Change Tracking
1	May 2, 2006	Approved by BOT	New
2	May 2, 2007	Approved by BOT	Revised
3	April 8, 2010	Approved by FERC, Effective July 1, 2010	

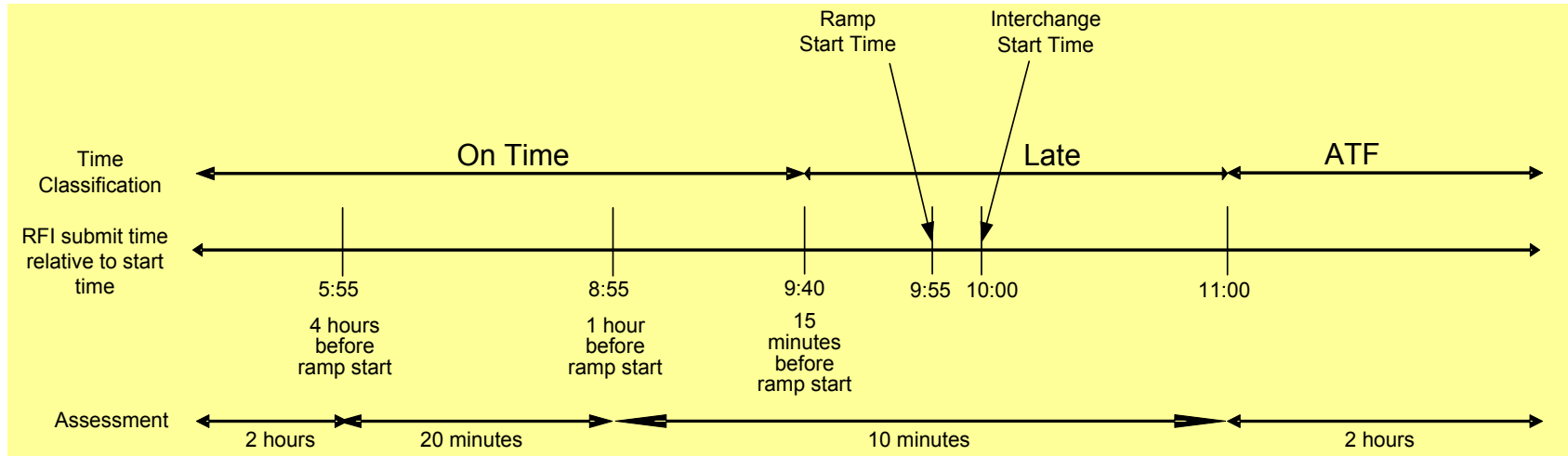
Timing Requirements for all Interconnections except WECC



		A	B	C	D
If Arranged Interchange (RFI) ² is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the RFI start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<15 minutes prior to ramp start and ≤1 hour after the RFI start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥1 hour to < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 20 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

² Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for all Interconnections except WECC

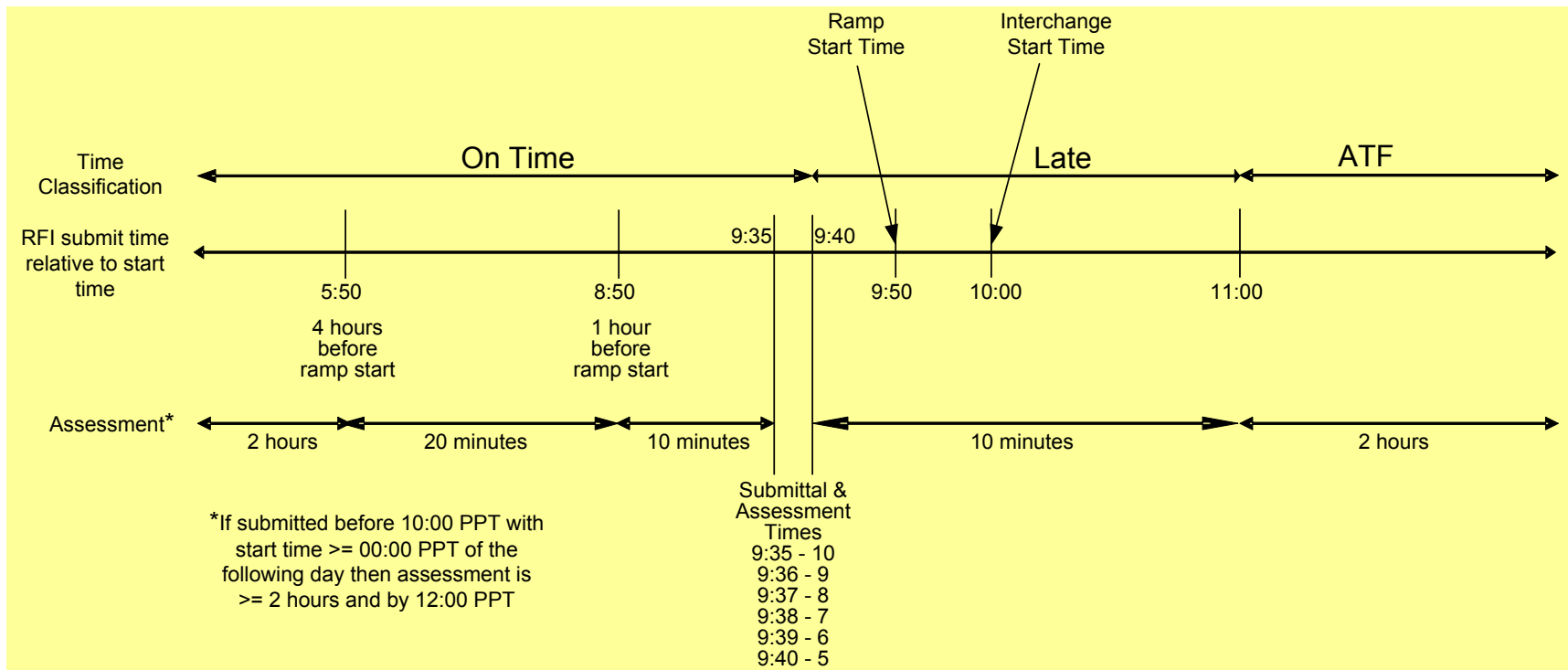


Timing Requirements for WECC

		A	B	C	D
If Arranged Interchange (RFI)³ is Submitted	IA Assigned Time Classification	IA Makes Initial Distribution of Arranged Interchange	BA and TSP Conduct Reliability Assessments	IA Compiles and Distributes Status	BA Prepares Confirmed Interchange for Implementation
>1 hour after the start time	ATF	≤ 1 minute from RFI submission	Entities have up to 2 hours to respond.	≤ 1 minute from receipt of all Reliability Assessments	NA
<10 minutes prior to ramp start and ≤1 hour after the start time	Late	≤ 1 minute from RFI submission	Entities have up to 10 minutes to respond.	≤ 1 minute from receipt of all Reliability Assessments	≤ 3 minutes after receipt of confirmed RFI
10 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 5 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
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<1 hour and ≥ 15 minutes prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 10 minutes from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 3 minutes prior to ramp start
≥ 1 hour and < 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	< 20 minutes from Arranged interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 39 minutes prior to ramp start
≥ 4 hours prior to ramp start	On-time	≤ 1 minute from RFI submission	≤ 2 hours from Arranged Interchange receipt from IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start
Submitted before 10:00 PPT with start time ≥ 00:00 PPT of following day	On-time	≤ 1 minute from RFI submission	By 12:00 PPT of day the Arranged Interchange was received by the IA	≤ 1 minute from receipt of all Reliability Assessments	≥ 1 hour 58 minutes prior to ramp start

³ Time Classifications and deadlines apply to both initial Arranged Interchange submittal and any subsequent modifications to the Arranged Interchange.

Example of Timing Requirements for WECC



A. Introduction

1. **Title:** **Reliability Coordination — Facilities**
2. **Number:** IRO 002-2
3. **Purpose:** Reliability Coordinators need information, tools and other capabilities to perform their responsibilities.
4. **Applicability**
 - 4.1. Reliability Coordinators.
5. **Proposed Effective Date:**

In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after Board of Trustee adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1.** Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time emergency condition.
- R2.** Each Reliability Coordinator — or its Transmission Operators and Balancing Authorities — shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network.
- R3.** Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection.
- R4.** Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure.
- R5.** Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.
- R6.** Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays.

- R7.** Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and IROL monitoring and derivations continue if the main monitoring system is unavailable.
- R8.** Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.

C. Measures

- M1.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a document that lists its voice communications facilities with Transmission Operators, Balancing Authorities and Generator Operators within its Reliability Coordinator Area and with neighboring Reliability Coordinators, that will be used to confirm that it has communication facilities in accordance with Requirements 1 and 3.
- M2.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a data-link facility description document, computer print-out, training-document, or other equivalent evidence that will be used to confirm that it has data links with entities within its Reliability Coordinator Area and with neighboring Reliability Coordinators, as specified in Requirements 1 and 3.
- M3.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, SCADA data collection system communications performance or equivalent evidence to demonstrate that it has real-time monitoring capability of its Reliability Coordinator Area and monitoring capability of its surrounding Reliability Coordinator Areas to identify potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations.
- M4.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, documentation from suppliers, operating and planning staff training documents, examples of studies, or other equivalent evidence to show that it has analysis tools in accordance with Requirement 6.
- M5.** Each Reliability Coordinator shall provide evidence such as equipment specifications, operating procedures, staff records of their involvement in training, or other equivalent evidence to show that it has a backup monitoring facility that can be used to identify and monitor SOLs and IROLs. (Requirement 7)
- M6.** Each Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, a documented procedure or equivalent evidence that will be used to confirm that the Reliability Coordinator has the authority to veto planned outages to analysis tools, including final approvals for planned maintenance as specified in Requirement 8 Part 1.
- M7.** Each Reliability Coordinator shall have and provide upon request its current procedures used to mitigate the effects of analysis tool outages as specified in Requirement 8 Part 2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance.
Monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Reliability Coordinator shall have current in-force documents used to show compliance with Measures 1 through 7.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Violation Severity Levels:

Requirement	Lower	Moderate	High	Severe
R1	The Reliability Coordinator has demonstrated communication facilities for both voice and data exist to all appropriate entities and that they are staffed and available but they are less than adequate.	The Reliability Coordinator has failed to demonstrate that is has: 1) Voice communication links with one appropriate entity or 2) Data links with one appropriate entity.	The Reliability Coordinator has failed to demonstrate that is has: 1) Voice communication links with two appropriate entities or 2) Data links with two appropriate entities.	The Reliability Coordinator has failed to demonstrate that is has: 1) Voice communication links with more than two appropriate entities or 2) Data links with more than two appropriate entities or 3) Communication facilities are not staffed or 4) Communication facilities are not ready.
R2	N/A	The Reliability Coordinator or designated Transmission Operator and Balancing Authority has failed to demonstrate it provided or arranged provision for the exchange of data with one of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.	The Reliability Coordinator or designated Transmission Operator and Balancing Authority has failed to demonstrate it provided or arranged provision for the exchange of data with two of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.	The Reliability Coordinator or designated Transmission Operator and Balancing Authority has failed to demonstrate it provided or arranged provision for the exchange of data with three of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.
R3	N/A	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to one of the Transmission Operators and Balancing Authorities in its Reliability Coordinator Area and with neighboring Reliability Coordinators.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to two or more of the Transmission Operators and Balancing Authorities in its Reliability Coordinator Area and with neighboring Reliability Coordinators.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to all of the Transmission Operators and Balancing Authorities in its Reliability Coordinator Area and with all neighboring Reliability Coordinators.

Requirement	Lower	Moderate	High	Severe
R4	The Reliability Coordinator's monitoring systems provide information in a way that is not easily understood and interpreted by the Reliability Coordinator's operating personnel or particular emphasis was not given to alarm management and awareness systems, automated data transfers and synchronized information systems.	The Reliability Coordinator has failed to demonstrate that is has detailed real-time monitoring capabilities in its Reliability Coordinator Area and sufficient monitoring capabilities of its surrounding Reliability Coordinator Areas to ensure that one potential or actual SOL or IROL violation is not identified.	The Reliability Coordinator has failed to demonstrate that is has detailed real-time monitoring capabilities in its Reliability Coordinator Area and sufficient monitoring capabilities of its surrounding Reliability Coordinator Areas to ensure that two or more potential and actual SOL and IROL violations are not identified.	The Reliability Coordinator has failed to demonstrate that is has detailed real-time monitoring capabilities in its Reliability Coordinator Area and sufficient monitoring capabilities of its surrounding Reliability Coordinator Areas to ensure that all potential and actual SOL and IROL violations are identified.
R5	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements that could result in one SOL violations or 2) or operating reserves for a small portion of the Reliability Authority Area.	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing one IROL or to system restoration, 2) the status, real power flow or reactive power flow of Bulk Electric System elements that could result in multiple SOL violations, or 3) operating reserves.	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing two or more IROLs; or one IROL and to system restoration, 2) the status, real power flow or reactive power flow of Bulk Electric System elements that could result in multiple SOL violations and operating reserves, or 3) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing one IROL or system restoration and operating reserves.	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing all IROLs and to system restoration, or 2) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing all SOL violations and operating reserves.

Requirement	Lower	Moderate	High	Severe
R6	<p>The Reliability Coordinator failed to demonstrate that it has:</p> <ol style="list-style-type: none"> 1) analysis tools capable of assessing all pre-contingency flows, 2) analysis tools capable of assessing all post-contingency flows, or 3) all necessary wide-area overview displays exist. 	<p>The Reliability Coordinator failed to demonstrate that it has:</p> <ol style="list-style-type: none"> 1) analysis tools capable of assessing the majority of pre-contingency flows, 2) analysis tools capable of assessing the majority of post-contingency flows, or 3) the majority of necessary wide-area overview displays exist. 	<p>The Reliability Coordinator failed to demonstrate that it has:</p> <ol style="list-style-type: none"> 1) analysis tools capable of assessing a minority of pre-contingency flows, 2) analysis tools capable of assessing a minority of post-contingency flows, or 3) a minority of necessary wide-area overview displays exist. 	<p>The Reliability Coordinator failed to demonstrate that it has:</p> <ol style="list-style-type: none"> 1) analysis tools capable of assessing any pre-contingency flows, 2) analysis tools capable of assessing any post-contingency flows, or 3) any necessary wide-area overview displays exist.
R7	<p>The Reliability Coordinator failed to demonstrate that:</p> <ol style="list-style-type: none"> 1) it or a delegated entity monitored SOLs when the main monitoring system was unavailable or 2) it has provisions to monitor SOLs when the main monitoring system is not available. 	<p>The Reliability Coordinator failed to demonstrate that:</p> <ol style="list-style-type: none"> 1) it or a delegated entity monitored one IROL when the main monitoring system was unavailable or 2) it has provisions to monitor one IROL when the main monitoring system is not available. 	<p>The Reliability Coordinator failed to demonstrate that:</p> <ol style="list-style-type: none"> 1) it or a delegated entity monitored two or more IROLs when the main monitoring system was unavailable, 2) it or a delegated entity monitored SOLs and one IROL when the main monitoring system was unavailable 3) it has provisions to monitor two or more IROLs when the main monitoring system is not available, or 4) it has provisions to monitor SOLs and one IROL when the main monitoring system was unavailable. 	<p>R9. The Reliability Coordinator failed to demonstrate that it continuously monitored its Reliability Authority Area.</p>

Requirement	Lower	Moderate	High	Severe
R8	Reliability Coordinator has approval rights for planned maintenance outages of analysis tools but does not have approval rights for work on analysis tools that creates a greater risk of an unplanned outage of the tools.	Reliability Coordinator has approval rights for planned maintenance but does not have plans to mitigate the effects of outages of the analysis tools.	Reliability Coordinator has approval rights for planned maintenance but does not have plans to mitigate the effects of outages of the analysis tools and does not have approval rights for work on analysis tools that creates a greater risk of an unplanned outage of the tools.	Reliability Coordinator approval is not required for planned maintenance.

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Revised
2		Deleted R2, M3 and associated compliance elements Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) Corrected typographical errors in BOT approved version of VSLs	Revised
2	October 17, 2008	Adopted by NERC Board of Trustees	
2	March 23, 2011	Order issued by FERC approving IRO-002-2 (approval effective 5/23/11)	

A. Introduction

- 1. Title:** **Reliability Coordination — Operations Planning**
- 2. Number:** IRO-004-2
- 3. Purpose:** Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions. System studies must be conducted to highlight potential interface and other operating limits, including overloaded transmission lines and transformers, voltage and stability limits, etc. Plans must be developed to alleviate System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) violations.
- 4. Applicability**
 - 4.1.** Balancing Authorities.
 - 4.2.** Transmission Operators.
 - 4.3.** Transmission Service Providers.
- 5. Effective Date:** In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1.** Each Transmission Operator, Balancing Authority, and Transmission Service Provider shall comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events.

C. Measures

- M1.** None

D. Compliance

1. Compliance Monitoring Process

Entities will be selected for an on-site audit at least every three years. For a selected 30-day period in the previous three calendar months prior to the on site audit, Reliability Coordinators will be asked to provide documentation showing that next-day reliability analyses were conducted each day to ensure the bulk power system could be operated in anticipated normal and Contingency conditions; and that they identified potential interface and other operating limits including overloaded transmission lines and transformers, voltage and stability limits, etc.

- 1.1. Compliance Monitoring Responsibility**
- 1.2. Compliance Monitoring Period and Reset Time Frame**
- 1.3. Data Retention**
- 1.4. Additional Compliance Information**

2. Violation Severity Levels

Requirement	Lower	Moderate	High	Severe
R1	The responsible entity failed to comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events on one (1) occasion during a calendar month.	The responsible entity failed to comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events on two (2) to three (3) occasions during a calendar month.	The responsible entity failed to comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events on four (4) to five (5) occasions during a calendar month.	The responsible entity failed to comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events on more than five (5) occasions during a calendar month.

E. Regional Variances

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1		Replaced Levels of Non-compliance with the February 28, 2008 BOT approved Violation Severity Levels Retired R1 through R6, and associated Measures, Data Retention, and VSLs	Revision
2	October 17, 2008	Adopted by NERC Board of Trustees	Revision
2	March 17, 2011	FERC Order issued approving IRO-004-2 (Clarification issued on July 13, 2011)	Revision

A. Introduction

- 1. Title:** **Reliability Coordination — Current Day Operations**
- 2. Number:** IRO-005-2a
- 3. Purpose:** The Reliability Coordinator must be continuously aware of conditions within its Reliability Coordinator Area and include this information in its reliability assessments. The Reliability Coordinator must monitor Bulk Electric System parameters that may have significant impacts upon the Reliability Coordinator Area and neighboring Reliability Coordinator Areas.
- 4. Applicability**
 - 4.1.** Reliability Coordinators.
 - 4.2.** Balancing Authorities.
 - 4.3.** Transmission Operators.
 - 4.4.** Transmission Service Providers.
 - 4.5.** Generator Operators.
 - 4.6.** Load-Serving Entities.
 - 4.7.** Purchasing-Selling Entities.
- 5. Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1.** Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:
 - R1.1.** Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.
 - R1.2.** Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
 - R1.3.** Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
 - R1.4.** System real and reactive reserves (actual versus required).
 - R1.5.** Capacity and energy adequacy conditions.
 - R1.6.** Current ACE for all its Balancing Authorities.
 - R1.7.** Current local or Transmission Loading Relief procedures in effect.
 - R1.8.** Planned generation dispatches.
 - R1.9.** Planned transmission or generation outages.
 - R1.10.** Contingency events.
- R2.** Each Reliability Coordinator shall be aware of all Interchange Transactions that wheel through, source, or sink in its Reliability Coordinator Area, and make that Interchange Transaction information available to all Reliability Coordinators in the Interconnection.

- R3.** As portions of the transmission system approach or exceed SOLs or IROLs, the Reliability Coordinator shall work with its Transmission Operators and Balancing Authorities to evaluate and assess any additional Interchange Schedules that would violate those limits. If a potential or actual IROL violation cannot be avoided through proactive intervention, the Reliability Coordinator shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall ensure all resources, including load shedding, are available to address a potential or actual IROL violation.
- R4.** Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.
- R5.** Each Reliability Coordinator shall identify the cause of any potential or actual SOL or IROL violations. The Reliability Coordinator shall initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall be able to utilize all resources, including load shedding, to address an IROL violation.
- R6.** Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.
- R7.** The Reliability Coordinator shall disseminate information within its Reliability Coordinator Area, as required.
- R8.** Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.
- R9.** The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.
- R10.** As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.
- R11.** The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.
- R12.** Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission

Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.

- R13.** Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or non-action in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the Interconnection. In instances where there is a difference in derived limits, the Reliability Coordinator and its Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.
- R14.** Each Reliability Coordinator shall make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view. The Transmission Service Providers shall respect these SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.
- R15.** Each Reliability Coordinator who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.
- R16.** Each Reliability Coordinator shall confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. The Reliability Coordinator shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.
- R17.** When an IROL or SOL is exceeded, the Reliability Coordinator shall evaluate the local and wide-area impacts, both real-time and post-contingency, and determine if the actions being taken are appropriate and sufficient to return the system to within IROL in thirty minutes. If the actions being taken are not appropriate or sufficient, the Reliability Coordinator shall direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.

C. Measures

- M1.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, a prepared report specifically detailing compliance to each of the bullets in Requirement 1, EMS availability, SCADA data collection system communications performance or equivalent evidence that will be used to confirm that it monitors the Reliability Coordinator Area parameters specified in Requirements 1.1 through 1.9.
- M2.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Historical Tag Archive information, Interchange Transaction records, computer printouts, voice recordings or transcripts of voice recordings or equivalent evidence that will be used to confirm that it was aware of and made Interchange Transaction information available to all other Reliability Coordinators, as specified in Requirement 2.
- M3.** If a potential or actual IROL violation occurs, the Reliability Coordinator involved in the event shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications, system

event logs, operator action notes or equivalent evidence that will be used to determine if it initiated control actions or emergency procedures to relieve that IROL violation within 30 minutes. (Requirement 3 Part 2 and Requirement 5)

- M4.** If one of its Balancing Authorities has insufficient operating reserves, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to computer printouts, operating logs, voice recordings or transcripts of voice recordings, or equivalent evidence that will be used to determine if the Reliability Coordinator directed and, if needed, assisted the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. (Requirement 4 Part 2 and Requirement 10)
- M5.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to determine if it informed Transmission Operators and Balancing Authorities of Geo-Magnetic Disturbance (GMD) forecast information and provided assistance as needed in the development of any required response plans. (Requirement 6)
- M6.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it disseminated information within its Reliability Coordinator Area in accordance with Requirement 7.
- M7.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, computer printouts, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it monitored system frequency and Balancing Authority performance and directed any necessary rebalancing, as specified in Requirement 8 Part 1.
- M8.** The Transmission Operators and Balancing Authorities shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it utilized all resources, including firm load shedding, as directed by its Reliability Coordinator, to relieve an emergent condition. (Requirement 8 Part 2)
- M9.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, voice recordings or transcripts of voice recordings, electronic communications, operator logs or equivalent evidence that will be used to determine if it coordinated with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations including the coordination of pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities and Generator Operators. (Requirement 9 Part 1)
- M10.** If a large Area Control Error has occurred, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it identified sources of the Area Control Errors, and initiated corrective actions with the appropriate Balancing Authority if the problem was within the Reliability Coordinator's Area (Requirement 11 Part 1)
- M11.** If a Special Protection System is armed and that system could have had an inter-area impact, the Reliability Coordinator shall have and provide upon request evidence that could include,

but is not limited to, agreements with their Transmission Operators, procedural documents, operator logs, computer analysis, training modules, training records or equivalent evidence that will be used to confirm that it was aware of the impact of that Special Protection System on inter-area flows. (Requirement 12)

- M12.** If there is an instance where there is a disagreement on a derived limit, the Reliability Coordinator, Transmission Operator, Balancing Authority, Generator Operator, Load-serving Entity, Purchasing-selling Entity and Transmission Service Provider involved in the disagreement shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings, electronic communications or equivalent evidence that will be used to determine if it operated to the most limiting parameter. (Part 2 of Requirement 13)
- M13.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, procedural documents, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it provided SOL and IROL information to Transmission Service Providers within its Reliability Coordinator Area. (Requirement 14, Part 1)
- M14.** The Transmission Service Providers shall have and provide upon request evidence that could include, but is not limited to, procedural documents, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it respected the SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.(Requirement 14 Part 2)
- M15.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it issued alerts when it foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area, to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area as specified in Requirement 15 Part 1.
- M16.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that upon receiving information such as an SOL or IROL violation, loss of reactive reserves, etc. it disseminated the information to its impacted Transmission Operators and Balancing Authorities as specified in Requirement 15 Part 2.
- M17.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it notified all impacted Transmission Operators, Balancing Authorities and Reliability Coordinators when a transmission problem has been mitigated. (Requirement 15 Part 3)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

For Measures 1 and 11, each Reliability Coordinator shall have its current in-force documents as evidence.

For Measures 2–10 and Measure 13, and Measures 15 through 16, the Reliability Coordinator shall keep 90 days of historical data (evidence).

For Measure 8, the Transmission Operator and Balancing Authority shall keep 90 days of historical data (evidence).

For Measure 12, the Reliability Coordinator, Transmission Operator, Balancing Authority, and Transmission Service Provider shall keep 90 days of historical data (evidence).

For Measure 14, the Transmission Service Provider shall keep 90 days of historical data (evidence).

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for a Transmission Operator, Balancing Authority, Generator Operator, Load-serving Entity, Purchasing-selling Entity and Transmission Service Provider

2.1. Level 1: Not applicable.

2.2. Level 2: Not applicable.

- 2.3. **Level 3:** Not applicable.
- 2.4. **Level 4:** There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:
 - 2.4.1 Did not follow the Reliability Coordinator's directives in accordance with R8 Part 2).
 - 2.4.2 Did not operate to the most limiting parameter when a difference in derived limits existed. (R13 Part 2)
- 3. **Levels of Non-Compliance for a Reliability Coordinator:**
 - 3.1. **Level 1:** Not applicable.
 - 3.2. **Level 2:** Did not make Interchange Transaction information available to all other Reliability Coordinators in the Interconnection. (Requirement 2)
 - 3.3. **Level 3:** There shall be a separate Level 3 non-compliance, for every one of the following requirements that is in violation:
 - 3.3.1 Did not communicate to each of its Balancing Authorities and Transmission Operators to make them aware of GMD forecast information or did not assist in the development of any required response plans to a predicted GMD. (Requirement 6)
 - 3.3.2 Did not disseminate information within its Reliability Coordinator Area. (Requirement 7)
 - 3.4. **Level 4:** There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:
 - 3.4.1 Does not meet one or more of the requirements as specified in requirement 1 (Requirements 1.1 through R1.9)
 - 3.4.2 Did not make Interchange Transaction information available to all other Reliability Coordinators. (Requirement 2)
 - 3.4.3 Did not initiate control actions or emergency procedures to relieve an IROL violation without delay, and no longer than 30 minutes. (Requirement 3 Part 2 and Requirement 5)
 - 3.4.4 Did not direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. (Requirement 4 Part 2)
 - 3.4.5 Did not monitor the system frequency or each of its Balancing Authorities performance or did not direct rebalancing to return to DCS and CPS compliance. (Requirement 8 Part 1)
 - 3.4.6 Did not coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations. (Requirement 9)
 - 3.4.7 When it identified a source of large Area Control Errors, it did not initiate corrective actions with the appropriate Balancing Authority if the problem was inside its Reliability Coordinator Area. (Requirement 11 part 1)
 - 3.4.8 Did not provide evidence that it was aware of the impact of the operation of a Special Protection System on inter-area flows. (Requirement 12)

- 3.4.9** Did not operate to the most limiting parameter when a difference in derived limits existed. (Requirement 13 Part 2)
- 3.4.10** Did not provide Transmission Service Providers with SOLs or IROLs (within the Reliability Coordinator’s wide-area view) (Requirement 14 Part 1)
- 3.4.11** Did not issue alerts when it foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area. (Requirement 15)

4. Levels of Non-Compliance for a Transmission Service Provider

- 4.1. Level 1:** Not applicable.
- 4.2. Level 2:** Not applicable.
- 4.3. Level 3:** Not applicable.
- 4.4. Level 4:** There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation:
 - 4.4.1** Did not operate to the most limiting parameter when a difference in derived limits existed. (R13 Part 2)
 - 4.4.2** Did not respect the SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.(Requirement 14 Part 2)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	February 2, 2006	Approved by Board of Trustees	Revised
2	August 31, 2006	Added three items that were inadvertently left out to “Applicability” section: 4.5 Generator Operators. 4.6 Load-Serving Entities. 4.7 Purchasing-Selling Entities	Errata
2	November 1, 2006	Approved by Board of Trustees	Revised
2	June 26, 2007	Approved by FERC: Missing Measures and Compliance Elements	Revised
2a	November 5, 2009	Added Appendix 1 – Interpretation of R12 approved by BOT on November 5, 2009	Interpretation
2a	April 21, 2011	FERC Order issued approving Interpretation (approval effective May 26, 2011)	Interpretation

Appendix 1

Requirement Number and Text of Requirement

TOP-005-1 Requirement R3

Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.

The above-referenced Attachment 1 — TOP-005-0 specifies the following data as item 2.6: New or degraded special protection systems. [Underline added for emphasis.]

IRO-005-1 Requirement R12

R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected. [Underline added for emphasis.]

PRC-012-0 Requirements R1 and R1.3

R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:

R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.

Background Information for Interpretation

The TOP-005-1 standard focuses on two key obligations. The first key obligation (Requirement R1) is a “responsibility mandate.” Requirement R1 establishes who is responsible for the obligation to provide operating data “required” by a Reliability Coordinator within the framework of the Reliability Coordinator requirements defined in the IRO standards. The second key obligation (Requirement R3) is a “performance mandate.” Requirement R3 defines the obligation to provide data “requested” by other reliability entities that is needed “to perform assessments and to coordinate operations.”

The Attachment to TOP-005-1 is provided as a guideline of what “can be shared.” The Attachment is not an obligation of “what must be shared.” Enforceable NERC Requirements must be explicitly contained within a given Standard’s approved requirements. In this case, the standard only requires data “upon request.” If a Reliability Coordinator or other reliability entity were to request data such as listed in the Attachment, then the entity being asked would be mandated by Requirements R1 and R3 to provide that data (including item 2.6, whether it is or is not in some undefined “degraded” state).

IRO-002-1 requires the Reliability Coordinator to have processes in place to support its reliability

obligations (Requirement R2). Requirement R4 mandates that the Reliability Coordinator have communications processes in place to meet its reliability obligations, and Requirement R5 et al mandate the Reliability Coordinator to have the tools to carry out these reliability obligations.

IRO-003-2 (Requirements R1 and R2) requires the Reliability Coordinator to monitor the state of its system.

IRO-004-1 requires that the Reliability Coordinator carry out studies to identify Interconnection Reliability Operating Limits (Requirement R1) and to be aware of system conditions via monitoring tools and information exchange.

IRO-005-1 mandates that each Reliability Coordinator monitor predefined base conditions (Requirement R1), collect additional data when operating limits are or may be exceeded (Requirement R3), and identify actual or potential threats (Requirement R5). The basis for that request is left to each Reliability Coordinator. The Purpose statement of IRO-005-1 focuses on the Reliability Coordinator's obligation to be aware of conditions that may have a "significant" impact upon its area and to communicate that information to others (Requirements R7 and R9). Please note: it is from this communication that Transmission Operators and Balancing Authorities would either obtain or would know to ask for SPS information from another Transmission Operator.

The IRO-005-1 (Requirement R12) standard implies that degraded is a condition that will result in a failure to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

Conclusion

The TOP-005-1 standard does not provide, nor does it require, a definition for the term "degraded."

The IRO-005-1 (R12) standard implies that degraded is a condition that will result in a failure of an SPS to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed, then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

To request a formal definition of the term degraded, the Reliability Standards Development Procedure requires the submittal of a Standards Authorization Request.

A. Introduction

1. **Title:** **Reliability Coordination — Current Day Operations**
2. **Number:** IRO-005-3a
3. **Purpose:** The Reliability Coordinator must be continuously aware of conditions within its Reliability Coordinator Area and include this information in its reliability assessments. The Reliability Coordinator must monitor Bulk Electric System parameters that may have significant impacts upon the Reliability Coordinator Area and neighboring Reliability Coordinator Areas.
4. **Applicability**
 - 4.1. Reliability Coordinators.
 - 4.2. Balancing Authorities.
 - 4.3. Transmission Operators.
 - 4.4. Transmission Service Providers.
 - 4.5. Generator Operators.
 - 4.6. Load-Serving Entities.
 - 4.7. Purchasing-Selling Entities.
5. **Effective Date:**

In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1. Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:
 - R1.1. Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.
 - R1.2. Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
 - R1.3. Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
 - R1.4. System real and reactive reserves (actual versus required).
 - R1.5. Capacity and energy adequacy conditions.
 - R1.6. Current ACE for all its Balancing Authorities.

- R1.7.** Current local or Transmission Loading Relief procedures in effect.
- R1.8.** Planned generation dispatches.
- R1.9.** Planned transmission or generation outages.
- R1.10.** Contingency events.
- R2.** Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.
- R3.** Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.
- R4.** The Reliability Coordinator shall disseminate information within its Reliability Coordinator Area, as required.
- R5.** Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.
- R6.** The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.
- R7.** As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.
- R8.** The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.
- R9.** Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.
- R10.** In instances where there is a difference in derived limits, the Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.
- R11.** The Transmission Service Provider shall respect SOLs and IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.

- R12.** Each Reliability Coordinator who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.

C. Measures

- M1.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, Energy Management System description documents, computer printouts, a prepared report specifically detailing compliance to each of the bullets in Requirement 1, EMS availability, SCADA data collection system communications performance or equivalent evidence that will be used to confirm that it monitors the Reliability Coordinator Area parameters specified in Requirements 1.1 through 1.9.
- M2.** If one of its Balancing Authorities has insufficient operating reserves, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to computer printouts, operating logs, voice recordings or transcripts of voice recordings, or equivalent evidence that will be used to determine if the Reliability Coordinator directed and, if needed, assisted the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. (Requirement 2 and Requirement 7)
- M3.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to determine if it informed Transmission Operators and Balancing Authorities of Geo-Magnetic Disturbance (GMD) forecast information and provided assistance as needed in the development of any required response plans. (Requirement 3)
- M4.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it disseminated information within its Reliability Coordinator Area in accordance with Requirement 4.
- M5.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, computer printouts, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it monitored system frequency and Balancing Authority performance and directed any necessary rebalancing, as specified in Requirement 5 Part 1.
- M6.** The Transmission Operators and Balancing Authorities shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it utilized all resources, including firm load shedding, as directed by its Reliability Coordinator, to relieve an emergent condition. (Requirement 5 Part 2)
- M7.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, voice recordings or transcripts of voice recordings, electronic communications, operator logs or equivalent evidence that will be used to determine if it coordinated with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations including the coordination of pending generation and transmission maintenance

outages with Transmission Operators, Balancing Authorities and Generator Operators. (Requirement 6 Part 1)

- M8.** If a large Area Control Error has occurred, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, Hot Line recordings, electronic communications or equivalent evidence that will be used to determine if it identified sources of the Area Control Errors, and initiated corrective actions with the appropriate Balancing Authority if the problem was within the Reliability Coordinator's Area (Requirement 8 Part 1)
- M9.** If a Special Protection System is armed and that system could have had an inter-area impact, the Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, agreements with their Transmission Operators, procedural documents, operator logs, computer analysis, training modules, training records or equivalent evidence that will be used to confirm that it was aware of the impact of that Special Protection System on inter-area flows. (Requirement 9)
- M10.** If there is an instance where there is a disagreement on a derived limit, the Transmission Operator, Balancing Authority, Generator Operator, Load-serving Entity, Purchasing-selling Entity and Transmission Service Provider involved in the disagreement shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings, electronic communications or equivalent evidence that will be used to determine if it operated to the most limiting parameter. (Part 2 of Requirement 10)
- M11.** The Transmission Service Providers shall have and provide upon request evidence that could include, but is not limited to, procedural documents, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it respected the SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes. (Requirement 11 Part 2)
- M12.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it issued alerts when it foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area, to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area as specified in Requirement 12 Part 1.
- M13.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that upon receiving information such as an SOL or IROL violation, loss of reactive reserves, etc. it disseminated the information to its impacted Transmission Operators and Balancing Authorities as specified in Requirement 12 Part 2.
- M14.** The Reliability Coordinator shall have and provide upon request evidence that could include, but is not limited to, operator logs, voice recordings or transcripts of voice recordings, electronic communications or equivalent evidence that will be used to confirm that it notified all impacted Transmission Operators, Balancing Authorities and Reliability Coordinators when a transmission problem has been mitigated. (Requirement 12 Part 3)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

For Measures 1 and 9, each Reliability Coordinator shall have its current in-force documents as evidence.

For Measures 2–8 and Measures 12 through 13, the Reliability Coordinator shall keep 90 days of historical data (evidence).

For Measure 6, the Transmission Operator and Balancing Authority shall keep 90 days of historical data (evidence).

For Measure 10, the Transmission Operator, Balancing Authority, and Transmission Service Provider shall keep 90 days of historical data (evidence).

For Measure 11, the Transmission Service Provider shall keep 90 days of historical data (evidence).

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Violation Severity Levels:

Requirement	Lower	Moderate	High	Severe
R1	The Reliability Coordinator failed to monitor one (1) of the elements listed in IRO-005-1 R1.1 through R1.10.	The Reliability Coordinator failed to monitor two (2) of the elements listed in IRO-005-1 R1.1 through R1.10.	The Reliability Coordinator failed to monitor three (3) of the elements listed in IRO-005-1 R1.1 through R1.10.	The Reliability Coordinator failed to monitor more than three (3) of the elements listed in IRO-005-1 R1.1 through R1.10.
R1.1	The Reliability Coordinator failed to monitor the current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.	N/A	N/A	N/A
R1.2	The Reliability Coordinator failed to monitor current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan’s viability and scope.	N/A	N/A	N/A

Requirement	Lower	Moderate	High	Severe
R1.3	The Reliability Coordinator failed to monitor current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	N/A	N/A	N/A
R1.4	The Reliability Coordinator failed to monitor system real and reactive reserves (actual versus required).	N/A	N/A	N/A
R1.5	The Reliability Coordinator failed to monitor capacity and energy adequacy conditions.	N/A	N/A	N/A
R1.6	The Reliability Coordinator failed to monitor current ACE for all its Balancing Authorities.	N/A	N/A	N/A
R1.7	The Reliability Coordinator failed to monitor current local or Transmission Loading Relief procedures in effect.	N/A	N/A	N/A
R1.8	The Reliability Coordinator failed to monitor planned generation dispatches.	N/A	N/A	N/A
R1.9	The Reliability Coordinator failed to monitor planned transmission or generation outages.	N/A	N/A	N/A

Requirement	Lower	Moderate	High	Severe
R1.10	The Reliability Coordinator failed to monitor contingency events.	N/A	N/A	N/A
R2	N/A	The Reliability Coordinator failed to direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities.	The Reliability Coordinator failed to issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.	The Reliability Coordinator failed to monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves was provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements.
R3	N/A	N/A	The Reliability Coordinator ensured its Transmission Operators and Balancing Authorities were aware of Geo-Magnetic Disturbance (GMD) forecast information, but failed to assist, when needed, in the development of any required response plans.	The Reliability Coordinator failed to ensure its Transmission Operators and Balancing Authorities were aware of Geo-Magnetic Disturbance (GMD) forecast information.
R4	N/A	N/A	N/A	The Reliability Coordinator failed to disseminate information within its Reliability Coordinator Area, when required.

Requirement	Lower	Moderate	High	Severe
R5	N/A	N/A	The Reliability Coordinator monitored system frequency and its Balancing Authorities' performance but failed to direct any necessary rebalancing to return to CPS and DCS compliance.	The Reliability Coordinator failed to monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance or the responsible entity failed to utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.

Requirement	Lower	Moderate	High	Severe
R6	N/A	The Reliability Coordinator coordinated with Transmission Operators, Balancing Authorities, and Generator Operators, as needed, to develop action plans to mitigate potential or actual SOL, CPS, or DCS violations but failed to implement said plans, or the Reliability Coordinator coordinated pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in the real-time reliability analysis timeframe but failed to coordinate pending generation and transmission maintenance outages in the next-day reliability analysis timeframe.	The Reliability Coordinator failed to coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations, or the Reliability Coordinator failed to coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real-time and next-day reliability analysis timeframes.	The Reliability Coordinator failed to coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations and the Reliability Coordinator failed to coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real-time and next-day reliability analysis timeframes.
R7	N/A	N/A	N/A	The Reliability Coordinator failed to assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities, when necessary.

Requirement	Lower	Moderate	High	Severe
R8	N/A	The Reliability Coordinator identified sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange and discussed corrective actions with the appropriate Balancing Authority but failed to direct the Balancing Authority to comply with CPS and DCS.	The Reliability Coordinator identified sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange but failed to discuss corrective actions with the appropriate Balancing Authority.	The Reliability Coordinator failed to identify sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange.
R9	N/A	N/A	N/A	The Reliability Coordinator failed to be aware of the impact on inter-area flows of an inter-Balancing Authority or inter-Transmission Operator, following the operation of a Special Protection System that is armed (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation), or the Transmission Operator failed to immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.

Requirement	Lower	Moderate	High	Severe
R10	N/A	N/A	N/A	The responsible entity failed to operate the Bulk Electric System to the most limiting parameter in instances where there was a difference in derived limits.
R11	N/A	N/A	N/A	The Transmission Service Provider failed to respect SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.
R12	N/A	The Reliability Coordinator failed to notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem had been mitigated.	N/A	The Reliability Coordinator who foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area failed to issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area, or the receiving Reliability Coordinator failed to disseminate this information to its impacted Transmission Operators and Balancing Authorities.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1		Retired R2, R3, R5; modified R9, R13 and R14; retired R16 and R17 Retired M2 and M3; modified M9 and M12; retired M13 Made conforming changes to data retention Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs) Retired VSLs associated with R2, R3, R5, R16 and R17; Modified VSLs associated with R9 and R13, and R14	Revised
2	November 1, 2006	Approved by the Board of Trustees	
2	January 1, 2007	Effective Date	
2a	November 5, 2009	Approved by the Board of Trustees	
3	October 17, 2008	Approved by the Board of Trustees	
3	March 23, 2011	Order issued by FERC approving IRO-005-3 (approval effective 5/23/11)	
3a	April 21, 2011	Added FERC approved Interpretation	

Appendix 1

Requirement Number and Text of Requirement
<p>TOP-005-1 Requirement R3</p> <p>Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.</p> <p style="text-align: center;"><i>The above-referenced Attachment 1 — TOP-005-0 specifies the following data as item 2.6: New or <u>degraded</u> special protection systems. [Underline added for emphasis.]</i></p> <p>IRO-005-1 Requirement R12¹</p> <p>R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any <u>degradation</u> or potential failure to operate as expected. [Underline added for emphasis.]</p> <p>PRC-012-0 Requirements R1 and R1.3</p> <p>R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:</p> <p style="padding-left: 40px;">R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.</p>
Background Information for Interpretation
<p>The TOP-005-1 standard focuses on two key obligations. The first key obligation (Requirement R1) is a “responsibility mandate.” Requirement R1 establishes who is responsible for the obligation to provide operating data “required” by a Reliability Coordinator within the framework of the Reliability Coordinator requirements defined in the IRO standards. The second key obligation (Requirement R3) is a “performance mandate.” Requirement R3 defines the obligation to provide data “requested” by other reliability entities that is needed “to perform assessments and to coordinate operations.”</p> <p>The Attachment to TOP-005-1 is provided as a guideline of what “can be shared.” The Attachment is not an obligation of “what must be shared.” Enforceable NERC Requirements must be explicitly contained within a given Standard’s approved requirements. In this case, the standard only requires data “upon request.” If a Reliability Coordinator or other reliability entity were to request data such as listed in the Attachment, then the entity being asked would be mandated by Requirements R1 and R3 to provide that</p>

¹ In the current version of the Standard (IRO-005-3a), this requirement is R9.

data (including item 2.6, whether it is or is not in some undefined “degraded” state).

IRO-002-1 requires the Reliability Coordinator to have processes in place to support its reliability obligations (Requirement R2). Requirement R4 mandates that the Reliability Coordinator have communications processes in place to meet its reliability obligations, and Requirement R5 et al mandate the Reliability Coordinator to have the tools to carry out these reliability obligations.

IRO-003-2 (Requirements R1 and R2) requires the Reliability Coordinator to monitor the state of its system.

IRO-004-1 requires that the Reliability Coordinator carry out studies to identify Interconnection Reliability Operating Limits (Requirement R1) and to be aware of system conditions via monitoring tools and information exchange.

IRO-005-1 mandates that each Reliability Coordinator monitor predefined base conditions (Requirement R1), collect additional data when operating limits are or may be exceeded (Requirement R3), and identify actual or potential threats (Requirement R5). The basis for that request is left to each Reliability Coordinator. The Purpose statement of IRO-005-1 focuses on the Reliability Coordinator’s obligation to be aware of conditions that may have a “significant” impact upon its area and to communicate that information to others (Requirements R7 and R9). Please note: it is from this communication that Transmission Operators and Balancing Authorities would either obtain or would know to ask for SPS information from another Transmission Operator.

The IRO-005-1 (Requirement R12) standard implies that degraded is a condition that will result in a failure to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

Conclusion

The TOP-005-1 standard does not provide, nor does it require, a definition for the term “degraded.”

The IRO-005-1 (R12) standard implies that degraded is a condition that will result in a failure of an SPS to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed, then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

To request a formal definition of the term degraded, the Reliability Standards Development Procedure requires the submittal of a Standards Authorization Request.

A. Introduction

1. **Title:** Reliability Coordination — Transmission Loading Relief (TLR)
2. **Number:** IRO-006-5
3. **Purpose:** To ensure coordinated action between Interconnections when implementing Interconnection-wide transmission loading relief procedures to prevent or manage potential or actual SOL and IROL exceedances to maintain reliability of the bulk electric system.
4. **Applicability:**
 - 4.1. Reliability Coordinator.
 - 4.2. Balancing Authority.
5. **Proposed Effective Date:** First day of the first calendar quarter following the date this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required; the standard becomes effective on the first day of the first calendar quarter after the date this standard is approved by the NERC Board of Trustees.

B. Requirements

- R1. Each Reliability Coordinator and Balancing Authority that receives a request pursuant to an Interconnection-wide transmission loading relief procedure (such as Eastern Interconnection TLR, WECC Unscheduled Flow Mitigation, or congestion management procedures from the ERCOT Protocols) from any Reliability Coordinator, Balancing Authority, or Transmission Operator in another Interconnection to curtail an Interchange Transaction that crosses an Interconnection boundary shall comply with the request, unless it provides a reliability reason to the requestor why it cannot comply with the request. [*Violation Risk Factor: High*] [*Time Horizon: Real-time Operations*]

C. Measures

- M1. Each Reliability Coordinator and Balancing Authority shall provide evidence (such as dated logs, voice recordings, Tag histories, and studies, in electronic or hard copy format) that, when a request to curtail an Interchange Transaction crossing an Interconnection boundary pursuant to an Interconnection-wide transmission loading relief procedure was made from another Reliability Coordinator, Balancing Authority, or Transmission Operator in that other Interconnection, it complied with the request or provided a reliability reason why it could not comply with the request (R1).

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Enforcement Authority**

Regional Entity.
 - 1.2. **Compliance Monitoring and Enforcement Processes:**

The following processes may be used:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.3. Data Retention

The Reliability Coordinator and Balancing Authority shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Reliability Coordinator and Balancing Authority shall maintain evidence to show compliance with R1 for the most recent twelve calendar months plus the current month.
- If a Reliability Coordinator or Balancing Authority is found non-compliant, it shall keep information related to the non-compliance until found compliant or for the duration specified above, whichever is longer.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1				<p>The responsible entity received a request to curtail an Interchange Transaction crossing an Interconnection boundary pursuant to an Interconnection-wide transmission loading relief procedure from a Reliability Coordinator, Balancing Authority, or Transmission Operator, but the entity neither complied with the request, nor provided a reliability reason why it could not comply with the request.</p>

E. Variances

None.

F. Associated Documents

None.

G. Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	August 8, 2005	Revised Attachment 1	Revision
3	February 26, 2007	Revised Purpose and Attachment 1 related to NERC NAESB split of the TLR procedure	Revision
4	October 23, 2007	Completed NERC/NAESB split	Revision
5	TBD	Removed Attachment 1 and made into a new standard, eliminated unnecessary requirements.	Revision
5	November 4, 2010	Approved by the Board of Trustees	
5	April 21, 2011	FERC Order issued approving IRO-006-5 (approval effective June 27, 2011)	

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

Market Flow: the total amount of power flowing across a specified Facility or set of Facilities due to a market dispatch of generation internal to the market to serve Load internal to the market.

A. **Introduction**

1. **Title: Transmission Loading Relief Procedure for the Eastern Interconnection**
2. **Number:** IRO-006-EAST-1
3. **Purpose:** To provide an Interconnection-wide transmission loading relief procedure (TLR) for the Eastern Interconnection that can be used to prevent and/or mitigate potential or actual System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) exceedances to maintain reliability of the Bulk Electric System (BES).
4. **Applicability:**
 - 4.1. Reliability Coordinators in the Eastern Interconnection.
5. **Proposed Effective Date:** First day of the first calendar quarter following the date this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter after the date this standard is approved by the NERC Board of Trustees.

B. **Requirements**

- R1. When acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's T_V , each Reliability Coordinator shall initiate, prior to or concurrently with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated), one or more of the following actions: [*Violation Risk Factor: High*] [*Time Horizon: Real-time Operations*]
 - Inter-area redispatch of generation
 - Intra-area redispatch of generation
 - Reconfiguration of the transmission system
 - Voluntary load reductions (e.g., Demand-side Management)
 - Controlled load reductions (e.g., load shedding)
- R2. To ensure operating entities are provided with information needed to maintain an awareness of changes to the Transmission System, when initiating the Eastern Interconnection TLR procedure to prevent or mitigate an SOL or IROL exceedance, and at least every clock hour (with the exception of TLR-1, where an hourly update is not required) after initiation up to and including the hour when the TLR level has been identified as TLR Level 0, the Reliability Coordinator shall identify: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
 - 2.1. A list of congestion management actions to be implemented, and
 - 2.2. One of the following TLR levels: TLR-1, TLR-2, TLR-3A, TLR-3B, TLR-4, TLR-5A, TLR-5B, TLR-6, TLR-0¹

¹ For more information on TLR levels, please see "Implementation Guideline for Reliability Coordinators: Eastern Interconnection TLR Levels Reference Document."

- R3.** Upon the identification of the TLR level and a list of congestion management actions to be implemented, the Reliability Coordinator initiating this TLR procedure shall: [*Violation Risk Factor: Medium*] [*Time Horizon: Real-time Operations*]
- 3.1.** Notify all Reliability Coordinators in the Eastern Interconnection of the identified TLR level
 - 3.2.** Communicate the list of congestion management actions to be implemented to 1.) all Reliability Coordinators in the Eastern Interconnection, and 2.) those Reliability Coordinators in other Interconnections responsible for curtailing Interchange Transactions crossing Interconnection boundaries identified in the list of congestion management actions.
 - 3.3.** Request that the congestion management actions identified in Requirement R2, Part 2.1 be implemented by:
 - 1.) Each Reliability Coordinator associated with a Sink Balancing Authority for which Interchange Transactions are to be curtailed,
 - 2.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which Network Integration Transmission Service or Native Load is to be curtailed, and
 - 3.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which its Market Flow is to be curtailed.
- R4.** Each Reliability Coordinator that receives a request as described in Requirement R3, Part 3.3. shall, within 15 minutes of receiving the request, implement the congestion management actions requested by the issuing Reliability Coordinator as follows: [*Violation Risk Factor: High*] [*Time Horizon: Real-time Operations*]
- Instruct its Balancing Authorities to implement the Interchange Transaction schedule change requests.
 - Instruct its Balancing Authorities to implement the Network Integration Transmission Service and Native Load schedule changes for which the Balancing Authorities are responsible.
 - Instruct its Balancing Authorities to implement the Market Flow schedule changes for which the Balancing Authorities are responsible.
 - If an assessment determines shows that one or more of the congestion management actions communicated in Requirement R3, Part 3.3 will result in a reliability concern or will be ineffective, the Reliability Coordinator may replace those specific actions with alternate congestion management actions, provided that:
 - The alternate congestion management actions have been agreed to by the initiating Reliability Coordinator, and
 - The assessment shows that the alternate congestion management actions will not adversely affect reliability.

C. Measures

- M1.** Each Reliability Coordinator shall provide evidence (such as dated logs, voice recordings, or other information in electronic or hard-copy format) that when acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's T_v , the Reliability Coordinator initiated one or more of the actions listed in R1 prior to or concurrently with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated)(R1).
- M2.** Each Reliability Coordinator shall provide evidence (such as dated logs, voice recordings, or other information in electronic or hard-copy format) that at the time it initiated the Eastern Interconnection TLR procedure, and at least every clock hour after initiation up to and including the hour when the TLR level was identified as TLR Level 0, the Reliability Coordinator identified both the TLR Level and a list of congestion management actions to be implemented (R2).
- M3.** Each Reliability Coordinator shall provide evidence (such as dated logs, voice recordings, or other information in electronic or hard-copy format) that after it identified a TLR level and a list of congestion management actions to take, it 1.) notified all Reliability Coordinators in the Eastern Interconnection of the TLR Level, 2.) communicated the list of actions to all Reliability Coordinators in the Eastern Interconnection and those Reliability Coordinators in other Interconnections responsible for curtailing Interchange Transactions crossing Interconnection boundaries identified in the list of congestion management actions, and 3.) requested the Reliability Coordinators identified in Requirement R3 Part 3.2 to implement the congestion management actions identified in Requirement R2 Part 2.1 (R3).
- M4.** Each Reliability Coordinator shall provide evidence (such as dated logs, voice recordings, or other information in electronic or hard-copy format) that within fifteen minutes of the receipt of a request as described in R3, the Reliability Coordinator complied with the request by either 1.) implementing the communicated congestion management actions requested by the issuing Reliability Coordinator, or 2.) implementing none or some of the communicated congestion management actions requested by the issuing Reliability Coordinator, and replacing the remainder with alternate congestion management actions if assessment showed that some or all of the congestion management actions communicated in R3 would have resulted in a reliability concern or would have been ineffective, the alternate congestion management actions were agreed to by the initiating Reliability Coordinator, and assessment showed that the alternate congestion management actions would not adversely affect reliability (R4).

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications

- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.3. Data Retention

The Reliability Coordinator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Reliability Coordinator shall maintain evidence to show compliance with R1, R2, R3, and R4 for the past 12 months plus the current month.
- If a Reliability Coordinator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Additional Compliance Information

None.

3. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1				When acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's T_v , the Reliability Coordinator did not initiate one or more of the actions listed under R1 prior to or in conjunction with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated).
R2	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR Level and/or a list of congestion management actions to take as specified by the requirement for one clock hour during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR Level and/or a list of congestion management actions to take as specified by the requirement for two clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR Level and/or a list of congestion management actions to take as specified by the requirement for three clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR Level and/or a list of congestion management actions to take as specified by the requirement for four or more clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.

Standard IRO-006-EAST-1 — TLR Procedure for the Eastern Interconnection

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3	The initiating Reliability Coordinator did not notify one or more Reliability Coordinators in the Eastern Interconnection of the TLR Level (3.1).	N/A	<p>The initiating Reliability Coordinator did not communicate the list of congestion management actions to one or more of the Reliability Coordinators listed in Requirement R3, Part 3.2.</p> <p>OR</p> <p>The initiating Reliability Coordinator requested some, but not all, of the Reliability Coordinators identified in Requirement R3, Part 3.3 to implement the identified congestion management actions.</p>	The initiating Reliability Coordinator requested none of the Reliability Coordinators identified in Requirement R3, Part 3.3 to implement the identified congestion management actions.
R4				The responding Reliability Coordinator did not, within 15 minutes of receiving a request, either 1.) implement all the requested congestion management actions, or 2.) implement none or some of the requested congestion management actions and replace the remainder with alternate congestion

Standard IRO-006-EAST-1 — TLR Procedure for the Eastern Interconnection

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
				<p>management actions, provided that: assessment showed that the actions replaced would have resulted in a reliability concern or would have been ineffective, the alternate congestion management actions were agreed to by the initiating Reliability Coordinator, and assessment determined that the alternate congestion management actions would not adversely affect reliability.</p>

E. Variances

None.

F. Associated Documents

Implementation Guideline for Reliability Coordinators:
Eastern Interconnection TLR Levels Reference Document

G. Revision History

Version	Date	Action	Tracking
1		Creation of new standard, incorporating concepts from IRO-006-4 Attachment; elimination of Regional Differences, as the standard allows the use of Market Flow	New
1	April 21, 2011	FERC Order issued approving IRO-006-EAST-1 (approval effective June 27, 2011)	

A. Introduction

1. **Title:** Reliability Coordinator Operational Analyses and Real-time Assessments
2. **Number:** IRO-008-1
3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the Bulk Electric System is assessed during the operations horizon.
4. **Applicability**
 - 4.1. Reliability Coordinator.
5. **Proposed Effective Date:**

In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1.** Each Reliability Coordinator shall perform an Operational Planning Analysis to assess whether the planned operations for the next day within its Wide Area, will exceed any of its Interconnection Reliability Operating Limits (IROLs) during anticipated normal and Contingency event conditions. (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning*)
- R2.** Each Reliability Coordinator shall perform a Real-Time Assessment at least once every 30 minutes to determine if its Wide Area is exceeding any IROLs or is expected to exceed any IROLs. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)
- R3.** When a Reliability Coordinator determines that the results of an Operational Planning Analysis or Real-Time Assessment indicates the need for specific operational actions to prevent or mitigate an instance of exceeding an IROL, the Reliability Coordinator shall share its results with those entities that are expected to take those actions. (*Violation Risk Factor: Medium*) (*Time Horizon: Real-time Operations or Same Day Operations*)

C. Measures

- M1.** The Reliability Coordinator shall have, and make available upon request, the results of its Operational Planning Analyses.
- M2.** The Reliability Coordinator shall have, and make available upon request, evidence to show it conducted a Real-Time Assessment at least once every 30 minutes. This evidence could include, but is not limited to, dated computer log showing times the assessment was conducted, dated checklists, or other evidence.

- M3.** The Reliability Coordinator shall have and make available upon request, evidence to confirm that it shared the results of its Operational Planning Analyses or Real-Time Assessments with those entities expected to take actions based on that information. This evidence could include, but is not limited to, dated operator logs, dated voice recordings, dated transcripts of voice records, dated facsimiles, or other evidence.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

For Reliability Coordinators that work for the Regional Entity, the ERO shall serve as the Compliance Enforcement Authority.

For Reliability Coordinators that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The Reliability Coordinator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

The Reliability Coordinator shall retain evidence for Requirement R1, Measure M1 and Requirement R2, Measure M2 for a rolling 30 days. The Reliability Coordinator shall keep evidence for Requirement R3, Measure M3 for a rolling three months.

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

Requirement	Lower	Moderate	High	Severe
R1	Performed an Operational Planning Analysis that covers all aspects of the requirement for all except one of 30 days. (R1)	Performed an Operational Planning Analysis that covers all aspects of the requirement for all except two of 30 days. (R1)	Performed an Operational Planning Analysis that covers all aspects of the requirement for all except three of 30 days. (R1)	Missed performing an Operational Planning Analysis that covers all aspects of the requirement for four or more of 30 days. (R1)
R2	For any sample 24 hour period within the 30 day retention period, a Real-time Assessment was not conducted for one 30-minute period. within that 24-hour period (R2)	For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for two 30-minute periods within that 24-hour period (R2)	For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for three 30-minute periods within that 24-hour period (R2)	For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for more than three 30-minute periods within that 24-hour period (R2)
R3		Shared the results with some but not all of the entities that were required to take action (R3)		Did not share the results of its analyses or assessments with any of the entities that were required to take action (R3).

E. Regional Variances

None

F. Associated Documents

None

Version History

Version	Date	Action	Change Tracking
1	October 17, 2008	Adopted by NERC Board of Trustees	
1	March 23, 2011	Order issued by FERC approving IRO-008-1 (approval effective 5/23/11)	

A. Introduction

1. **Title:** Reliability Coordinator Actions to Operate Within IROLs
2. **Number:** IRO-009-1
3. **Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring prompt action to prevent or mitigate instances of exceeding Interconnection Reliability Operating Limits (IROLs).
4. **Applicability:**
 - 4.1. Reliability Coordinator.
5. **Proposed Effective Date:**

In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1. For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs. (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning or Same Day Operations*)
- R2. For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's T_v . (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning or Same Day Operations*)
- R3. When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)
- R4. When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's T_v . (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)

- R5.** If unanimity cannot be reached on the value for an IROL or its T_v , each Reliability Coordinator that monitors that Facility (or group of Facilities) shall, without delay, use the most conservative of the values (the value with the least impact on reliability) under consideration. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)

C. Measures

- M1.** Each Reliability Coordinator shall have, and make available upon request, evidence to confirm that it has Operating Processes, Procedures, or Plans to address both preventing and mitigating instances of exceeding IROs in accordance with Requirement R1 and Requirement R2. This evidence shall include a list of any IROs (and each associated T_v) identified in advance, along with one or more dated Operating Processes, Procedures, or Plans that that will be used.
- M2.** Each Reliability Coordinator shall have, and make available upon request, evidence to confirm that it acted or directed others to act in accordance with Requirement R3 and Requirement R4. This evidence could include, but is not limited to, Operating Processes, Procedures, or Plans from Requirement R1, dated operating logs, dated voice recordings, dated transcripts of voice recordings, or other evidence.
- M3.** For a situation where Reliability Coordinators disagree on the value of an IROL or its T_v the Reliability Coordinator shall have, and make available upon request, evidence to confirm that it used the most conservative of the values under consideration, without delay. Such evidence could include, but is not limited to, dated computer printouts, dated operator logs, dated voice recordings, dated transcripts of voice recordings, or other equivalent evidence. (R5)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

For Reliability Coordinators that work for the Regional Entity, the ERO shall serve as the Compliance Enforcement Authority.

For Reliability Coordinators that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

Exception Reporting

1.4. Data Retention

The Reliability Coordinator, shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain evidence of Requirement R1, Requirement R2, and Measure M1, for a rolling 12 months.

The Reliability Coordinator shall retain evidence of Requirement R3, Requirement R4, Requirement R5, Measure M2, and Measure M3 for a rolling 12 months.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records, and all IROL Violation Reports submitted since the last audit.

1.5. Additional Compliance Information

Exception Reporting: For each instance of exceeding an IROL for time greater than IROL T_v , the Reliability Coordinator shall submit an IROL Violation Report to its Compliance Enforcement Authority within 30 days of the initiation of the event.

2. Violation Severity Levels

Requirement	Lower	Moderate	High	Severe
R1				An IROL in its Reliability Coordinator Area was identified one or more days in advance and the Reliability Coordinator does not have an Operating Process, Procedure, or Plan that identifies actions to prevent exceeding that IROL. (R1)
R2				An IROL in its Reliability Coordinator Area was identified one or more days in advance and the Reliability Coordinator does not have an Operating Process, Procedure, or Plan that identifies actions to mitigate exceeding that IROL within the IROL’s T _v . (R2)
R3				An assessment of actual or expected system conditions predicted that an IROL in the Reliability Coordinator’s Area would be exceeded, but no Operating Processes, Procedures, or Plans were implemented. (R3)
R4			Actual system conditions	Actual system conditions

Requirement	Lower	Moderate	High	Severe
			<p>showed that there was an instance of exceeding an IROL in its Reliability Coordinator Area, and there was a delay of five minutes or more before acting or directing others to act to mitigate the magnitude and duration of the instance of exceeding that IROL, however the IROL was mitigated within the IROL T_v. (R4)</p>	<p>showed that there was an instance of exceeding an IROL in its Reliability Coordinator Area, and that IROL was not resolved within the IROL's T_v. (R4)</p>
R5	Not applicable.	Not applicable.	Not applicable.	<p>There was a disagreement on the value of the IROL or its T_v and the most conservative limit under consideration was not used. (R5)</p>

E. Regional Variances

None

F. Associated Documents

IROL Violation Report

Version History

Version	Date	Action	Change Tracking
1	October 17, 2008	Adopted by NERC Board of Trustees	
1	March 23, 2011	Order issued by FERC approving IRO-009-1 (approval effective 5/23/11)	

A. Introduction

- 1. Title:** **Reliability Coordinator Data Specification and Collection**
- 2. Number:** IRO-010-1a
- 3. Purpose:** To prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring the Reliability Coordinator has the data it needs to monitor and assess the operation of its Reliability Coordinator Area.
- 4. Applicability**
 - 4.1.** Reliability Coordinator.
 - 4.2.** Balancing Authority.
 - 4.3.** Generator Owner.
 - 4.4.** Generator Operator.
 - 4.5.** Interchange Authority.
 - 4.6.** Load-Serving Entity.
 - 4.7.** Transmission Operator.
 - 4.8.** Transmission Owner.
- 5. Proposed Effective Date:** In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following: (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
 - R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.
 - R1.2.** Mutually agreeable format.
 - R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
 - R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

- R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. (*Violation Risk Factor: Low*) (*Time Horizon: Operations Planning*)
- R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning; Same-day Operations; Real-time Operations*)

C. Measures

- M1.** The Reliability Coordinator shall have, and make available upon request, a documented data specification that contains all elements identified in Requirement R1.
- M2.** The Reliability Coordinator shall have, and make available upon request, evidence that it distributed its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. This evidence could include, but is not limited to, dated paper or electronic notice used to distribute its data specification showing recipient, and data or information requested or other equivalent evidence. (R2)
- M3.** The Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner shall each have, and make available upon request, evidence to confirm that it provided data and information, as specified in Requirement R3. This evidence could include, but is not limited to, dated operator logs, dated voice recordings, dated computer printouts, dated SCADA data, or other equivalent evidence.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

For Reliability Coordinators and other functional entities that work for the Regional Entity, the ERO shall serve as the Compliance Enforcement Authority.

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4.Data Retention

The Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner, shall each keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

The Reliability Coordinator shall retain its current, in force data specification for Requirement R1, Measure M1.

The Reliability Coordinator shall keep evidence of its most recent distribution of its data specification and evidence to show the data supplied in response to that specification for Requirement R2, Measure M2 and Requirement R3 Measure M3.

For data that is requested in accordance with Requirement R2, the Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Reliability Coordinator, Transmission Operator and Transmission Owner shall keep evidence used to show compliance with Requirement R3 Measure M3 for the Reliability Coordinator's most recent data specification for a rolling 90 calendar days.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

1.5.1 None.

2. Violation Severity Levels

Requirement	Lower	Moderate	High	Severe
R1	Data specification is complete with the following exception: Missing the mutually agreeable format. (R1.2)	Data specification is complete with the following exception – no process for data provision when automated Real-Time system operating data is unavailable. (R1.4)	Data specification incomplete (missing either the list of required data (R1.1), or the timeframe for providing data. (R1.3)	No data specification (R1)
R2	Distributed its data specification to greater than or equal to 95% but less than 100% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status.	Distributed its data specification to greater than or equal to 85% but less than 95% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)	Distributed its data specification to greater than or equal to 75% - but less than 85% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)	Data specification distributed to less than 75% of the entities that have Facilities monitored by the Reliability Coordinator and the entities that provide the Reliability Coordinator with Facility status. (R2)
R3	Provided greater than or equal to 95% but less than 100% of the data and information as specified. (R3)	Provided greater than or equal to 85% but less than 95% of the data and information as specified. (R3)	Provided greater than or equal to 75% but less than 85% of the data and information as specified. (R3)	Provided less than 75% of the data and information as specified. (R3)

E. Regional Variances

None

F. Associated Documents

1. Appendix 1 – Interpretation of Requirements R1.2 and R3

Version History

Version	Date	Action	Change Tracking
1	October 17, 2008	Adopted by Board of Trustees	New
1a	August 5, 2009	Added Appendix 1: Interpretation of R1.2 and R3 as approved by Board of Trustees	Addition
1a	March 23, 2011	Order issued by FERC approving IRO-010-1a (approval effective 5/23/11)	

Appendix 1

Interpretation of Requirements R1.2 and R3

Text of Requirements R1.2 and R3

- R1. The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:**
- R1.1. List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.**
 - R1.2. Mutually agreeable format.**
 - R1.3. Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).**
 - R1.4. Process for data provision when automated Real-Time system operating data is unavailable.**
- R3. Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship.**

Question 1

Does the phrase, “as specified” in Requirement R3 reference the documented data and information specification in IRO-010-1 Requirement R1, or is the data and information in Requirement R3 “any” data and information that the Reliability Coordinator might request?

Response: The data to be supplied in Requirement R3 applies to the documented specification for data and information referenced in Requirement R1.

Question 2

Is the intent of Requirement R3 to have each responsible entity provide its own data and information to its Reliability Coordinator, or is the intent to have responsible entities provide aggregated data (collected and compiled from other entities at the direction of the Reliability Coordinator) to the Reliability Coordinator?

Response: The intent of Requirement R3 is for each responsible entity to ensure that its data and information (as stated in the documented specification in Requirement R1) are provided to the Reliability Coordinator.

Another entity may provide that data or information to the Reliability Coordinator on behalf of the responsible entity, but the responsibility remains with the responsible entity. There is neither intent nor obligation for any entity to compile information from other entities and provide it to the Reliability Coordinator.

Question 3

Under Requirement R1.2, what actions (on the part of the Reliability Coordinator) are expected to support the “mutually acceptable format” for submission of data and information?

Response: Requirement R1.2 mandates that the parties will reach a mutual agreement with respect to the format of the data and information. If the parties can not mutually agree on the format, it is expected that they will negotiate to reach agreement or enter into dispute resolution to resolve the disagreement.

A. **Introduction**

1. **Title:** Available Transmission System Capability
2. **Number:** MOD-001-1a
3. **Purpose:** To ensure that calculations are performed by Transmission Service Providers to maintain awareness of available transmission system capability and future flows on their own systems as well as those of their neighbors
4. **Applicability:**
 - 4.1. Transmission Service Provider.
 - 4.2. Transmission Operator.
5. **Proposed Effective Date:** Immediately after approval of applicable regulatory authorities.

B. **Requirements**

- R1.** Each Transmission Operator shall select one of the methodologies¹ listed below for calculating Available Transfer Capability (ATC) or Available Flowgate Capability (AFC) for each ATC Path per time period identified in R2 for those Facilities within its Transmission operating area: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
 - The Area Interchange Methodology, as described in MOD-028
 - The Rated System Path Methodology, as described in MOD-029
 - The Flowgate Methodology, as described in MOD-030
- R2.** Each Transmission Service Provider shall calculate ATC or AFC values as listed below using the methodology or methodologies selected by its Transmission Operator(s): [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
 - R2.1.** Hourly values for at least the next 48 hours.
 - R2.2.** Daily values for at least the next 31 calendar days.
 - R2.3.** Monthly values for at least the next 12 months (months 2-13).
- R3.** Each Transmission Service Provider shall prepare and keep current an Available Transfer Capability Implementation Document (ATCID) that includes, at a minimum, the following information: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
 - R3.1.** Information describing how the selected methodology (or methodologies) has been implemented, in such detail that, given the same information used by the Transmission Service Provider, the results of the ATC or AFC calculations can be validated.
 - R3.2.** A description of the manner in which the Transmission Service Provider will account for counterflows including:

¹ All ATC Paths do not have to use the same methodology and no particular ATC Path must use the same methodology for all time periods.

- R4.5.** Each Reliability Coordinator adjacent to the Transmission Service Provider’s area.
- R4.6.** Each Transmission Service Provider whose area is adjacent to the Transmission Service Provider’s area.
- R5.** The Transmission Service Provider shall make available the current ATCID to all of the entities specified in R4. *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
- R6.** When calculating Total Transfer Capability (TTC) or Total Flowgate Capability (TFC) the Transmission Operator shall use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period. *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
- R7.** When calculating ATC or AFC the Transmission Service Provider shall use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period. *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
- R8.** Each Transmission Service Provider that calculates ATC shall recalculate ATC at a minimum on the following frequency, unless none of the calculated values identified in the ATC equation have changed: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
- R8.1.** Hourly values, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the ATC equation.
- R8.2.** Daily values, once per day.
- R8.3.** Monthly values, once per week.
- R9.** Within thirty calendar days of receiving a request by any Transmission Service Provider, Planning Coordinator, Reliability Coordinator, or Transmission Operator for data from the list below solely for use in the requestor’s ATC or AFC calculations, each Transmission Service Provider receiving said request shall begin to make the requested data available to the requestor, subject to the conditions specified in R9.1 and R9.2: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
- Expected generation and Transmission outages, additions, and retirements.
 - Load forecasts.
 - Unit commitments and order of dispatch, to include all designated network resources and other resources that are committed or have the legal obligation to run, as they are expected to run, in one of the following formats chosen by the data provider:

Note that the North American Energy Standards Board (NAESB) is developing the companion standards that address the posting of ATC information, including supporting information such as that described in R9.

- Dispatch Order
- Participation Factors
- Block Dispatch
- Aggregated firm capacity set-aside for Network Integration Transmission Service and aggregated non-firm capacity set aside for Network Integration Transmission Service (i.e. Secondary Service).
- Firm and non-firm Transmission reservations.
- Aggregated capacity set-aside for Grandfathered obligations
- Firm roll-over rights.
- Any firm and non-firm adjustments applied by the Transmission Service Provider to reflect parallel path impacts.
- Power flow models and underlying assumptions.
- Contingencies, provided in one or more of the following formats:
 - A list of Elements
 - A list of Flowgates
 - A set of selection criteria that can be applied to the Transmission model used by the Transmission Operator and/or Transmission Service Provider
- Facility Ratings.
- Any other services that impact Existing Transmission Commitments (ETCs).
- Values of Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) for all ATC Paths or Flowgates.
- Values of Total Flowgate Capability (TFC) and AFC for any Flowgates considered by the Transmission Service Provider receiving the request when selling Transmission service.
- Values of TTC and ATC for all ATC Paths for those Transmission Service Providers receiving the request that do not consider Flowgates when selling Transmission Service.
- Source and sink identification and mapping to the model.

R9.1. The Transmission Service Provider shall make its own current data available, in the format maintained by the Transmission Service Provider, for up to 13 months into the future (subject to confidentiality and security requirements).

R9.1.1. If the Transmission Service Provider uses the data requested in its transfer or Flowgate capability calculations, it shall make the data used available

R9.1.2. If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, but maintains that data, it shall make that data available

R9.1.3. If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, and does not maintain that data, it shall not be required to make that data available

R9.2. This data shall be made available by the Transmission Provider on the schedule specified by the requestor (but no more frequently than once per hour, unless mutually agreed to by the requester and the provider).

C. Measures

M1. The Transmission Operator shall provide evidence (such as a calculation, inclusion of the information in the ATCID, or other written documentation) that it has selected one of the specified methodologies per time period in R2 for use in determining Transfer Capabilities of those Facilities for each ATC Path within the Transmission Operator's operating area. (R1).

M2. The Transmission Service Provider shall provide ATC or AFC values and identification of the selected methodologies along with other evidence (such as written documentation, processes, or data) to show it calculated ATC or AFC for the following using the selected methodology or methodologies chosen as part of R1 (R2):

- There has been at least 48 hours of hourly values calculated at all times. (R2.1)
- There has been at least 31 consecutive calendar days of daily values calculated at all times. (R2.2)
- There has been at least the next 12 months of monthly values calculated at all times (Months 2-13). (R2.3)

M3. The Transmission Service Provider shall provide its current ATCID that contains all the information specified in R3. (R3)

M4. The Transmission Service Provider shall provide evidence (such as dated electronic mail messages, mail receipts, or voice recordings) that it has notified the entities specified in R4 before a new or revised ATCID was implemented. (R4)

M5. The Transmission Service Provider shall provide evidence (such as a demonstration) that the current ATCID is available to all of the entities specified in R4, as required by R5. (R5)

M6. The Transmission Operator shall provide a copy of the assumptions (such as contingencies, loop flow, generation re-dispatch, switching operating guides or data sources for load forecast and facility outages) used to calculate TTC or TFC as well as other evidence (such as copies of operations planning studies, models, supporting information, or data) to show that the assumptions used in determining TTC or TFC are no more limiting than those used in planning of operations for the corresponding time period studied. Alternatively the Transmission Operator may demonstrate that the same load flow cases are used for both TTC or TFC and Operations Planning.

When different inputs to the calculations are used because the calculations are performed at different times, such that the most recent information is used in any calculation, a difference in that input data shall not be considered to be a difference in assumptions. (R6)

- M7.** The Transmission Service Provider shall provide a copy of the assumptions (such as contingencies, loop flow, generation re-dispatch, switching operating guides or data sources for load forecast and facility outages) used to calculate ATC or AFC as well as other evidence (such as copies of operations planning studies, models, supporting information, or data) to show that the assumptions used in determining ATC or AFC are no more limiting than those used in planning of operations for the corresponding time period studied. Alternatively the Transmission Service Provider may demonstrate that the same load flow cases are used for both AFC and Operations Planning. When different inputs to the calculations are used because the calculations are performed at different times, such that the most recent information is used in any calculation, a difference in that input data shall not be considered to be a difference in assumptions. (R7)
- M8.** The Transmission Service Provider calculating ATC shall provide evidence (such as logs or data) that it has calculated the hourly, daily, and monthly values on at least the minimum frequencies specified in R8 or provide evidence (such as data, procedures, or software documentation) that the calculated values identified in the ATC equation have not changed. (R8)
- M9.** The Transmission Service Provider shall provide a copy of the dated request, if any, for ATC or AFC data as well as evidence to show it responded to that request (such as logs or data) within thirty calendar days of receiving the request, and the requested data items were made available in accordance with R9. (R9)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Data Retention

The Transmission Operator and Transmission Service Provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Transmission Operator shall maintain its current selected method(s) for calculating ATC or AFC and any methods in force since last compliance audit period to show compliance with R1.

- The Transmission Service Provider shall maintain evidence to show compliance with R2, R4, R6, R7, and R8 for the most recent calendar year plus the current year.
- The Transmission Service Provider shall maintain its current, in force ATCID and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R3.
- The Transmission Service Provider shall maintain evidence to show compliance with R5 for the most recent three calendar years plus the current year.
- The Transmission Operator shall maintain evidence to show compliance with R6 for the most recent calendar year plus the current year.
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The Transmission Operator did not select one of the specified methodologies for each ATC Path per time period identified in R2 for those Facilities within its Transmission operating area.
R2.	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Service Provider has calculated hourly ATC or AFC values for more than the next 30 hours but less than the next 48 hours. ▪ Has calculated daily ATC or AFC values for more than the next 21 calendar days but less than the next 31 calendar days. ▪ Has calculated monthly ATC or AFC values for more than the next 9 months but less than the next 12 months. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Service Provider has calculated hourly ATC or AFC values for more than the next 20 hours but less than the next 31 hours. ▪ Has calculated daily ATC or AFC values for more than the next 14 calendar days but less than the next 22 calendar days. ▪ Has calculated monthly ATC or AFC values for more than the next 6 months but less than the next 10 months. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Service Provider has calculated hourly ATC or AFC values for more than the next 10 hours but less than the next 21 hours. ▪ Has calculated daily ATC or AFC values for more than the next 7 calendar days but less than the next 15 calendar days. ▪ Has calculated monthly ATC or AFC values for more than the next 3 months but less than the next 7 months. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Service Provider has calculated hourly ATC or AFC values for less than the next 11 hours. ▪ Has calculated daily ATC or AFC values for less than the next 8 calendar days. ▪ Has calculated monthly ATC or AFC values for less than the next 4 months. ▪ Did not use the selected methodology(ies) to calculate ATC.
R3.	The Transmission Service Provider has an ATCID that does not incorporate changes made up to three months ago.	The Transmission Service Provider has an ATCID that does not incorporate changes made more than three months but not more than six months ago.	<p>The Transmission Service Provider has an ATCID that does not incorporate changes made more than six months but not more than one year ago.</p> <p>OR</p> <p>The Transmission Service Provider has an ATCID, but it does not include one or two of the information items described in R3.</p>	<p>The Transmission Service Provider has an ATCID that does not incorporate changes made a year or more ago.</p> <p>OR</p> <p>The Transmission Service Provider does not have an ATCID, or its ATCID does not include three or more of the information items described in R3.</p>

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R4.	The Transmission Service Provider notified one or more of the parties specified in R4 of a new or modified ATCID after, but not more than 30 calendar days after, its implementation.	The Transmission Service Provider notified one or more of the parties specified in R4 of a new or modified ATCID more than 30, but not more than 60, calendar days after its implementation.	The Transmission Service Provider notified one or more of the parties specified in R4 of a new or modified ATCID more than 60, but not more than 90, calendar days after its implementation.	The Transmission Service Provider notified one or more of the parties specified in R4 of a new or modified ATCID more than 90 calendar days after its implementation. OR The Transmission Service Provider did not notify one or more of the parties specified in R4 of a new or modified ATCID for more than 90 calendar days after its implementation.
R5.	N/A	N/A	N/A	The Transmission Service Provider did not make the ATCID available to the parties described in R4.
R6.	The Transmission Operator determined TTC or TFC using assumptions more limiting than those used in planning of operations for the studied time period for more than zero ATC Paths or Flowgates, but not more than 5% of all ATC Paths or Flowgates or 1 ATC Path or Flowgate (whichever is greater).	The Transmission Operator determined TTC or TFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 5% of all ATC Paths or Flowgates or 1 ATC Path or Flowgate (whichever is greater), but not more than 10% of all ATC Paths or Flowgates or 2 ATC Paths or Flowgates (whichever is greater).	The Transmission Operator determined TTC or TFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 10% of all ATC Paths or Flowgates or 2 ATC Path or Flowgate (whichever is greater), but not more than 15% of all ATC Paths or Flowgates or 3 ATC Paths or Flowgates (whichever is greater).	The Transmission Operator determined TTC or TFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 15% of all ATC Paths or Flowgates or more than 3 ATC Paths or Flowgates (whichever is greater).
R7	The Transmission Service Provider determined ATC or AFC using assumptions more limiting than those used in planning of operations for the studied time period for more than zero ATC Paths or Flowgates, but not more	The Transmission Service Provider determined ATC or AFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 5% of all ATC Paths or Flowgates or 1 ATC Path	The Transmission Service Provider determined ATC or AFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 10%, of all ATC Paths or Flowgates or 2 ATC	The Transmission Service Provider determined ATC or AFC using assumptions more limiting than those used in planning of operations for the studied time period for more than 15% of all ATC Paths or Flowgates or more

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	than 5% of all ATC Paths or Flowgates or 1 ATC Path or Flowgate (whichever is greater).	or Flowgate (whichever is greater), but not more than 10% of all ATC Paths or Flowgates or 2 ATC Paths or Flowgates (whichever is greater).	Path or Flowgate (whichever is greater), but not more than 15% of all ATC Paths or Flowgates or 3 ATC Paths or Flowgates (whichever is greater).	than 3 ATC Paths or Flowgates (whichever is greater).
R8.	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for one or more hours but not more than 15 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the ATC equation changed and the Transmission Service provider did not calculate for one or more calendar days but not more than 3 calendar days. ▪ For Monthly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for seven or more calendar days, but less than 14 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 15 hours but not more than 20 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 3 calendar days but not more than 4 calendar days. ▪ For Monthly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for 14 or more calendar days, but less than 21 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 20 hours but not more than 25 hours, and was in excess of the 175-hour per year requirement. <p>For Daily, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 4 calendar days but not more than 5 calendar days.</p> <ul style="list-style-type: none"> ▪ For Monthly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for 21 or more calendar days, but less than 28 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 25 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the ATC equation changed and the Transmission Service provider did not calculate for more than 5 calendar days. ▪ For Monthly, the values described in the ATC equation changed and the Transmission Service provider did not calculate for 28 or more calendar days.

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R9	N/A	The Transmission Service Provider made the requested data items specified in R9 available to the requesting entities specified within the requirement, per the schedule specified in the request, subject to the limitations specified in R9, available more than 30 calendar days but less than 45 calendar days after receiving a request.	The Transmission Service Provider made the requested data items specified in R9 available to the requesting entities specified within the requirement, per the schedule specified in the request, subject to the limitations specified in R9, available 45 calendar days or more but less than 60 calendar days after receiving a request.	The Transmission Service Provider did not make the requested data items specified in R9 available to the requesting entities specified within the requirement, per the schedule specified in the request, subject to the limitations specified in R9, available for 60 calendar days or more after receiving a request.

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Version History

Version	Date	Action	Change Tracking
1a	Board approved 11/05/2009	Interpretation of R2 and R8	Interpretation (Project 2009-15)

Appendix 1

Requirement Number and Text of Requirement
<p>MOD-001-01 Requirement R2:</p> <p>R2. Each Transmission Service Provider shall calculate ATC or AFC values as listed below using the methodology or methodologies selected by its Transmission Operator(s):</p> <ul style="list-style-type: none">R2.1. Hourly values for at least the next 48 hours.R2.2. Daily values for at least the next 31 calendar days.R2.3. Monthly values for at least the next 12 months (months 2-13). <p>MOD-001-01 Requirement R8:</p> <p>R8. Each Transmission Service Provider that calculates ATC shall recalculate ATC at a minimum on the following frequency, unless none of the calculated values identified in the ATC equation have changed:</p> <ul style="list-style-type: none">R8.1. Hourly values, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the ATC equation.R8.2. Daily values, once per day.R8.3. Monthly values, once per week.
Question #1
Is the “advisory ATC” used under the NYISO tariff subject to the ATC calculation and recalculation requirements in MOD-001-1 Requirements R2 and R8? If not, is it necessary to document the frequency of “advisory” calculations in the responsible entity’s Available Transfer Capability Implementation Document?
Response to Question #1
<p>Requirements R2 and R8 of MOD-001-1 are both related to Requirement R1, which defines that ATC methodologies are to be applied to specific “ATC Paths.” The NERC definition of ATC Path is “Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path.” Based on a review of the language included in this request, the NYISO Open Access Transmission Tariff, and other information posted on the NYISO Web site, it appears that the NYISO does indeed have multiple ATC Paths, which are subject to the calculation and recalculation requirements in Requirements R2 and R8. It appears from reviewing this information that ATC is defined in the NYISO tariff in the same manner in which NERC defines it, making it difficult to conclude that NYISO’s “advisory ATC” is not the same as ATC. In addition, it appears that pre-scheduling is permitted on certain external paths, making the calculation of ATC prior to day ahead necessary on those paths.</p> <p>The second part of NYISO’s question is only applicable if the first part was answered in the</p>

negative and therefore will not be addressed.

Requirement Number and Text of Requirement

MOD-029-01 Requirements R5 and R6:

R5. When calculating ETC for firm Existing Transmission Commitments (ETC_F) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below:

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

NL_F is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$NITS_F$ is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_F is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_F is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

ROR_F is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.

OS_F is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

R6. When calculating ETC for non-firm Existing Transmission Commitments (ETC_{NF}) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm:

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

$NITS_{NF}$ is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_{NF} is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the

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effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.

Question #2

Could OS_F in MOD-029-1 Requirement R5 and OS_{NF} in MOD-029-1 Requirement R6 be calculated using Transmission Flow Utilization in the determination of ATC?

Response to Question #2

This request for interpretation and the NYISO Open Access Transmission Tariff describe the NYISO's concept of "Transmission Flow Utilization;" however, it is unclear whether or not Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6 are incorporated into "Transmission Flow Utilization." Provided that "Transmission Flow Utilization" does not include Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6, it is appropriate to be included within the "Other Services" term. However, if "Transmission Flow Utilization" does incorporate those components, then simply including "Transmission Flow Utilization" in "Other Service" would be inappropriate.

A. Introduction

1. **Title:** Capacity Benefit Margin
2. **Number:** MOD-004-1
3. **Purpose:** To promote the consistent and reliable calculation, verification, preservation, and use of Capacity Benefit Margin (CBM) to support analysis and system operations.
4. **Applicability:**
 - 4.1. Load-Serving Entities.
 - 4.2. Resource Planners.
 - 4.3. Transmission Service Providers.
 - 4.4. Balancing Authorities.
 - 4.5. Transmission Planners, when their associated Transmission Service Provider has elected to maintain CBM.
5. **Effective Date:** First day of the first calendar quarter that is twelve months beyond the date that this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter that is twelve months beyond the date this standard is approved by the NERC Board of Trustees.

B. Requirements

- R1. The Transmission Service Provider that maintains CBM shall prepare and keep current a “Capacity Benefit Margin Implementation Document” (CBMID) that includes, at a minimum, the following information: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning, Long-term Planning*]
 - R1.1. The process through which a Load-Serving Entity within a Balancing Authority Area associated with the Transmission Service Provider, or the Resource Planner associated with that Balancing Authority Area, may ensure that its need for Transmission capacity to be set aside as CBM will be reviewed and accommodated by the Transmission Service Provider to the extent Transmission capacity is available.
 - R1.2. The procedure and assumptions for establishing CBM for each Available Transfer Capability (ATC) Path or Flowgate.
 - R1.3. The procedure for a Load-Serving Entity or Balancing Authority to use Transmission capacity set aside as CBM, including the manner in which the Transmission Service Provider will manage situations where the requested use of CBM exceeds the amount of CBM available.
- R2. The Transmission Service Provider that maintains CBM shall make available its current CBMID to the Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, Resource Planners, and Planning Coordinators that are within or adjacent to the Transmission Service Provider’s area, and to the Load Serving Entities and Balancing Authorities within the Transmission Service Provider’s

area, and notify those entities of any changes to the CBMID prior to the effective date of the change. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

- R3.** Each Load-Serving Entity determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

R3.1. Using one or more of the following to determine the GCIR:

- Loss of Load Expectation (LOLE) studies
- Loss of Load Probability (LOLP) studies
- Deterministic risk-analysis studies
- Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities

R3.2. Identifying expected import path(s) or source region(s).

- R4.** Each Resource Planner determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

R4.1. Using one or more of the following to determine the GCIR:

- Loss of Load Expectation (LOLE) studies
- Loss of Load Probability (LOLP) studies
- Deterministic risk-analysis studies
- Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities

R4.2. Identifying expected import path(s) or source region(s).

- R5.** At least every 13 months, the Transmission Service Provider that maintains CBM shall establish a CBM value for each ATC Path or Flowgate to be used for ATC or Available Flowgate Capability (AFC) calculations during the 13 full calendar months (months 2-14) following the current month (the month in which the Transmission Service Provider is establishing the CBM values). This value shall: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

R5.1. Reflect consideration of each of the following if available:

- Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Service Provider's area
- Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Service Provider's area

- Any reserve margin or resource adequacy requirements for loads within the Transmission Service Provider's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities
- R5.2.** Be allocated as follows:
- For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners
 - For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Service Provider
- R6.** At least every 13 months, the Transmission Planner shall establish a CBM value for each ATC Path or Flowgate to be used in planning during each of the full calendar years two through ten following the current year (the year in which the Transmission Planner is establishing the CBM values). This value shall: [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*]
- R6.1.** Reflect consideration of each of the following if available:
- Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Planner's area
 - Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Planner's area
 - Any reserve margin or resource adequacy requirements for loads within the Transmission Planner's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities
- R6.2.** Be allocated as follows:
- For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners
 - For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Planner.
- R7.** Less than 31 calendar days after the establishment of CBM, the Transmission Service Provider that maintains CBM shall notify all the Load-Serving Entities and Resource Planners that determined they had a need for CBM on the Transmission Service Provider's system of the amount of CBM set aside. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R8.** Less than 31 calendar days after the establishment of CBM, the Transmission Planner shall notify all the Load-Serving Entities and Resource Planners that determined they

had a need for CBM on the system being planned by the Transmission Planner of the amount of CBM set aside. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

R9. The Transmission Service Provider that maintains CBM and the Transmission Planner shall each provide (subject to confidentiality and security requirements) copies of the applicable supporting data, including any models, used for determining CBM or allocating CBM over each ATC Path or Flowgate to the following: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning, Long-term Planning*]

R9.1. Each of its associated Transmission Operators within 30 calendar days of their making a request for the data.

R9.2. To any Transmission Service Provider, Reliability Coordinator, Transmission Planner, Resource Planner, or Planning Coordinator within 30 calendar days of their making a request for the data.

R10. The Load-Serving Entity or Balancing Authority shall request to import energy over firm Transfer Capability set aside as CBM only when experiencing a declared NERC Energy Emergency Alert (EEA) 2 or higher. [*Violation Risk Factor: Lower*] [*Time Horizon: Same-day Operations*]

R11. When reviewing an Arranged Interchange using CBM, all Balancing Authorities and Transmission Service Providers shall waive, within the bounds of reliable operation, any Real-time timing and ramping requirements. [*Violation Risk Factor: Medium*] [*Time Horizon: Same-day Operations*]

R12. The Transmission Service Provider that maintains CBM shall approve, within the bounds of reliable operation, any Arranged Interchange using CBM that is submitted by an “energy deficient entity¹” under an EEA 2 if: [*Violation Risk Factor: Medium*] [*Time Horizon: Same-day Operations*]

R12.1. The CBM is available

R12.2. The EEA 2 is declared within the Balancing Authority Area of the “energy deficient entity,” and

R12.3. The Load of the “energy deficient entity” is located within the Transmission Service Provider’s area.

C. Measures

M1. Each Transmission Service Provider that maintains CBM shall produce its CBMID evidencing inclusion of all information specified in R1. (R1)

M2. Each Transmission Service Provider that maintains CBM shall have evidence (such as dated logs and data, copies of dated electronic messages, or other equivalent evidence) to show that it made the current CBMID available to the Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, and Planning Coordinators specified in R2, and that prior to any change to the CBMID, it notified those entities of the change. (R2)

¹ See Attachment 1-EOP-002-0 for explanation.

- M3.** Each Load-Serving Entity that determined a need for Transmission capacity to be set aside as CBM shall provide evidence (including studies and/or requirements) that it met the criteria in R3. (R3)
- M4.** Each Resource Planner that determined a need for Transmission capacity to be set aside as CBM shall provide evidence (including studies and/or requirements) that it met the criteria in R4. (R4)
- M5.** Each Transmission Service Provider that maintains CBM shall provide evidence (such as studies, requirements, and dated CBM values) that it established 13 months of CBM values consistent with the requirements in R5.1 and allocated the values consistent with the requirements in R5.2. (Note that CBM values may legitimately be zero.) (R5)
- M6.** Each Transmission Planner with an associated Transmission Service Provider that maintains CBM shall provide evidence (such as studies, requirements, and dated CBM values) that it established CBM values for years two through ten consistent with the requirements in R6.1 and allocated the values consistent with the requirements in R6.2. Inclusion of GCIR based on R6.1 and R6.2 within the transmission base case meets this requirement. (Note that CBM values may legitimately be zero.) (R6)
- M7.** Each Transmission Service Provider that maintains CBM shall provide evidence (such as dated e-mail, data, or other records) that it notified the entities described in R7 of the amount of CBM set aside. (R7)
- M8.** Each Transmission Planner with an associated Transmission Service Provider that maintains CBM shall provide evidence (such as e-mail, data, or other records) that it notified the entities described in R8 of the amount of CBM set aside. (R8)
- M9.** Each Transmission Service Provider that maintains CBM and each Transmission Planner shall provide evidence including copies of dated requests for data supporting the calculation of CBM along with other evidences such as copies of electronic messages or other evidence to show that it provided the required entities with copies of the supporting data, including any models, used for allocating CBM as specified in R9. (R9)
- M10.** Each Load-Serving Entity and Balancing Authority shall provide evidence (such as logs, copies of tag data, or other data from its Reliability Coordinator) that at the time it requested to import energy using firm Transfer Capability set aside as CBM, it was in an EEA 2 or higher. (R10)
- M11.** Each Balancing Authority and Transmission Service Provider shall provide evidence (such as operating logs and tag data) that it waived Real-time timing and ramping requirements when approving an Arranged Interchange using CBM (R11)
- M12.** Each Transmission Service Provider that maintains CBM shall provide evidence including copies of CBM values along with other evidence (such as tags, reports, and supporting data) to show that it approved any Arranged Interchange meeting the criteria in R12. (R12)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority (CEA)

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Data Retention

- The Transmission Service Provider that maintains CBM shall maintain its current, in force CBMID and any prior versions of the CBMID that were in force during the past three calendar years plus the current year to show compliance with R1.
- The Transmission Service Provider that maintains CBM shall maintain evidence to show compliance with R2, R5, R7, R9, and R12 for the most recent three calendar years plus the current year.
- The Load-Serving Entity shall each maintain evidence to show compliance with R3 and R10 for the most recent three calendar years plus the current year.
- The Resource Planner shall each maintain evidence to show compliance with R4 for the most recent three calendar years plus the current year.
- The Transmission Planner shall maintain evidence to show compliance with R6, R8, and R9 for the most recent three calendar years plus the current year.
- The Balancing Authority shall maintain evidence to show compliance with R10 and R11 for the most recent three calendar years plus the current year.
- The Transmission Service Provider shall maintain evidence to show compliance with R11 for the most recent three calendar years plus the current year.
- If an entity is found non-compliant, it shall keep information related to the non-compliance until found compliant.
- The Compliance Enforcement Authority shall keep the last audit records and all requested and subsequently submitted audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting

- Complaints

1.5. Additional Compliance Information

None.

Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made within the last three months.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than three, but not more than six, months ago.</p> <p style="text-align: center;">OR</p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address one of the sub requirements.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than six, but not more than twelve, months ago.</p> <p style="text-align: center;">OR</p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address two of the sub requirements.</p>	<p>The Transmission Service Provider that maintains CBM has a CBMID that does not incorporate changes that have been made more than twelve months ago.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM does not have a CBMID;</p> <p style="text-align: center;">OR</p> <p>The CBM maintaining Transmission Service Provider’s CBMID does not address three of the sub requirements.</p>
R2.	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID after the effective date of the change, but not more than 30 calendar days after the effective date of the change.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID 30 or more calendar days but not more than 60 calendar days after the effective date of the change.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID 60 or more calendar days but not more than 90 calendar days after the effective date of the change.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM made available the CBMID to at least one, but not all, of the entities specified in R2.</p>	<p>The Transmission Service Provider that maintains CBM notifies one or more of the entities specified in R2 of a change in the CBM ID more than 90 calendar days after the effective date of the change.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM made available the CBMID to none of the entities specified in R2.</p>

Standard MOD-004-1 — Capacity Benefit Margin

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.		<p>The Load-Serving Entity did not use one of the methods described in R3.1</p> <p style="text-align: center;">OR</p> <p>The Load-Serving Entity did not identify paths or regions as described in R3.2</p>		<p>The Load-Serving Entity did not use one of the methods described in R3.1</p> <p style="text-align: center;">AND</p> <p>The Load-Serving Entity did not identify paths or regions as described in R3.2</p>
R4		<p>The Resource Planner did not use one of the methods described in R4.1</p> <p style="text-align: center;">OR</p> <p>The Resource Planner did not identify paths or regions as described in R4.2</p>		<p>The Resource Planner did not use one of the methods described in R4.1</p> <p style="text-align: center;">AND</p> <p>The Resource Planner did not identify paths or regions as described in R4.2</p>
R5.	<p>The Transmission Service Provider that maintains CBM established CBM more than 13 months, but not more than 16 months, after the last time the values were established.</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 16 months, but not more than 19 months, after the last time the values were established.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM did not consider one or more of the items described in R5.1 that was available.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM did not base the allocation on one or more paths or regions as</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 19 months, but not more than 22 months, after the last time the values were established.</p>	<p>The Transmission Service Provider that maintains CBM established CBM more than 22 months after the last time the values were established.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM failed to establish an initial value for CBM.</p> <p style="text-align: center;">OR</p> <p>The Transmission Service Provider that maintains CBM did not consider one or more of the items described in R5.1 that was available, and did not base the allocation on one or more</p>

Standard MOD-004-1 — Capacity Benefit Margin

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
		described in R5.2.		paths or regions as described in R5.2
R6.	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 13 months, but not more than 16 months, after the last time the values were established.</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 16 months, but not more than 19 months, after the last time the values were established.</p> <p style="text-align: center;">OR</p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not consider one or more of the items described in R6.1 that was available.</p> <p style="text-align: center;">OR</p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not base the allocation</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 19 months, but not more than 22 months, after the last time the values were established.</p>	<p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM established CBM for each of the years 2 through 10 more than 22 months after the last time the values were established.</p> <p style="text-align: center;">OR</p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM failed to establish an initial value for CBM for each of the years 2 through 10.</p> <p style="text-align: center;">OR</p> <p>The Transmission Planner with an associated Transmission Service Provider that maintains CBM did not consider one or more of the items described in</p>

Standard MOD-004-1 — Capacity Benefit Margin

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
		on one or more paths or regions as described in R6.2		R6.1 that was available, and did not base the allocation on one or more paths or regions as described in R6.2
R7.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 31 or more days, but less than 45 days.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 45 or more days, but less than 60 days.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 60 or more days, but less than 75 days. OR The Transmission Service Provider that maintains CBM notified at least one, but not all, of the entities as required.	The Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 75 or more days, OR The Transmission Service Provider that maintains CBM notified none of the entities as required.
R8.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 31 or more days, but less than 45 days.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 45 or more days, but less than 60 days.	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 60 or more days, but less than 75 days. OR The Transmission Planner with	The Transmission Planner with an associated Transmission Service Provider that maintains CBM notified all the entities as required, but did so in 75 or more days, OR The Transmission Planner with an associated Transmission

Standard MOD-004-1 — Capacity Benefit Margin

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
			an associated Transmission Service Provider that maintains CBM notified at least one, but not all, of the entities as required.	Service Provider that maintains CBM notified none of the entities as required.
R9.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 30, but not more than 45, days after the submission of the request.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 45, but not more than 60, days after the submission of the request.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 60, but not more than 75, days after the submission of the request. OR The Transmission Service Provider or Transmission Planner provided at least one, but not all, of the requesters specified in R9 with the supporting data, including models, used to allocate CBM.	The Transmission Service Provider or Transmission Planner provided a requester specified in R9 with the supporting data, including models, used to allocate CBM more than 75 days after the submission of the request. OR The Transmission Service Provider or Transmission Planner provided none of the requesters specified in R9 with the supporting data, including models, used to allocate CBM.
R10.	N/A	N/A	N/A	A Load-Serving Entity or Balancing Authority requested to schedule energy over CBM while not in an EEA 2 or higher.
R11.	N/A	N/A	N/A	A Balancing Authority or Transmission Service Provider denied an Arranged Interchange using CBM based on timing or ramping requirements without a reliability reason to do so.

Standard MOD-004-1 — Capacity Benefit Margin

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R12.	N/A	N/A	N/A	The Transmission Service Provider failed to approve an Arranged Interchange for CBM that met the criteria described in R12 without a reliability reason to do so.

A. Introduction

1. **Title:** **Transmission Reliability Margin Calculation Methodology**
2. **Number:** **MOD-008-1**
3. **Purpose:** To promote the consistent and reliable calculation, verification, preservation, and use of Transmission Reliability Margin (TRM) to support analysis and system operations.
4. **Applicability:**
 - 4.1. Transmission Operators that maintain TRM.
5. **Proposed Effective Date:** First day of the first calendar quarter that is twelve months beyond the date this standard is approved by applicable regulatory authorities, or in those jurisdictions where regulatory approval is not required, the standard becomes effective on the first day of the first calendar quarter that is twelve months beyond the date this standard is approved by the NERC Board of Trustees.

B. Requirements

- R1. Each Transmission Operator shall prepare and keep current a TRM Implementation Document (TRMID) that includes, as a minimum, the following information:
[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]
 - R1.1. Identification of (on each of its respective ATC Paths or Flowgates) each of the following components of uncertainty if used in establishing TRM, and a description of how that component is used to establish a TRM value:
 - Aggregate Load forecast.
 - Load distribution uncertainty.
 - Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages).
 - Allowances for parallel path (loop flow) impacts.
 - Allowances for simultaneous path interactions.
 - Variations in generation dispatch (including, but not limited to, forced or unplanned outages, maintenance outages and location of future generation).
 - Short-term System Operator response (Operating Reserve actions).
 - Reserve sharing requirements.
 - Inertial response and frequency bias.
 - R1.2. The description of the method used to allocate TRM across ATC Paths or Flowgates.
 - R1.3. The identification of the TRM calculation used for the following time periods:
 - R1.3.1. Same day and real-time.
 - R1.3.2. Day-ahead and pre-schedule.
 - R1.3.3. Beyond day-ahead and pre-schedule, up to thirteen months ahead.

- R2.** Each Transmission Operator shall only use the components of uncertainty from R1.1 to establish TRM, and shall not include any of the components of Capacity Benefit Margin (CBM). Transmission capacity set aside for reserve sharing agreements can be included in TRM. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R3.** Each Transmission Operator shall make available its TRMID, and if requested, underlying documentation (if any) used to determine TRM, in the format used by the Transmission Operator, to any of the following who make a written request no more than 30 calendar days after receiving the request. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- Transmission Service Providers
 - Reliability Coordinators
 - Planning Coordinators
 - Transmission Planner
 - Transmission Operators
- R4.** Each Transmission Operator that maintains TRM shall establish TRM values in accordance with the TRMID at least once every 13 months. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R5.** The Transmission Operator that maintains TRM shall provide the TRM values to its Transmission Service Provider(s) and Transmission Planner(s) no more than seven calendar days after a TRM value is initially established or subsequently changed. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

C. Measures

- M1.** Each Transmission Operator shall produce its TRMID evidencing inclusion of all specified information in R1. (R1)
- M2.** Each Transmission Operator shall provide evidence including its TRMID, TRM values, CBM values, or other evidence, (such as written documentation, study reports, documentation of its CBM process, and supporting information) to demonstrate that its TRM values did not include any elements of uncertainty beyond those defined in R1.1 and to show that it did not include any of the components of CBM. (R2)
- M3.** Each Transmission Operator shall provide a dated copy of any request from an entity described in R3. The Transmission Operator shall also provide evidence (such as copies of emails or postal receipts that show the recipient, date and contents) that the requested documentation (such as work papers and load flow cases) was made available within the specified timeframe to the requestor. (R3)
- M4.** Each Transmission Operator shall provide evidence (such as logs, study report, review notes, or data) that it established TRM values at least once every thirteen months for each of the TRM time periods. (R4)
- M5.** Each Transmission Operator shall provide evidence (such as logs, email, website postings) that it provided their Transmission Service Provider(s) and Transmission Planner(s) with the updated TRM value as described in R5. (R5)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Data Retention

The Transmission Operator shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Transmission Operator shall have its current, in-force TRMID and any TRMIDs in force since last compliance audit period for R1.
- The Transmission Operator shall retain evidence to show compliance with R2, R3, and R5 for the most recent three calendar years plus the current year.
- The Transmission Operator shall retain evidence to show compliance with R4 for the most recent three calendar years plus the current year.
- If a responsible entity is found non-compliant, it shall keep information related to the non-compliance until found compliant.
- The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes

Any of the following may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	The Transmission Operator has a TRMID that does not incorporate changes made up to three months ago.	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made three or more months ago but less than six months ago.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address one of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3 	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made six or more months ago but less than one year ago.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address two of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3 	<p>The Transmission Operator has a TRMID that does not incorporate changes that have been made one year ago or more.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator does not have a TRMID.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator's TRMID does not address three of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ Any one or more of the following: <ul style="list-style-type: none"> ○ R1.3.1, R1.3.2 or R1.3.3
R2.	N/A	N/A	N/A	<p>One or both of the following:</p> <ul style="list-style-type: none"> ▪ The Transmission Operator included elements of uncertainty not defined in R1 in their establishment of TRM. ▪ The Transmission Operator included components of CBM in TRM.
R3.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in more than 30 days but less than 45 days.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in 45 days or more but less than 60 days.	The Transmission Operator made the TRMID available to a requesting entity specified in R3 but provided TRMID in 60 days or more but less than 90 days.	The Transmission Operator did not make the TRMID available for 90 days or more.

Standard MOD-008-1 — TRM Calculation Methodology

<p>R4</p>	<p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. Not more than 5% or 1 value (whichever is greater) were incorrect or missing.</p>	<p>The Transmission Operator did not establish TRM within thirteen months of the previous determination, and the last determination was not more than 15 months ago</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete. More than 5%, or 1 value (which ever is greater) were incorrect or missing, but not more than 10% or 2 values (whichever is greater).</p>	<p>The Transmission Operator did not establish TRM within 15 months of the previous determination, and the last determination was not more than 18 months ago.</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. More than 10% or 2 values (which ever is greater) were incorrect or missing, but not more than 15% or 3 values.</p>	<p>The Transmission Operator did not establish TRM</p> <p>OR</p> <p>The last determination of TRM was more than 18 months ago.</p> <p>OR</p> <p>The Transmission Operator established TRM values on schedule BUT the values were incomplete or incorrect. More than 15% or 3 values (which ever is greater) were incorrect or missing.</p>
<p>R5</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in more than 7 days but less than 14 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. Not more than 5% or 1 value (which ever is greater) were incorrect or missing.</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in 14 days or more, but less than 30 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 5% or 1 value (which ever is greater) were incorrect or missing, but not more than 10% or 2 values (whichever is greater).</p>	<p>The Transmission Operator did provide the TRM values to all entities specified in 30 days or more, but less than 60 days.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 10% or 2 values (which ever is greater) were incorrect or missing, but not more than 15% or 3 values.</p>	<p>The Transmission Operator did not provide the TRM values to all entities specified within 60 days of the change.</p> <p>OR</p> <p>The Transmission Operator did provide TRM values on schedule BUT the values were incomplete or did not match those determined in R4. More than 15% or 3 values (which ever is greater) were incorrect or missing.</p>

A. Introduction

1. **Title:** **Documentation of the Accounting Methodology for the Effects of Demand-Side Management in Demand and Energy Forecasts.**
2. **Number:** MOD-021-1
3. **Purpose:** To ensure that assessments and validation of past events and databases can be performed, reporting of actual Demand data is needed. Forecast demand data is needed to perform future system assessments to identify the need for system reinforcement for continued reliability. In addition, to assist in proper real-time operating, load information related to Demand-Side Management (DSM) programs is needed.
4. **Applicability:**
 - 4.1. Load-Serving Entity
 - 4.2. Transmission Planner
 - 4.3. Resource Planner
5. **(Proposed) Effective Date:** The first day of the first calendar quarter after applicable regulatory approval; or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter after Board of Trustees' adoption.

B. Requirements

- R1. The Load-Serving Entity, Transmission Planner and Resource Planner's forecasts shall each clearly document how the Demand and energy effects of DSM programs (such as conservation, time-of-use rates, interruptible Demands, and Direct Control Load Management) are addressed.
- R2. The Load-Serving Entity, Transmission Planner and Resource Planner shall each include information detailing how Demand-Side Management measures are addressed in the forecasts of its Peak Demand and annual Net Energy for Load in the data reporting procedures of Standard MOD-016-0_R1.
- R3. The Load-Serving Entity, Transmission Planner and Resource Planner shall each make documentation on the treatment of its DSM programs available to NERC on request (within 30 calendar days).

C. Measures

- M1. The Load-Serving Entity, Transmission Planner and Resource Planner forecasts clearly document how the demand and energy effects of DSM programs (such as conservation, time-of-use rates, interruptible demands, and Direct Control Load Management) are addressed.
- M2. The Load-Serving Entity, Transmission Planner and Resource Planner information detailing how Demand-Side Management measures are addressed in the forecasts of Peak Demand and annual Net Energy for Load are included in the data reporting procedures of Reliability Standard MOD-016-0_R1.
- M3. The Load-Serving Entity, Planning Authority and Resource Planner shall each provide evidence to its Compliance Monitor that it provided documentation on the treatment of DSM programs to NERC as requested (within 30 calendar days).

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Enforcement Authority**

Standard MOD-021-1 — Accounting Methodology for Effects of DSM in Forecasts

Regional Entity.

1.2. Compliance Monitoring Period and Reset Timeframe

On request (within 30 calendar days).

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

None specified.

1.5. Additional Compliance Information

None.

2. Violation Severity Levels (no changes)

E. Regional Differences

1. None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0.1	April 15, 2009	R1. – comma inserted after Load-Serving Entity	
0.1	December 10, 2009	Approved by FERC — Added effective date	Update
1	TBD	Modified to address Order No. 693 Directives contained in paragraph 1300.	Revised.

A. Introduction

1. **Title: Area Interchange Methodology**
2. **Number: MOD-028-1**
3. **Purpose:** To increase consistency and reliability in the development and documentation of Transfer Capability calculations for short-term use performed by entities using the Area Interchange Methodology to support analysis and system operations.
4. **Applicability:**
 - 4.1. Each Transmission Operator that uses the Area Interchange Methodology to calculate Total Transfer Capabilities (TTCs) for ATC Paths.
 - 4.2. Each Transmission Service Provider that uses the Area Interchange Methodology to calculate Available Transfer Capabilities (ATCs) for ATC Paths.
5. **Proposed Effective Date:** First day of the first calendar quarter that is twelve months beyond the date that all four standards (MOD-001-1, MOD-028-1, MOD-029-1, and MOD-030-1) are approved by all applicable regulatory authorities.

B. Requirements

- R1. Each Transmission Service Provider shall include in its Available Transfer Capability Implementation Document (ATCID), at a minimum, the following information relative to its methodology for determining Total Transfer Capability (TTC): *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*
 - R1.1. Information describing how the selected methodology has been implemented, in such detail that, given the same information used by the Transmission Operator, the results of the TTC calculations can be validated.
 - R1.2. A description of the manner in which the Transmission Operator will account for Interchange Schedules in the calculation of TTC.
 - R1.3. Any contractual obligations for allocation of TTC.
 - R1.4. A description of the manner in which Contingencies are identified for use in the TTC process.
 - R1.5. The following information on how source and sink for transmission service is accounted for in ATC calculations including:
 - R1.5.1. Define if the source used for Available Transfer Capability (ATC) calculations is obtained from the source field or the Point of Receipt (POR) field of the transmission reservation
 - R1.5.2. Define if the sink used for ATC calculations is obtained from the sink field or the Point of Delivery (POD) field of the transmission reservation
 - R1.5.3. The source/sink or POR/POD identification and mapping to the model.

- R1.5.4.** If the Transmission Service Provider's ATC calculation process involves a grouping of generation, the ATCID must identify how these generators participate in the group.
- R2.** When calculating TTC for ATC Paths, the Transmission Operator shall use a Transmission model that contains all of the following: *[Violation Risk Factor: Lower]*
[Time Horizon: Operations Planning]
- R2.1.** Modeling data and topology of its Reliability Coordinator's area of responsibility. Equivalent representation of radial lines and facilities 161 kV or below is allowed.
- R2.2.** Modeling data and topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination areas.
- R2.3.** Facility Ratings specified by the Generator Owners and Transmission Owners.
- R3.** When calculating TTCs for ATC Paths, the Transmission Operator shall include the following data for the Transmission Service Provider's area. The Transmission Operator shall also include the following data associated with Facilities that are explicitly represented in the Transmission model, as provided by adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed: *[Violation Risk Factor: Lower]*
[Time Horizon: Operations Planning]
- R3.1.** For on-peak and off-peak intra-day and next-day TTCs, use the following (as well as any other values and additional parameters as specified in the ATCID):
- R3.1.1.** Expected generation and Transmission outages, additions, and retirements, included as specified in the ATCID.
- R3.1.2.** Load forecast for the applicable period being calculated.
- R3.1.3.** Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.
- R3.2.** For days two through 31 TTCs and for months two through 13 TTCs, use the following (as well as any other values and internal parameters as specified in the ATCID):
- R3.2.1.** Expected generation and Transmission outages, additions, and Retirements, included as specified in the ATCID.
- R3.2.2.** Daily load forecast for the days two through 31 TTCs being calculated and monthly forecast for months two through 13 months TTCs being calculated.
- R3.2.3.** Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.

- R4.** When calculating TTCs for ATC Paths, the Transmission Operator shall meet all of the following conditions: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R4.1.** Use all Contingencies meeting the criteria described in the ATCID.
- R4.2.** Respect any contractual allocations of TTC.
- R4.3.** Include, for each time period, the Firm Transmission Service expected to be scheduled as specified in the ATCID (filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers) for the Transmission Service Provider, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed modeling the source and sink as follows:
- If the source, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider’s Transmission model, use the discretely modeled point as the source.
 - If the source, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an “equivalence” or “aggregate representation” in the Transmission Service Provider’s Transmission model, use the modeled equivalence or aggregate as the source.
 - If the source, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point, an “equivalence,” or an “aggregate representation” in the Transmission Service Provider’s Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source.
 - If the source, as specified in the ATCID, has not been identified in the reservation, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source.
 - If the sink, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider’s Transmission model, use the discretely modeled point shall as the sink.
 - If the sink, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an “equivalence” or “aggregate representation” in the Transmission Service Provider’s Transmission model, use the modeled equivalence or aggregate as the sink.
 - If the sink, as specified in the ATCID, has been identified in the reservation and the point can not be mapped to a discretely modeled point, an “equivalence,” or an “aggregate representation” in the Transmission Service Provider’s Transmission model, use the immediately adjacent

Balancing Authority associated with the Transmission Service Provider to which the power is to be delivered as the sink.

- If the sink, as specified in the ATCID, has not been identified in the reservation, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider to which the power is being delivered as the sink.

R5. Each Transmission Operator shall establish TTC for each ATC Path as defined below: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R5.1. At least once within the seven calendar days prior to the specified period for TTCs used in hourly and daily ATC calculations.

R5.2. At least once per calendar month for TTCs used in monthly ATC calculations.

R5.3. Within 24 hours of the unexpected outage of a 500 kV or higher transmission Facility or a transformer with a low-side voltage of 200 kV or higher for TTCs in effect during the anticipated duration of the outage, provided such outage is expected to last 24 hours or longer.

R6. Each Transmission Operator shall establish TTC for each ATC Path using the following process: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

R6.1. Determine the incremental Transfer Capability for each ATC Path by increasing generation and/or decreasing load within the source Balancing Authority area and decreasing generation and/or increasing load within the sink Balancing Authority area until either:

- A System Operating Limit is reached on the Transmission Service Provider's system, or
- A SOL is reached on any other adjacent system in the Transmission model that is not on the study path and the distribution factor is 5% or greater¹.

R6.2. If the limit in step R6.1 can not be reached by adjusting any combination of load or generation, then set the incremental Transfer Capability by the results of the case where the maximum adjustments were applied.

R6.3. Use (as the TTC) the lesser of:

- The sum of the incremental Transfer Capability and the impacts of Firm Transmission Services, as specified in the Transmission Service Provider's ATCID, that were included in the study model, or
- The sum of Facility Ratings of all ties comprising the ATC Path.

R6.4. For ATC Paths whose capacity uses jointly-owned or allocated Facilities, limit TTC for each Transmission Service Provider so the TTC does not exceed each Transmission Service Provider's contractual rights.

¹ The Transmission operator may honor distribution factors less than 5% if desired.

- R7.** The Transmission Operator shall provide the Transmission Service Provider of that ATC Path with the most current value for TTC for that ATC Path no more than:
[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]
- R7.1.** One calendar day after its determination for TTCs used in hourly and daily ATC calculations.
- R7.2.** Seven calendar days after its determination for TTCs used in monthly ATC calculations.
- R8.** When calculating Existing Transmission Commitments (ETCs) for firm commitments (ETC_F) for all time periods for an ATC Path the Transmission Service Provider shall use the following algorithm: *[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]*

$$ETC_F = NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

- $NITS_F$** is the firm capacity set aside for Network Integration Transmission Service (including the capacity used to serve bundled load within the Transmission Service Provider's area with external sources) on ATC Paths that serve as interfaces with other Balancing Authorities.
- GF_F** is the firm capacity set aside for Grandfathered Firm Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or safe harbor tariff on ATC Paths that serve as interfaces with other Balancing Authorities.
- PTP_F** is the firm capacity reserved for confirmed Point-to-Point Transmission Service.
- ROR_F** is the capacity reserved for roll-over rights for Firm Transmission Service contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.
- OS_F** is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service, including any other firm adjustments to reflect impacts from other ATC Paths of the Transmission Service Provider as specified in the ATCID.
- R9.** When calculating ETC for non-firm commitments (ETC_{NF}) for all time periods for an ATC Path the Transmission Service Provider shall use the following algorithm:
[Violation Risk Factor: Lower] [Time Horizon: Operations Planning]

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

- $NITS_{NF}$** is the non-firm capacity set aside for Network Integration Transmission Service (i.e., secondary service, including the capacity used to serve bundled load within the Transmission Service Provider's area with external sources)

reserved on ATC Paths that serve as interfaces with other Balancing Authorities.

GF_{NF} is the non-firm capacity reserved for Grandfathered Non-Firm Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or safe harbor tariff on ATC Paths that serve as interfaces with other Balancing Authorities.

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Non-Firm Transmission Service, including any other firm adjustments to reflect impacts from other ATC Paths of the Transmission Service Provider as specified in the ATCID.

- R10.** When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall utilize the following algorithm: *[Violation Risk Factor: Lower]* *[Time Horizon: Operations Planning]*

$$ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + counterflows_F$$

Where:

ATC_F is the firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm Transmission commitments for the ATC Path during that period.

CBM is the Capacity Benefit Margin for the ATC Path during that period.

TRM is the Transmission Reliability Margin for the ATC Path during that period.

Postbacks_F are changes to firm ATC due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_F are adjustments to firm ATC as determined by the Transmission Service Provider and specified in the ATCID.

- R11.** When calculating non-firm ATC for a ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: *[Violation Risk Factor: Lower]* *[Time Horizon: Operations Planning]*

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + Postbacks_{NF} + counterflows_{NF}$$

Where:

ATC_{NF} is the non-firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm Transmission commitments for the ATC Path during that period.

ETC_{NF} is the sum of existing non-firm Transmission commitments for the ATC Path during that period.

CBM_S is the Capacity Benefit Margin for the ATC Path that has been scheduled without a separate reservation during that period.

TRM_U is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period.

Postbacks_{NF} are changes to non-firm ATC due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_{NF} are adjustments to non-firm ATC as determined by the Transmission Service Provider and specified in the ATCID.

C. Measures

- M1.** Each Transmission Service Provider shall provide its current ATCID that has the information described in R1 to show compliance with R1. (R1)
- M2.** Each Transmission Operator shall provide evidence including the model used to calculate TTC as well as other evidence (such as Facility Ratings provided by facility owners, written documentation, logs, and data) to show that the modeling requirements in R2 were met. (R2)
- M3.** Each Transmission Operator shall provide evidence, including scheduled outages, facility additions and retirements, (such as written documentation, logs, and data) that the data described in R3 and R4 were included in the determination of TTC as specified in the ATCID. (R3)
- M4.** Each Transmission Operator shall provide the contingencies used in determining TTC and the ATCID as evidence to show that the contingencies described in the ATCID were included in the determination of TTC. (R4)
- M5.** Each Transmission Operator shall provide copies of contracts that contain requirements to allocate TTCs and TTC values to show that any contractual allocations of TTC were respected as required in R4.2. (R4)
- M6.** Each Transmission Operator shall provide evidence (such as copies of coordination agreements, reservations, interchange transactions, or other documentation) to show that firm reservations were used to estimate scheduled interchange, the modeling of scheduled interchange was based on the rules described in R4.3, and that estimated scheduled interchange was included in the determination of TTC. (R4)
- M7.** Each Transmission Operator shall provide evidence (such as logs and data and dated copies of requests from the Transmission Service Provider to establish TTCs at specific intervals) that TTCs have been established at least once in the calendar week prior to the specified period for TTCs used in hourly and daily ATC calculations, at least once per calendar month for TTCs used in monthly ATC calculations, and within 24 hours of the unexpected outage of a 500 kV or higher transmission Facility or a autotransformer with a low-side voltage of 200 kV or higher for TTCs in effect during the anticipated

duration of the outage; provided such outage is expected to last 24 hours or longer in duration per the specifications in R5.(R5)

- M8.** Each Transmission Operator shall provide evidence (such as written documentation) that TTCs have been calculated using the process described in R6. (R6)
- M9.** Each Transmission Operator shall have evidence including a copy of the latest calculated TTC values along with a dated copy of email notices or other equivalent evidence to show that it provided its Transmission Service Provider with the most current values for TTC in accordance with R7. (R7)
- M10.** The Transmission Service Provider shall demonstrate compliance with R8 by recalculating firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R8 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in MOD-028-1 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R8 to calculate its firm ETC. (R8)
- M11.** The Transmission Service Provider shall demonstrate compliance with R9 by recalculating non-firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R9 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in MOD-028-1 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R8 to calculate its non-firm ETC. (R9)
- M12.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates firm ATCs, as required in R10. Such documentation must show that only the variables allowed in R10 were used to calculate firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R10)
- M13.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates non-firm ATCs, as required in R11. Such documentation must show that only the variables allowed in R11 were used to calculate non-firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R11)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset

Not applicable.

1.3. Data Retention

The Transmission Operator and Transmission Service Provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Transmission Service Provider shall retain its current, in force ATCID and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R1.
- The Transmission Operator shall have its latest model used to calculate TTC and evidence of the previous version to show compliance with R2.
- The Transmission Operator shall retain evidence to show compliance with R3 for the most recent 12 months or until the model used to calculate TTC is updated, whichever is longer.
- The Transmission Operator shall retain evidence to show compliance with R4, R5, R6 and R7 for the most recent 12 months.
- The Transmission Service Provider shall retain evidence to show compliance in calculating hourly values required in R8 and R9 for the most recent 14 days; evidence to show compliance in calculating daily values required in R8 and R9 for the most recent 30 days; and evidence to show compliance in calculating monthly values required in R8 and R9 for the most recent 60 days.
- The Transmission Service Provider shall retain evidence to show compliance with R10 and R11 for the most recent 12 months.
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.
- The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	<p>The Transmission Service Provider has an ATCID but it is missing one of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ R1.3 ▪ R1.4 ▪ R1.5 (any one or more of its sub-subrequirements) 	<p>The Transmission Service Provider has an ATCID but it is missing two of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ R1.3 ▪ R1.4 ▪ R1.5 (any one or more of its sub-subrequirements) 	<p>The Transmission Service Provider has an ATCID but it is missing three of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ R1.3 ▪ R1.4 ▪ R1.5 (any one or more of its sub-subrequirements) 	<p>The Transmission Service Provider has an ATCID but it is missing more than three of the following:</p> <ul style="list-style-type: none"> ▪ R1.1 ▪ R1.2 ▪ R1.3 ▪ R1.4 ▪ R1.5 (any one or more of its sub-subrequirements)
R2.	<p>The Transmission Operator used one to ten Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model.</p>	<p>The Transmission Operator used eleven to twenty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model.</p>	<p>One or both of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator used twenty-one to thirty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission Operator did not use a Transmission model that includes modeling data and topology (or equivalent representation) for one adjacent Reliability Coordinator Area. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator used more than thirty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission Operator’s model includes equivalent representation of non-radial facilities greater than 161 kV for its own Reliability Coordinator Area. • The Transmission Operator did not use a Transmission model that includes modeling data and topology (or equivalent representation) for two or more adjacent Reliability Coordinator

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Areas.
R3.	The Transmission Operator did not include in the TTC process one to ten expected generation and Transmission outages, additions or retirements as specified in the ATCID.	The Transmission Operator did not include in the TTC process eleven to twenty-five expected generation and Transmission outages, additions or retirements as specified in the ATCID.	The Transmission Operator did not include in the TTC process twenty-six to fifty expected generation and Transmission outages, additions or retirements as specified in the ATCID.	One or more of the following: <ul style="list-style-type: none"> • The Transmission Operator did not include in the TTC process more than fifty expected generation and Transmission outages, additions or retirements as specified in the ATCID. • The Transmission Operator did not include the Load forecast or unit commitment in its TTC calculation as described in R3.
R4.	The Transmission Operator did not model reservations' sources or sinks as described in R5.3 for more than zero reservations, but not more than 5% of all reservations; or 1 reservation, whichever is greater.	The Transmission Operator did not model reservations' sources or sinks as described in R5.3 for more than 5%, but not more than 10% of all reservations; or 2 reservations, whichever is greater.	The Transmission Operator did not model reservations' sources or sinks as described in R5.3 for more than 10%, but not more than 15% of all reservations; or 3 reservations, whichever is greater.	One or more of the following: <ul style="list-style-type: none"> • The Transmission Operator did not include in the TTC calculation the contingencies that met the criteria described in the ATCID. • The Transmission Operator did not respect contractual allocations of TTC. • The Transmission Operator did not model reservations' sources or sinks as described in R4.3 for more than 15% of all reservations; or more than 3 reservations, whichever is greater. • The Transmission Operator did not use firm reservations to estimate interchange or did not

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
				utilize that estimate in the TTC calculation as described in R4.3.
R5.	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not establish TTCs for use in hourly or daily ATCs within 7 calendar days but did establish the values within 10 calendar days The Transmission Operator did not establish TTCs for use in monthly ATCs during a calendar month but did establish the values within the next consecutive calendar month 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not establish TTCs for use in hourly or daily ATCs in 10 calendar days but did establish the values within 13 calendar days The Transmission Operator did not establish TTCs for use in monthly ATCs during a two consecutive calendar month period but did establish the values within the third consecutive calendar month 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not establish TTCs for used in hourly or daily ATCs in 13 calendar days but did establish the values within 16 calendar days The Transmission Operator did not establish TTCs for use in monthly ATCs during a three consecutive calendar month period but did establish the values within the fourth consecutive calendar month 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not establish TTCs for used in hourly or daily ATCs in 16 calendar days The Transmission Operator did not establish TTCs for use in monthly ATCs during a four or more consecutive calendar month period The Transmission Operator did not establish TTCs within 24 hrs of the triggers defined in R5.3
R6.	N/A	N/A	N/A	The Transmission Operator did not calculate TTCs per the process specified in R6.
R7.	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator provided its Transmission Service Provider with its ATC Path TTCs used in hourly or daily ATC calculations more than one calendar day after their determination, but not been more than two calendar days after their determination. The Transmission Operator 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator provided its Transmission Service Provider with its ATC Path TTCs used in hourly or daily ATC calculations more than two calendar days after their determination, but not been more than three calendar days after their determination. The Transmission Operator 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator provided its Transmission Service Provider with its ATC Path TTCs used in hourly or daily ATC calculations more than three calendar days after their determination, but not been more than four calendar days after their determination. The Transmission Operator 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator provided its Transmission Service Provider with its ATC Path TTCs used in hourly or daily ATC calculations more than four calendar days after their determination. The Transmission Operator did not provide its Transmission Service Provider with its ATC Path TTCs used in hourly or

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	<p>has not provided its Transmission Service Provider with its ATC Path TTCs used in monthly ATC calculations more than seven calendar days after their determination, but not more than 14 calendar days since their determination.</p>	<p>has not provided its Transmission Service Provider with its ATC Path TTCs used in monthly ATC calculations more than 14 calendar days after their determination, but not been more than 21 calendar days after their determination.</p>	<p>has not provided its Transmission Service Provider with its ATC Path TTCs used in monthly ATC calculations more than 21 calendar days after their determination, but not been more than 28 calendar days after their determination.</p>	<p>daily ATC calculations.</p> <ul style="list-style-type: none"> • The Transmission Operator provided its Transmission Service Provider with its ATC Path TTCs used in monthly ATC calculations more than 28 calendar days after their determination. • The Transmission Operator did not provide its Transmission Service Provider with its ATC Path TTCs used in monthly ATC calculations.
R8.	<p>For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M10 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.</p>	<p>For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M10 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.</p>	<p>For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M10 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.</p>	<p>For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M10 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.</p>
R9.	<p>For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M11 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not</p>	<p>For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M11 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not</p>	<p>For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M11 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not</p>	<p>For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M11 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.</p>

Standard MOD-028-1 — Area Interchange Methodology

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	more than 25% of the value calculated in the measure or 25MW, whichever is greater.	more than 35% of the value calculated in the measure or 35MW, whichever is greater...	more than 45% of the value calculated in the measure or 45MW, whichever is greater.	
R10.	The Transmission Service Provider did not use all the elements defined in R10 when determining firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R10 when determining firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R10 when determining firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R10 when determining firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).
R11.	The Transmission Service Provider did not use all the elements defined in R11 when determining non-firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R11 when determining non-firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R11 when determining non-firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R11 when determining non-firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).

A. Introduction

1. **Title:** Rated System Path Methodology
2. **Number:** MOD-029-1a
3. **Purpose:** To increase consistency and reliability in the development and documentation of transfer capability calculations for short-term use performed by entities using the Rated System Path Methodology to support analysis and system operations.
4. **Applicability:**
 - 4.1. Each Transmission Operator that uses the Rated System Path Methodology to calculate Total Transfer Capabilities (TTCs) for ATC Paths.
 - 4.2. Each Transmission Service Provider that uses the Rated System Path Methodology to calculate Available Transfer Capabilities (ATCs) for ATC Paths.
5. **Proposed Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1. When calculating TTCs for ATC Paths, the Transmission Operator shall use a Transmission model which satisfies the following requirements: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
 - R1.1. The model utilizes data and assumptions consistent with the time period being studied and that meets the following criteria:
 - R1.1.1. Includes at least:
 - R1.1.1.1. The Transmission Operator area. Equivalent representation of radial lines and facilities 161kV or below is allowed.
 - R1.1.1.2. All Transmission Operator areas contiguous with its own Transmission Operator area. (Equivalent representation is allowed.)
 - R1.1.1.3. Any other Transmission Operator area linked to the Transmission Operator's area by joint operating agreement. (Equivalent representation is allowed.)
 - R1.1.2. Models all system Elements as in-service for the assumed initial conditions.
 - R1.1.3. Models all generation (may be either a single generator or multiple generators) that is greater than 20 MVA at the point of interconnection in the studied area.
 - R1.1.4. Models phase shifters in non-regulating mode, unless otherwise specified in the Available Transfer Capability Implementation Document (ATCID).
 - R1.1.5. Uses Load forecast by Balancing Authority.

while at the same time honoring the reliability criteria outlined in R2.1. The Transmission Operator shall include the resolution of this adverse impact in its study report for the ATC Path.

- R2.6.** Where multiple ownership of Transmission rights exists on an ATC Path, allocate TTC of that ATC Path in accordance with the contractual agreement made by the multiple owners of that ATC Path.
- R2.7.** For ATC Paths whose path rating, adjusted for seasonal variance, was established, known and used in operation since January 1, 1994, and no action has been taken to have the path rated using a different method, set the TTC at that previously established amount.
- R2.8.** Create a study report that describes the steps above that were undertaken (R2.1 – R2.7), including the contingencies and assumptions used, when determining the TTC and the results of the study. Where three phase fault damping is used to determine stability limits, that report shall also identify the percent used and include justification for use unless specified otherwise in the ATCID.
- R3.** Each Transmission Operator shall establish the TTC at the lesser of the value calculated in R2 or any System Operating Limit (SOL) for that ATC Path. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R4.** Within seven calendar days of the finalization of the study report, the Transmission Operator shall make available to the Transmission Service Provider of the ATC Path, the most current value for TTC and the TTC study report documenting the assumptions used and steps taken in determining the current value for TTC for that ATC Path. [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]
- R5.** When calculating ETC for firm Existing Transmission Commitments (ETC_F) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

NL_F is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

NITS_F is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_F is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_F is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

ROR_F is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer’s Transmission Service contract expires or is eligible for renewal.

OS_F is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

- R6.** When calculating ETC for non-firm Existing Transmission Commitments (ETC_{NF}) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

NITS_{NF} is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_{NF} is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.

- R7.** When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ATC_F = TTC - ETC_F - CBM - TRM + Postbacks_F + counterflows_F$$

Where

ATC_F is the firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm commitments for the ATC Path during that period.

CBM is the Capacity Benefit Margin for the ATC Path during that period.

TRM is the Transmission Reliability Margin for the ATC Path during that period.

Postbacks_F are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_F are adjustments to firm Available Transfer Capability as determined by the Transmission Service Provider and specified in their ATCID.

- R8.** When calculating non-firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [*Violation Risk Factor: Lower*] [*Time Horizon: Operations Planning*]

$$ATC_{NF} = TTC - ETC_F - ETC_{NF} - CBM_S - TRM_U + Postbacks_{NF} + counterflows_{NF}$$

Where:

ATC_{NF} is the non-firm Available Transfer Capability for the ATC Path for that period.

TTC is the Total Transfer Capability of the ATC Path for that period.

ETC_F is the sum of existing firm commitments for the ATC Path during that period.

ETC_{NF} is the sum of existing non-firm commitments for the ATC Path during that period.

CBM_S is the Capacity Benefit Margin for the ATC Path that has been scheduled during that period.

TRM_U is the Transmission Reliability Margin for the ATC Path that has not been released for sale (unreleased) as non-firm capacity by the Transmission Service Provider during that period.

Postbacks_{NF} are changes to non-firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_{NF} are adjustments to non-firm Available Transfer Capability as determined by the Transmission Service Provider and specified in its ATCID.

C. Measures

- M1.** Each Transmission Operator that uses the Rated System Path Methodology shall produce any Transmission model it used to calculate TTC for purposes of calculating ATC for each ATC Path, as required in R1, for the time horizon(s) to be examined. (R1)
 - M1.1.** Production shall be in the same form and format used by the Transmission Operator to calculate the TTC, as required in R1. (R1)
 - M1.2.** The Transmission model produced must include the areas listed in R1.1.1 (or an equivalent representation, as described in the requirement) (R1.1)
 - M1.3.** The Transmission model produced must show the use of the modeling parameters stated in R1.1.2 through R1.1.10; except that, no evidence shall be required to prove: 1) utilization of a Special Protection System where none was included in the model or 2) that no additions or retirements to the generation or Transmission system occurred. (R1.1.2 through R1.1.10)
 - M1.4.** The Transmission Operator must provide evidence that the models used to determine TTC included Facility Ratings as provided by the Transmission Owner and Generator Owner. (R1.2)
- M2.** Each Transmission Operator that uses the Rated System Path Methodology shall produce the ATCID it uses to show where it has described and used additional modeling criteria in its ACTID that are not otherwise included in MOD-29 (R1.1.4, R.1.1.9, and R1.1.10).
- M3.** Each Transmission Operator that uses the Rated System Path Methodology with paths with ratings established prior to January 1, 1994 shall provide evidence the path and its rating were established prior to January 1, 1994. (R2.7)
- M4.** Each Transmission Operator that uses the Rated System Path Methodology shall produce as evidence the study reports, as required in R.2.8, for each path for which it determined TTC for the period examined. (R2)
- M5.** Each Transmission Operator shall provide evidence that it used the lesser of the calculated TTC or the SOL as the TTC, by producing: 1) all values calculated pursuant to R2 for each ATC Path, 2) Any corresponding SOLs for those ATC Paths, and 3) the TTC set by the Transmission Operator and given to the Transmission Service Provider for use in R7 and R8 for each ATC Path. (R3)
- M6.** Each Transmission Operator shall provide evidence (such as logs or data) that it provided the TTC and its study report to the Transmission Service Provider within seven calendar days of the finalization of the study report. (R4)
- M7.** The Transmission Service Provider shall demonstrate compliance with R5 by recalculating firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R5 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in MOD-029-1 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the

originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R5 to calculate its firm ETC. (R5)

- M8.** The Transmission Service Provider shall demonstrate compliance with R5 by recalculating non-firm ETC for any specific time period as described in (MOD-001 R2), using the algorithm defined in R6 and with data used to calculate this specified value for the designated time period. The data used must meet the requirements specified in the MOD-029 and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the algorithm in R6 to calculate its non-firm ETC. (R6)
- M9.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates firm ATCs, as required in R7. Such documentation must show that only the variables allowed in R7 were used to calculate firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R7)
- M10.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates non-firm ATCs, as required in R8. Such documentation must show that only the variables allowed in R8 were used to calculate non-firm ATCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R8)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Data Retention

- The Transmission Operator and Transmission Service Provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:
- The Transmission Operator shall have its latest models used to determine TTC for R1. (M1)

- The Transmission Operator shall have the current, in force ATCID(s) provided by its Transmission Service Provider(s) and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R1. (M2)
- The Transmission Operator shall retain evidence of any path and its rating that was established prior to January 1, 1994. (M3)
- The Transmission Operator shall retain the latest version and prior version of the TTC study reports to show compliance with R2. (M4)
- The Transmission Operator shall retain evidence for the most recent three calendar years plus the current year to show compliance with R3 and R4. (M5 and M6)
- The Transmission Service Provider shall retain evidence to show compliance in calculating hourly values required in R5 and R6 for the most recent 14 days; evidence to show compliance in calculating daily values required in R5 and R6 for the most recent 30 days; and evidence to show compliance in calculating daily values required in R5 and R6 for the most recent sixty days. (M7 and M8)
- The Transmission Service Provider shall retain evidence for the most recent three calendar years plus the current year to show compliance with R7 and R8. (M9 and M10)
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	<p>The Transmission Operator used a model that met all but one of the modeling requirements specified in R1.1.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator utilized one to ten Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that met all but two of the modeling requirements specified in R1.1.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator utilized eleven to twenty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that met all but three of the modeling requirements specified in R1.1.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator utilized twenty-one to thirty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>	<p>The Transmission Operator used a model that did not meet four or more of the modeling requirements specified in R1.1.</p> <p style="text-align: center;">OR</p> <p>The Transmission Operator utilized more than thirty Facility Ratings that were different from those specified by a Transmission Owner or Generation Owner in their Transmission model. (R1.2)</p>
R2	<p>One or both of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not calculate TTC using one of the items in sub-requirements R2.1-R2.6. The Transmission Operator does not include one required item in the study report required in R2.8. 	<p>One or both of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not calculate TTC using two of the items in sub-requirements R2.1-R2.6. The Transmission Operator does not include two required items in the study report required in R2.8. 	<p>One or both of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not calculate TTC using three of the items in sub-requirements R2.1-R2.6. The Transmission Operator does not include three required items in the study report required in R2.8. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> The Transmission Operator did not calculate TTC using four or more of the items in sub-requirements R2.1-R2.6. The Transmission Operator did not apply R2.7. The Transmission Operator does not include four or more required items in the study report required in R2.8

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than zero ATC Paths, BUT, not more than 1% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than 1% of all ATC Paths or 1 ATC Path (whichever is greater), BUT not more than 2% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL for more than 2% of all ATC Paths or 2 ATC Paths (whichever is greater), BUT not more than 5% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Operator did not specify the TTC as the lesser of the TTC calculated using the process described in R2 or any associated SOL, for more than 5% of all ATC Paths or 3 ATC Paths (whichever is greater).
R4.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than seven, but not more than 14 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 14, but not more than 21 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 21, but not more than 28 calendar days after the report was finalized.	The Transmission Operator provided the TTC and study report to the Transmission Service Provider more than 28 calendar days after the report was finalized.
R5.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M7 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.
R6.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the absolute	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M8 for the same period, and the

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.	value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.	value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.	absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.
R7.	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R7 when determining firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).
R8.	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than zero ATC Paths, but not more than 5% of all ATC Paths or 1 ATC Path (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 5% of all ATC Paths or 1 ATC Path (whichever is greater), but not more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 10% of all ATC Paths or 2 ATC Paths (whichever is greater), but not more than 15% of all ATC Paths or 3 ATC Paths (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm ATC, or used additional elements, for more than 15% of all ATC Paths or more than 3 ATC Paths (whichever is greater).

Version History

Version	Date	Action	Change Tracking
1a	Board approved 11/05/2009	Interpretation of R5 and R6	Interpretation (Project 2009-15)

Appendix 1

Requirement Number and Text of Requirement
<p>MOD-001-01 Requirement R2:</p> <p>R2. Each Transmission Service Provider shall calculate ATC or AFC values as listed below using the methodology or methodologies selected by its Transmission Operator(s):</p> <ul style="list-style-type: none">R2.1. Hourly values for at least the next 48 hours.R2.2. Daily values for at least the next 31 calendar days.R2.3. Monthly values for at least the next 12 months (months 2-13).
<p>MOD-001-01 Requirement R8:</p> <p>R8. Each Transmission Service Provider that calculates ATC shall recalculate ATC at a minimum on the following frequency, unless none of the calculated values identified in the ATC equation have changed:</p> <ul style="list-style-type: none">R8.1. Hourly values, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the ATC equation.R8.2. Daily values, once per day.R8.3. Monthly values, once per week.
<p>Question #1</p> <p>Is the “advisory ATC” used under the NYISO tariff subject to the ATC calculation and recalculation requirements in MOD-001-1 Requirements R2 and R8? If not, is it necessary to document the frequency of “advisory” calculations in the responsible entity’s Available Transfer Capability Implementation Document?</p>
<p>Response to Question #1</p> <p>Requirements R2 and R8 of MOD-001-1 are both related to Requirement R1, which defines that ATC methodologies are to be applied to specific “ATC Paths.” The NERC definition of ATC Path is “Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path.” Based on a review of the language included in this request, the NYISO Open Access Transmission Tariff, and other information posted on the NYISO Web site, it appears that the NYISO does indeed have multiple ATC Paths, which are subject to the calculation and recalculation requirements in Requirements R2 and R8. It appears from reviewing this information that ATC is defined in the NYISO tariff in the same manner in which NERC defines it, making it difficult to conclude that NYISO’s “advisory ATC” is not the same as ATC. In addition, it appears that pre-scheduling is permitted on certain external paths, making the calculation of ATC prior to day ahead necessary on those paths.</p> <p>The second part of NYISO’s question is only applicable if the first part was answered in the</p>

negative and therefore will not be addressed.

Requirement Number and Text of Requirement

MOD-029-01 Requirements R5 and R6:

R5. When calculating ETC for firm Existing Transmission Commitments (ETC_F) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below:

$$ETC_F = NL_F + NITS_F + GF_F + PTP_F + ROR_F + OS_F$$

Where:

NL_F is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

$NITS_F$ is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_F is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_F is the firm capacity reserved for confirmed Point-to-Point Transmission Service.

ROR_F is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer's Transmission Service contract expires or is eligible for renewal.

OS_F is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service as specified in the ATCID.

R6. When calculating ETC for non-firm Existing Transmission Commitments (ETC_{NF}) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm:

$$ETC_{NF} = NITS_{NF} + GF_{NF} + PTP_{NF} + OS_{NF}$$

Where:

$NITS_{NF}$ is the non-firm capacity set aside for Network Integration Transmission Service serving Load (i.e., secondary service), to include losses, and load growth not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.

GF_{NF} is the non-firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the

effective date of a Transmission Service Provider's Open Access Transmission Tariff or "safe harbor tariff."

PTP_{NF} is non-firm capacity reserved for confirmed Point-to-Point Transmission Service.

OS_{NF} is the non-firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using non-firm transmission service as specified in the ATCID.

Question #2

Could OS_F in MOD-029-1 Requirement R5 and OS_{NF} in MOD-029-1 Requirement R6 be calculated using Transmission Flow Utilization in the determination of ATC?

Response to Question #2

This request for interpretation and the NYISO Open Access Transmission Tariff describe the NYISO's concept of "Transmission Flow Utilization;" however, it is unclear whether or not Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6 are incorporated into "Transmission Flow Utilization." Provided that "Transmission Flow Utilization" does not include Native Load, Point-to-Point Transmission Service, Network Integration Transmission Service, or any of the other components explicitly defined in Requirements R5 and R6, it is appropriate to be included within the "Other Services" term. However, if "Transmission Flow Utilization" does incorporate those components, then simply including "Transmission Flow Utilization" in "Other Service" would be inappropriate.

A. Introduction

1. **Title:** **Flowgate Methodology**
2. **Number:** **MOD-030-02**
3. **Purpose:** To increase consistency and reliability in the development and documentation of transfer capability calculations for short-term use performed by entities using the Flowgate Methodology to support analysis and system operations.
4. **Applicability:**
 - 4.1.1 Each Transmission Operator that uses the Flowgate Methodology to support the calculation of Available Flowgate Capabilities (AFCs) on Flowgates.
 - 4.1.2 Each Transmission Service Provider that uses the Flowgate Methodology to calculate AFCs on Flowgates.
5. **Proposed Effective Date:** The date upon which MOD-030-01 is currently scheduled to become effective.

B. Requirements

- R1. The Transmission Service Provider shall include in its “Available Transfer Capability Implementation Document” (ATCID): [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]
 - R1.1. The criteria used by the Transmission Operator to identify sets of Transmission Facilities as Flowgates that are to be considered in Available Flowgate Capability (AFC) calculations.
 - R1.2. The following information on how source and sink for transmission service is accounted for in AFC calculations including:
 - R1.2.1. Define if the source used for AFC calculations is obtained from the source field or the Point of Receipt (POR) field of the transmission reservation.
 - R1.2.2. Define if the sink used for AFC calculations is obtained from the sink field or the Point of Delivery (POD) field of the transmission reservation.
 - R1.2.3. The source/sink or POR/POD identification and mapping to the model.
 - R1.2.4. If the Transmission Service Provider’s AFC calculation process involves a grouping of generators, the ATCID must identify how these generators participate in the group.
- R2. The Transmission Operator shall perform the following: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]
 - R2.1. Include Flowgates used in the AFC process based, at a minimum, on the following criteria:
 - R2.1.1. Results of a first Contingency transfer analysis for ATC Paths internal to a Transmission Operator’s system up to the path capability such that at a minimum the first three limiting Elements and their worst associated Contingency combinations with an OTDF of at least 5% and within the Transmission Operator’s system are included as Flowgates.
 - R2.1.1.1. Use first Contingency criteria consistent with those first Contingency criteria used in planning of operations for the

applicable time periods, including use of Special Protection Systems.

R2.1.1.2. Only the most limiting element in a series configuration needs to be included as a Flowgate.

R2.1.1.3. If any limiting element is kept within its limit for its associated worst Contingency by operating within the limits of another Flowgate, then no new Flowgate needs to be established for such limiting elements or Contingencies.

R2.1.2. Results of a first Contingency transfer analysis from all adjacent Balancing Authority source and sink (as defined in the ATCID) combinations up to the path capability such that at a minimum the first three limiting Elements and their worst associated Contingency combinations with an Outage Transfer Distribution Factor (OTDF) of at least 5% and within the Transmission Operator's system are included as Flowgates unless the interface between such adjacent Balancing Authorities is accounted for using another ATC methodology.

R2.1.2.1. Use first Contingency criteria consistent with those first Contingency criteria used in planning of operations for the applicable time periods, including use of Special Protection Systems.

R2.1.2.2. Only the most limiting element in a series configuration needs to be included as a Flowgate.

R2.1.2.3. If any limiting element is kept within its limit for its associated worst Contingency by operating within the limits of another Flowgate, then no new Flowgate needs to be established for such limiting elements or Contingencies.

R2.1.3. Any limiting Element/Contingency combination at least within its Reliability Coordinator's Area that has been subjected to an Interconnection-wide congestion management procedure within the last 12 months, unless the limiting Element/Contingency combination is accounted for using another ATC methodology or was created to address temporary operating conditions.

R2.1.4. Any limiting Element/Contingency combination within the Transmission model that has been requested to be included by any other Transmission Service Provider using the Flowgate Methodology or Area Interchange Methodology, where:

R2.1.4.1. The coordination of the limiting Element/Contingency combination is not already addressed through a different methodology, and

- Any generator within the Transmission Service Provider's area has at least a 5% Power Transfer Distribution Factor (PTDF) or Outage Transfer Distribution Factor (OTDF) impact on the Flowgate when delivered to the aggregate load of its own area, or
- A transfer from any Balancing Area within the Transmission Service Provider's area to a Balancing Area

adjacent has at least a 5% PTDF or OTDF impact on the Flowgate.

- The Transmission Operator may utilize distribution factors less than 5% if desired.

R2.1.4.2. The limiting Element/Contingency combination is included in the requesting Transmission Service Provider's methodology.

R2.2. At a minimum, establish a list of Flowgates by creating, modifying, or deleting Flowgate definitions at least once per calendar year.

R2.3. At a minimum, establish a list of Flowgates by creating, modifying, or deleting Flowgates that have been requested as part of R2.1.4 within thirty calendar days from the request.

R2.4. Establish the TFC of each of the defined Flowgates as equal to:

- For thermal limits, the System Operating Limit (SOL) of the Flowgate.
- For voltage or stability limits, the flow that will respect the SOL of the Flowgate.

R2.5. At a minimum, establish the TFC once per calendar year.

R2.5.1. If notified of a change in the Rating by the Transmission Owner that would affect the TFC of a flowgate used in the AFC process, the TFC should be updated within seven calendar days of the notification.

R2.6. Provide the Transmission Service Provider with the TFCs within seven calendar days of their establishment.

R3. The Transmission Operator shall make available to the Transmission Service Provider a Transmission model to determine Available Flowgate Capability (AFC) that meets the following criteria: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

R3.1. Contains generation Facility Ratings, such as generation maximum and minimum output levels, specified by the Generator Owners of the Facilities within the model.

R3.2. Updated at least once per day for AFC calculations for intra-day, next day, and days two through 30.

R3.3. Updated at least once per month for AFC calculations for months two through 13.

R3.4. Contains modeling data and system topology for the Facilities within its Reliability Coordinator's Area. Equivalent representation of radial lines and Facilities 161kV or below is allowed.

R3.5. Contains modeling data and system topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination Areas.

R4. When calculating AFCs, the Transmission Service Provider shall represent the impact of Transmission Service as follows: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

- If the source, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the source.
- If the source, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the

Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the source.

- If the source, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source.
- If the source, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source.
- If the sink, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the sink.
- If the sink, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the sink.
- If the sink, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink.
- If the sink, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink.

R5. When calculating AFCs, the Transmission Service Provider shall: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

R5.1. Use the models provided by the Transmission Operator.

R5.2. Include in the transmission model expected generation and Transmission outages, additions, and retirements within the scope of the model as specified in the ATCID and in effect during the applicable period of the AFC calculation for the Transmission Service Provider's area, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed.

R5.3. For external Flowgates, identified in R2.1.4, use the AFC provided by the Transmission Service Provider that calculates AFC for that Flowgate.

R6. When calculating the impact of ETC for firm commitments (ETC_{Fi}) for all time periods for a Flowgate, the Transmission Service Provider shall sum the following: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

R6.1. The impact of firm Network Integration Transmission Service, including the impacts of generation to load, in the model referenced in R5.2 for the Transmission Service Provider's area, based on:

R6.1.1. Load forecast for the time period being calculated, including Native Load and Network Service load

- R6.1.2.** Unit commitment and Dispatch Order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.
 - R6.2.** The impact of any firm Network Integration Transmission Service, including the impacts of generation to load in the model referenced in R5.2 and has a distribution factor equal to or greater than the percentage¹ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed based on:
 - R6.2.1.** Load forecast for the time period being calculated, including Native Load and Network Service load
 - R6.2.2.** Unit commitment and Dispatch Order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.
 - R6.3.** The impact of all confirmed firm Point-to-Point Transmission Service expected to be scheduled, including roll-over rights for Firm Transmission Service contracts, for the Transmission Service Provider's area.
 - R6.4.** The impact of any confirmed firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, including roll-over rights for Firm Transmission Service contracts having a distribution factor equal to or greater than the percentage² used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.
 - R6.5.** The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.
 - R6.6.** The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage³ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.
 - R6.7.** The impact of other firm services determined by the Transmission Service Provider.
- R7.** When calculating the impact of ETC for non-firm commitments (ETC_{NFi}) for all time periods for a Flowgate the Transmission Service Provider shall sum: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

¹ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

² A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

³ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

- R7.1.** The impact of all confirmed non-firm Point-to-Point Transmission Service expected to be scheduled for the Transmission Service Provider's area.
- R7.2.** The impact of any confirmed non-firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, that have a distribution factor equal to or greater than the percentage⁴ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.
- R7.3.** The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.
- R7.4.** The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage⁵ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.
- R7.5.** The impact of non-firm Network Integration Transmission Service serving Load within the Transmission Service Provider's area (i.e., secondary service), to include load growth, and losses not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
- R7.6.** The impact of any non-firm Network Integration Transmission Service (secondary service) with a distribution factor equal to or greater than the percentage⁶ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.
- R7.7.** The impact of other non-firm services determined by the Transmission Service Provider.
- R8.** When calculating firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm (subject to allocation processes described in the ATCID): [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

$$AFC_F = TFC - ETC_{Fi} - CBM_i - TRM_i + Postbacks_{Fi} + counterflows_{Fi}$$

Where:

AFC_F is the firm Available Flowgate Capability for the Flowgate for that period.

⁴ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

⁵ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

⁶ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

TFC is the Total Flowgate Capability of the Flowgate.

ETC_{Fi} is the sum of the impacts of existing firm Transmission commitments for the Flowgate during that period.

CBM_i is the impact of the Capacity Benefit Margin on the Flowgate during that period.

TRM_i is the impact of the Transmission Reliability Margin on the Flowgate during that period.

Postbacks_{Fi} are changes to firm AFC due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_{Fi} are adjustments to firm AFC as determined by the Transmission Service Provider and specified in their ATCID.

- R9.** When calculating non-firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm (subject to allocation processes described in the ATCID): [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

$$AFC_{NF} = TFC - ETC_{Fi} - ETC_{NFi} - CBM_{Si} - TRM_{Ui} + Postbacks_{NFi} + counterflows$$

Where:

AFC_{NF} is the non-firm Available Flowgate Capability for the Flowgate for that period.

TFC is the Total Flowgate Capability of the Flowgate.

ETC_{Fi} is the sum of the impacts of existing firm Transmission commitments for the Flowgate during that period.

ETC_{NFi} is the sum of the impacts of existing non-firm Transmission commitments for the Flowgate during that period.

CBM_{Si} is the impact of any schedules during that period using Capacity Benefit Margin.

TRM_{Ui} is the impact on the Flowgate of the Transmission Reliability Margin that has not been released (unreleased) for sale as non-firm capacity by the Transmission Service Provider during that period.

Postbacks_{NF} are changes to non-firm Available Flowgate Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.

counterflows_{NF} are adjustments to non-firm AFC as determined by the Transmission Service Provider and specified in their ATCID.

- R10.** Each Transmission Service Provider shall recalculate AFC, utilizing the updated models described in R3.2, R3.3, and R5, at a minimum on the following frequency, unless none of the calculated values identified in the AFC equation have changed: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

R10.1. For hourly AFC, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the AFC equation.

R10.2. For daily AFC, once per day.

R10.3. For monthly AFC, once per week.

- R11.** When converting Flowgate AFCs to ATCs for ATC Paths, the Transmission Service Provider shall convert those values based on the following algorithm: [*Violation Risk Factor: To Be Determined*] [*Time Horizon: Operations Planning*]

$$ATC = \min(P)$$

$$P = \{PATC_1, PATC_2, \dots, PATC_n\}$$

$$PATC_n = \frac{AFC_n}{DF_{np}}$$

Where:

ATC is the Available Transfer Capability.

P is the set of partial Available Transfer Capabilities for all “impacted” Flowgates honored by the Transmission Service Provider; a Flowgate is considered “impacted” by a path if the Distribution Factor for that path is greater than the percentage⁷ used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider on an OTDF Flowgate or PTDF Flowgate.

PATC_n is the partial Available Transfer Capability for a path relative to a Flowgate *n*.

AFC_n is the Available Flowgate Capability of a Flowgate *n*.

DF_{np} is the distribution factor for Flowgate *n* relative to path *p*.

C. Measures

- M1.** Each Transmission Service Provider shall provide its ATCID and other evidence (such as written documentation) to show that its ATCID contains the criteria used by the Transmission Operator to identify sets of Transmission Facilities as Flowgates and information on how sources and sinks are accounted for in AFC calculations. (R1)
- M2.** The Transmission Operator shall provide evidence (such as studies and working papers) that all Flowgates that meet the criteria described in R2.1 are considered in its AFC calculations. (R2.1)
- M3.** The Transmission Operator shall provide evidence (such as logs) that it updated its list of Flowgates at least once per calendar year. (R2.2)
- M4.** The Transmission Operator shall provide evidence (such as logs and dated requests) that it updated the list of Flowgates within thirty calendar days from a request. (R2.3)
- M5.** The Transmission Operator shall provide evidence (such as data or models) that it determined the TFC for each Flowgate as defined in R2.4. (R2.4)
- M6.** The Transmission Operator shall provide evidence (such as logs) that it established the TFCs for each Flowgate in accordance with the timing defined in R2.5. (R2.5)
- M7.** The Transmission Operator shall provide evidence (such as logs and electronic communication) that it provided the Transmission Service Provider with updated TFCs within seven calendar days of their determination. (R2.6)

⁷ A percentage less than that used in the Interconnection-wide congestion management procedure may be utilized.

- M8.** The Transmission Operator shall provide evidence (such as written documentation, logs, models, and data) that the Transmission model used to determine AFCs contains the information specified in R3. (R3)
- M9.** The Transmission Service Provider shall provide evidence (such as written documentation and data) that the modeling of point-to-point reservations was based on the rules described in R4. (R4)
- M10.** The Transmission Service Provider shall provide evidence including the models received from Transmission Operators and other evidence (such as documentation and data) to show that it used the Transmission Operator's models in calculating AFC. (R5.1)
- M11.** The Transmission Service Provider shall provide evidence (such as written documentation, electronic communications, and data) that all expected generation and Transmission outages, additions, and retirements were included in the AFC calculation as specified in the ATCID. (R5.2)
- M12.** The Transmission Service Provider shall provide evidence (such as logs, electronic communications, and data) that AFCs provided by third parties on external Flowgates were used instead of those calculated by the Transmission Operator. (R5.3)
- M13.** The Transmission Service Provider shall demonstrate compliance with R6 by recalculating firm ETC for any specific time period as described in (MOD-001 R2), using the requirements defined in R6 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in this standard and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the requirements defined in R6 to calculate its firm ETC. (R6)
- M14.** The Transmission Service Provider shall demonstrate compliance with R7 by recalculating non-firm ETC for any specific time period as described in (MOD-001 R2), using the requirements defined in R7 and with data used to calculate the specified value for the designated time period. The data used must meet the requirements specified in the standard and the ATCID. To account for differences that may occur when recalculating the value (due to mixing automated and manual processes), any recalculated value that is within +/- 15% or 15 MW, whichever is greater, of the originally calculated value, is evidence that the Transmission Service Provider used the requirements in R7 to calculate its non-firm ETC. (R7)
- M15.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates firm AFCs, as required in R8. Such documentation must show that only the variables allowed in R8 were used to calculate firm AFCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R8)
- M16.** Each Transmission Service Provider shall produce the supporting documentation for the processes used to implement the algorithm that calculates non-firm AFCs, as required in R9. Such documentation must show that only the variables allowed in R9 were used to calculate non-firm AFCs, and that the processes use the current values for the variables as determined in the requirements or definitions. Note that any variable may legitimately be zero if the

value is not applicable or calculated to be zero (such as counterflows, TRM, CBM, etc...). The supporting documentation may be provided in the same form and format as stored by the Transmission Service Provider. (R9)

M17. The Transmission Service Provider shall provide evidence (such as documentation, dated logs, and data) that it calculated AFC on the frequency defined in R10. (R10)

M18. The Transmission Service Provider shall provide evidence (such as documentation and data) when converting Flowgate AFCs to ATCs for ATC Paths, it follows the procedure described in R11. (R11)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Data Retention

The Transmission Operator and Transmission Service Provider shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The Transmission Service Provider shall retain its current, in force ATCID and any prior versions of the ATCID that were in force since the last compliance audit to show compliance with R1.
- The Transmission Operator shall have its latest model used to determine flowgates and TFC and evidence of the previous version to show compliance with R2 and R3.
- The Transmission Operator shall retain evidence to show compliance with R2.1, R2.3 for the most recent 12 months.
- The Transmission Operator shall retain evidence to show compliance with R2.2, R2.4 and R2.5 for the most recent three calendar years plus current year.
- The Transmission Service Provider shall retain evidence to show compliance with R4 for 12 months or until the model used to calculate AFC is updated, whichever is longer.
- The Transmission Service Provider shall retain evidence to show compliance with R5, R8, R9, R10, and R11 for the most recent calendar year plus current year.
- The Transmission Service Provider shall retain evidence to show compliance in calculating hourly values required in R6 and R7 for the most recent 14 days; evidence to show compliance in calculating daily values required in R6 and R7 for the most recent 30 days; and evidence to show compliance in calculating monthly values required in R6 and R7 for the most recent sixty days.
- If a Transmission Service Provider or Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.4. Compliance Monitoring and Enforcement Processes:

The following processes may be used:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	The Transmission Service Provider does not include in its ATCID one or two of the sub-requirements listed under R1.2, or the sub-requirement is incomplete.	The Transmission Service Provider does not include in its ATCID three of the sub-requirements listed under R1.2, or the sub-requirement is incomplete.	The Transmission Service Provider does not include in its ATCID the information described in R1.1. OR The Transmission Service Provider does not include in its ATCID the information described in R1.2 (1.2.1, 1.2.2., 1.2.3, and 1.2.4 are missing).	The Transmission Service Provider does not include in its ATCID the information described in R1.1 and R1.2 (1.2.1, 1.2.2., 1.2.3, and 1.2.4 are missing).
R2.	One or more of the following: <ul style="list-style-type: none"> The Transmission Operator established its list of Flowgates less frequently than once per calendar year, but not more than three months late as described in R2.2. The Transmission Operator established its list of Flowgates more than thirty days, but not more than sixty days, following a request to create, modify or delete a flowgate as described in R2.3. The Transmission Operator has not updated its Flowgate TFC when notified by the Transmission Owner in more than 7 days, but it has not been more than 14 days 	One or more of the following: <ul style="list-style-type: none"> The Transmission Operator did not include a Flowgate in their AFC calculations that met the criteria described in R2.1. The Transmission Operator established its list of Flowgates more than three months late, but not more than six months late as described in R2.2. The Transmission Operator established its list of Flowgates more than sixty days, but not more than ninety days, following a request to create, modify or delete a flowgate as described in R2.3. The Transmission Operator 	One or more of the following: <ul style="list-style-type: none"> The Transmission Operator did not include two to five Flowgates in their AFC calculations that met the criteria described in R2.1. The Transmission Operator established its list of Flowgates more than six months late, but not more than nine months late as described in R2.2. The Transmission Operator established its list of Flowgates more than ninety days, but not more than 120 days, following a request to create, modify or delete a flowgate as described in R2.3. The Transmission Operator 	One or more of the following: <ul style="list-style-type: none"> The Transmission Operator did not include six or more Flowgates in their AFC calculations that met the criteria described in R2.1. The Transmission Operator established its list of Flowgates more than nine months late as described in R2.2. The Transmission Operator did not establish its list of internal Flowgates as described in R2.2. The Transmission Operator established its list of Flowgates more than 120 days following a request to create, modify or delete a flowgate as described in

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	<p>since the notification (R2.5.1)</p> <ul style="list-style-type: none"> The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs within seven days (one week) of their determination, but is has not been more than 14 days (two weeks) since their determination. 	<p>has not updated its Flowgate TFCs at least once within a calendar year, and it has been not more than 15 months since the last update.</p> <ul style="list-style-type: none"> The Transmission Operator has not updated its Flowgate TFC when notified by the Transmission Owner in more than 14 days, but it has not been more than 21 days since the notification (R2.5.1) The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 14 days (two weeks) of their determination, but is has not been more than 21 days (three weeks) since their determination. 	<p>has not updated its Flowgate TFCs at least once within a calendar year, and it has been more than 15 months but not more than 18 months since the last update.</p> <ul style="list-style-type: none"> The Transmission Operator has not updated its Flowgate TFCs when notified by the Transmission Owner in more than 21 days, but it has not been more than 28 days since the notification (R2.5.1) The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 21 days (three weeks) of their determination, but is has not been more than 28 days (four weeks) since their determination. 	<p>R2.3.</p> <ul style="list-style-type: none"> The Transmission Operator did not establish its list of external Flowgates following a request to create, modify or delete an external flowgate as described in R2.3. The Transmission Operator did not determine the TFC for a flowgate as described in R2.4. The Transmission Operator has not updated its Flowgate TFCs at least once within a calendar year, and it has been more than 18 months since the last update. (R2.5) The Transmission Operator has not updated its Flowgate TFCs when notified by the Transmission Owner in more than 28 calendar days (R2.5.1) The Transmission Operator has not provided its Transmission Service Provider with its Flowgate TFCs in more than 28 days (4 weeks) of their determination.

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R3.	<p>One or more of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator used one to ten Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission Operator did not update the model per R3.2 for one or more calendar days but not more than 2 calendar days • The Transmission Operator did not update the model for per R3.3 for one or more months but not more than six weeks 	<p>One or more of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator used eleven to twenty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission Operator did not update the model per R3.2 for more than 2 calendar days but not more than 3 calendar days • The Transmission Operator did not update the model for per R3.3 for more than six weeks but not more than eight weeks 	<p>One or more of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator used twenty-one to thirty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission Operator did not update the model per R3.2 for more than 3 calendar days but not more than 4 calendar days • The Transmission Operator did not update the model for per R3.3 for more than eight weeks but not more than ten weeks 	<p>One or more of the following:</p> <ul style="list-style-type: none"> • The Transmission Operator did not update the model per R3.2 for more than 4 calendar days • The Transmission Operator did not update the model for per R3.3 for more than ten weeks • The Transmission Operator used more than thirty Facility Ratings that were different from those specified by a Transmission or Generator Owner in their Transmission model. • The Transmission operator did not include in the Transmission model detailed modeling data and topology for its own Reliability Coordinator area. • The Transmission operator did not include in the Transmission modeling data and topology for immediately adjacent and beyond Reliability Coordinator area.
R4.	<p>The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than zero, but not more than</p>	<p>The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 5%, but not more than</p>	<p>The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 10%, but not more than</p>	<p>The Transmission Service Provider did not represent the impact of Transmission Service as described in R4 for more than 15% of all reservations; or</p>

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	5% of all reservations; or more than zero, but not more than 1 reservation, whichever is greater..	10% of all reservations; or more than 1, but not more than 2 reservations, whichever is greater..	15% of all reservations; or more than 2, but not more than 3 reservations, whichever is greater..	more than 3 reservations, whichever is greater..
R5.	The Transmission Service Provider did not include in the AFC process one to ten expected generation or Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	The Transmission Service Provider did not include in the AFC process eleven to twenty-five expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	The Transmission Service Provider did not include in the AFC process twenty-six to fifty expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID.	One or more of the following: <ul style="list-style-type: none"> The Transmission Service Provider did not use the model provided by the Transmission Operator. The Transmission Service Provider did not include in the AFC process more than fifty expected generation and Transmission outages, additions or retirements within the scope of the model as specified in the ATCID. The Transmission Service provider did not use AFC provided by a third party.
R6.	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or	For a specified period, the Transmission Service Provider calculated a firm ETC with an absolute value different than that calculated in M13 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	25MW, whichever is greater..	35MW, whichever is greater.	45MW, whichever is greater.	
R7.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 15% of the value calculated in the measure or 15MW, whichever is greater, but not more than 25% of the value calculated in the measure or 25MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 25% of the value calculated in the measure or 25MW, whichever is greater, but not more than 35% of the value calculated in the measure or 35MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 35% of the value calculated in the measure or 35MW, whichever is greater, but not more than 45% of the value calculated in the measure or 45MW, whichever is greater.	For a specified period, the Transmission Service Provider calculated a non-firm ETC with an absolute value different than that calculated in M14 for the same period, and the absolute value difference was more than 45% of the value calculated in the measure or 45MW, whichever is greater.
R8.	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more than zero Flowgates, but not more than 5% of all Flowgates or 1 Flowgate (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more than 5% of all Flowgates or 1 Flowgates (whichever is greater), but not more than 10% of all Flowgates or 2 Flowgates (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more than 10% of all Flowgates or 2 Flowgates (whichever is greater), but not more than 15% of all Flowgates or 3 Flowgates (whichever is greater).	The Transmission Service Provider did not use all the elements defined in R8 when determining firm AFC, or used additional elements, for more than 15% of all Flowgates or more than 3 Flowgates (whichever is greater).
R9.	The Transmission Service Provider did not use all the elements defined in R8 when determining non-firm AFC, or used additional elements, for more than zero Flowgates, but	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 5% of all Flowgates	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 10% of all	The Transmission Service Provider did not use all the elements defined in R9 when determining non-firm AFC, or used additional elements, for more than 15% of all

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
	not more than 5% of all Flowgates or 1 Flowgate (whichever is greater).	or 1 Flowgate (whichever is greater), but not more than 10% of all Flowgates or 2 Flowgates (whichever is greater).	Flowgates or 2 Flowgates (whichever is greater), but not more than 15% of all Flowgates or 3 Flowgates (whichever is greater).	Flowgates or more than 3 Flowgates (whichever is greater).
R10	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for one or more hours but not more than 15 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the AFC equation changed and the Transmission Service provider did not calculate for one or more calendar days but not more than 3 calendar days. ▪ For Monthly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for seven or more calendar days, but less than 14 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 15 hours but not more than 20 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 3 calendar days but not more than 4 calendar days. ▪ For Monthly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for 14 or more calendar days, but less than 21 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 20 hours but not more than 25 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 4 calendar days but not more than 5 calendar days. ▪ For Monthly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for 21 or more calendar days, but less than 28 calendar days. 	<p>One or more of the following:</p> <ul style="list-style-type: none"> ▪ For Hourly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 25 hours, and was in excess of the 175-hour per year requirement. ▪ For Daily, the values described in the AFC equation changed and the Transmission Service provider did not calculate for more than 5 calendar days. ▪ For Monthly, the values described in the AFC equation changed and the Transmission Service provider did not calculate for 28 or more calendar days.

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R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R11.	N/A	N/A	N/A	The Transmission Service Provider did not follow the procedure for converting Flowgate AFCs to ATCs described in R11.

A. Regional Differences

None identified.

B. Associated Documents

Version History

Version	Date	Action	Change Tracking
2		Modified R2.1.1.3, R2.1.2.3, R2.1.3, R2.2, R2.3 and R11 Made conforming changes to M18 and VSLs for R2 and R11	Revised

A. Introduction

1. **Title:** Reliability Coordination — Staffing
2. **Number:** PER-004-2
3. **Purpose:**

Reliability Coordinators must have sufficient, competent staff to perform the Reliability Coordinator functions.
4. **Applicability**
 - 4.1. Reliability Coordinators.
5. **Effective Date:**
 - Retire Requirement 2 when PER-005-1 Requirement 3 becomes effective.
 - Retire Requirements 3 and 4 when PER-005-1 Requirements 1 and 2 become effective.

B. Requirements

- R1. Each Reliability Coordinator shall be staffed with adequately trained and NERC-certified Reliability Coordinator operators, 24 hours per day, seven days per week.
- R2. Reliability Coordinator operating personnel shall place particular attention on SOLs and IROLs and inter-tie facility limits. The Reliability Coordinator shall ensure protocols are in place to allow Reliability Coordinator operating personnel to have the best available information at all times.

C. Measures

None

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**

Regional Reliability Organizations shall be responsible for compliance monitoring.
 - 1.2. **Compliance Monitoring and Reset Time Frame**

One or more of the following methods will be used to assess compliance:

 - Self-certification (Conducted annually with submission according to schedule.)
 - Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
 - Periodic Audit (Conducted once every three years according to schedule.)
 - Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an

extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Reliability Coordinator shall keep evidence of compliance for the previous two calendar years plus the current year.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records.

1.4. Additional Compliance Information

None.

2. Levels of Non-Compliance for a Reliability Coordinator (Replaced with VSLs)

2.1.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Revised
2		Retire R2 and M1 when PER-005-1 Requirement 3 becomes effective. Retire R3, R4 and M2 when PER-005 R1 and R2 become effective.	Revised

A. Introduction

1. **Title:** System Personnel Training
2. **Number:** PER-005-1
3. **Purpose:** To ensure that System Operators performing real-time, reliability-related tasks on the North American Bulk Electric System (BES) are competent to perform those reliability-related tasks. The competency of System Operators is critical to the reliability of the North American Bulk Electric System.
4. **Applicability:**
 - 4.1. **Functional Entities:**
 - 4.1.1 Reliability Coordinator.
 - 4.1.2 Balancing Authority.
 - 4.1.3 Transmission Operator.
5. **Proposed Effective Date for Regulatory Approvals:**
 - 5.1. In those jurisdictions where regulatory approval is required, Requirement R1 and Requirement R2 shall become effective on the first day of the first calendar quarter, 24 months after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, Requirement R1 and Requirement R2 shall become effective on the first day of the first calendar quarter, 24 months after Board of Trustees adoption.
 - 5.2. In those jurisdictions where regulatory approval is required, Requirement R3 shall become effective on the first day of the first calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, Requirement R3 shall become effective on the first day of the first calendar quarter after Board of Trustees adoption.
 - 5.3. In those jurisdictions where regulatory approval is required Sub-requirement R3.1 shall become effective on the first day of the first calendar quarter, 36 months after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, the Sub-requirement R3.1 shall become effective on the first day of the first calendar quarter, 36 months after Board of Trustees adoption.

B. Requirements

- R1. Each Reliability Coordinator, Balancing Authority and Transmission Operator shall use a systematic approach to training to establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and shall implement the program. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - R1.1. Each Reliability Coordinator, Balancing Authority and Transmission Operator shall create a list of BES company-specific reliability-related tasks performed by its System Operators.
 - R1.1.1. Each Reliability Coordinator, Balancing Authority and Transmission Operator shall update its list of BES company-specific reliability-related tasks performed by its System Operators each calendar year to identify new or modified tasks for inclusion in training.

- R1.2.** Each Reliability Coordinator, Balancing Authority and Transmission Operator shall design and develop learning objectives and training materials based on the task list created in R1.1.
- R1.3.** Each Reliability Coordinator, Balancing Authority and Transmission Operator shall deliver the training established in R1.2.
- R1.4.** Each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of the training program established in R1, to identify any needed changes to the training program and shall implement the changes identified.
- R2.** Each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator’s capabilities to perform each assigned task identified in R1.1 at least one time. *[Violation Risk Factor: High] [Time Horizon: Long-term Planning]*
 - R2.1.** Within six months of a modification of the BES company-specific reliability-related tasks, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator’s capabilities to perform the new or modified tasks.
- R3.** At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall provide each of its System Operators with at least 32 hours of emergency operations training applicable to its organization that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*
 - R3.1.** Each Reliability Coordinator, Balancing Authority and Transmission Operator that has operational authority or control over Facilities with established IROLs or has established operating guides or protection systems to mitigate IROL violations shall provide each System Operator with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES during normal and emergency conditions.

C. Measures

- M1.** Each Reliability Coordinator, Balancing Authority and Transmission Operator shall have available for inspection evidence of using a systematic approach to training to establish and implement a training program, as specified in R1.
 - M1.1** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have available for inspection its company-specific reliability-related task list, with the date of the last review and/or revision, as specified in R1.1.
 - M1.2** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have available for inspection its learning objectives and training materials, as specified in R1.2.
 - M1.3** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have available for inspection System Operator training records showing the names of the people trained, the title of the training delivered and the dates of delivery to show that it delivered the training, as specified in R1.3.
 - M1.4** Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have available for inspection evidence (such as instructor observations, trainee feedback, supervisor feedback, course evaluations, learning assessments, or internal

audit results) that it performed an annual training program evaluation, as specified in R1.4

M2. Each Reliability Coordinator, Balancing Authority and Transmission Operator shall have available for inspection evidence to show that it verified that each of its System Operators is capable of performing each assigned task identified in R1.1, as specified in R2. This evidence can be documents such as training records showing successful completion of tasks with the employee name and date; supervisor check sheets showing the employee name, date, and task completed; or the results of learning assessments.

M3. Each Reliability Coordinator, Balancing Authority and Transmission Operator shall have available for inspection training records that provide evidence that each System Operator has obtained 32 hours of emergency operations training, as specified in R3.

M3.1 Each Reliability Coordinator, Balancing Authority and Transmission Operator shall have available for inspection training records that provide evidence that each System Operator received emergency operations training using simulation technology, as specified in R3.1.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority

For Reliability Coordinators and other functional entities that work for their Regional Entity, the ERO shall serve as the Compliance Enforcement Authority.

For entities that do not work for the Regional Entity, the Regional Entity shall serve as the Compliance Enforcement Authority.

1.2. Compliance Monitoring Period and Reset

Not Applicable.

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

Each Reliability Coordinator, Balancing Authority and Transmission Operator shall keep data or evidence to show compliance for three years or since its last compliance audit, whichever time frame is the greatest, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If a Reliability Coordinator, Balancing Authority and Transmission Operator is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

1.5. Additional Compliance Information

None.

2. Violation Severity Levels

R#	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	None	<p>The responsible entity failed to provide evidence that it updated its company-specific reliability-related task list to identify new or modified tasks each calendar year (R1.1.1)</p> <p>OR</p> <p>The responsible entity failed to provide evidence of evaluating its training program to identify needed changes to its training program(s). (R1.4)</p>	<p>The responsible entity failed to design and develop learning objectives and training materials based on the BES company specific reliability related tasks. (R1.2)</p>	<p>The responsible entity failed to prepare a company-specific reliability-related task list (R1.1)</p> <p>OR</p> <p>The responsible entity failed to deliver training based on the BES company specific reliability related tasks. (R1.3)</p>
R2	None	<p>The responsible entity verified at least 90% but less than 100% of its System Operators’ capabilities to perform each assigned task from its list of BES company-specific reliability-related tasks. (R2)</p>	<p>The responsible entity verified at least 70% but less than 90% of its System Operators’ capabilities to perform each assigned task from its list of BES company-specific reliability-related tasks (R2)</p> <p>OR</p> <p>The responsible entity failed to verify its system operator’s capabilities to perform each new or modified task within six months of making a modification to its BES company-specific reliability-related task list. (R2.1)</p>	<p>The responsible entity verified less than 70% of its System Operators’ capabilities to perform each assigned task from its list of BES company-specific reliability-related tasks. (R2)</p>
R3	None	<p>The responsible entity provided at least 32 hours of emergency operations training to at least 90% but less than 100% of their System Operators. (R3)</p>	<p>The responsible entity provided at least 32 hours of emergency operations training to at least 70% but less than 90% of its System Operators. (R3)</p>	<p>The responsible entity provided 32 hours of emergency operations training to less than 70% of its System Operators (R3)</p> <p>OR</p> <p>The responsible entity did not include simulation technology replicating the operational behavior of the BES in its emergency operations training. (R3.1)</p>

E. Regional Variances

None.

Version History

Version	Date	Action	Change Tracking

Standard PRC-004-2 – Analysis and Mitigation of Transmission and Generation Protection System Misoperations

A. Introduction

1. **Title:** Analysis and Mitigation of Transmission and Generation Protection System Misoperations
2. **Number:** PRC-004-2
3. **Purpose:** Ensure all transmission and generation Protection System Misoperations affecting the reliability of the Bulk Electric System (BES) are analyzed and mitigated.
4. **Applicability**
 - 4.1. Transmission Owner.
 - 4.2. Distribution Provider that owns a transmission Protection System.
 - 4.3. Generator Owner.
5. **(Proposed) Effective Date:** The first day of the first calendar quarter, one year after applicable regulatory approval; or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter one year after Board of Trustees' adoption.

B. Requirements

- R1. The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.
- R2. The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.
- R3. The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Entity, documentation of its Misoperations analyses and Corrective Action Plans according to the Regional Entity's procedures.

C. Measures

- M1. The Transmission Owner, and any Distribution Provider that owns a transmission Protection System shall each have evidence it analyzed its Protection System Misoperations and developed and implemented Corrective Action Plans to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.
- M2. The Generator Owner shall have evidence it analyzed its Protection System Misoperations and developed and implemented Corrective Action Plans to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.
- M3. Each Transmission Owner, and any Distribution Provider that owns a transmission Protection System, and each Generator Owner shall have evidence it provided documentation of its Protection System Misoperations, analyses and Corrective Action Plans according to the Regional Entity's procedures.

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Enforcement Authority**

Regional Entity.

Standard PRC-004-2 – Analysis and Mitigation of Transmission and Generation Protection System Misoperations

1.2. Compliance Monitoring Period and Reset Time Frame

Not applicable.

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The Transmission Owner, and Distribution Provider that own a transmission Protection System and the Generator Owner that owns a generation Protection System shall each retain data on its Protection System Misoperations and each accompanying Corrective Action Plan until the Corrective Action Plan has been executed or for 12 months, whichever is later.

The Compliance Monitor shall retain any audit data for three years.

1.5. Additional Compliance Information

The Transmission Owner, and any Distribution Provider that owns a transmission Protection System and the Generator Owner shall demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Violation Severity Levels (no changes)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
1	December 1, 2005	1. Changed incorrect use of certain hyphens (-) to “en dash” (–) and “em dash (—).” 2. Added “periods” to items where appropriate. Changed “Timeframe” to “Time Frame” in item D, 1.2.	01/20/06
2	TBD	Modified to address Order No. 693 Directives contained in paragraph 1469.	Revised.

A. Introduction

- 1. Title: Transmission Relay Loadability**
- 2. Number:** PRC-023-1
- 3. Purpose:** Protective relay settings shall not limit transmission loadability; not interfere with system operators' ability to take remedial action to protect system reliability and; be set to reliably detect all fault conditions and protect the electrical network from these faults.
- 4. Applicability:**
 - 4.1.** Transmission Owners with load-responsive phase protection systems as described in Attachment A, applied to facilities defined below:
 - 4.1.1** Transmission lines operated at 200 kV and above.
 - 4.1.2** Transmission lines operated at 100 kV to 200 kV as designated by the Planning Coordinator as critical to the reliability of the Bulk Electric System.
 - 4.1.3** Transformers with low voltage terminals connected at 200 kV and above.
 - 4.1.4** Transformers with low voltage terminals connected at 100 kV to 200 kV as designated by the Planning Coordinator as critical to the reliability of the Bulk Electric System.
 - 4.2.** Generator Owners with load-responsive phase protection systems as described in Attachment A, applied to facilities defined in 4.1.1 through 4.1.4.
 - 4.3.** Distribution Providers with load-responsive phase protection systems as described in Attachment A, applied according to facilities defined in 4.1.1 through 4.1.4., provided that those facilities have bi-directional flow capabilities.
 - 4.4.** Planning Coordinators.
- 5. Effective Dates¹:**
 - 5.1.** Requirement 1, Requirement 2:
 - 5.1.1** For circuits described in 4.1.1 and 4.1.3 above (except for switch-on-to-fault schemes) —the beginning of the first calendar quarter following applicable regulatory approvals.
 - 5.1.2** For circuits described in 4.1.2 and 4.1.4 above (including switch-on-to-fault schemes) — at the beginning of the first calendar quarter 39 months following applicable regulatory approvals.
 - 5.1.3** Each Transmission Owner, Generator Owner, and Distribution Provider shall have 24 months after being notified by its Planning Coordinator pursuant to R3.3 to comply with R1 (including all sub-requirements) for each facility that is added to the Planning Coordinator's critical facilities list determined pursuant to R3.1.
 - 5.2.** Requirement 3: 18 months following applicable regulatory approvals.

¹ Temporary Exceptions that have already been approved by the NERC Planning Committee via the NERC System Protection and Control Task Force prior to the approval of this standard shall not result in either findings of non-compliance or sanctions if all of the following apply: (1) the approved requests for Temporary Exceptions include a mitigation plan (including schedule) to come into full compliance, and (2) the non-conforming relay settings are mitigated according to the approved mitigation plan.

B. Requirements

- R1.** Each Transmission Owner, Generator Owner, and Distribution Provider shall use any one of the following criteria (R1.1 through R1.13) for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Bulk Electric System for all fault conditions. Each Transmission Owner, Generator Owner, and Distribution Provider shall evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees: [Violation Risk Factor: High] [Mitigation Time Horizon: Long Term Planning].
- R1.1.** Set transmission line relays so they do not operate at or below 150% of the highest seasonal Facility Rating of a circuit, for the available defined loading duration nearest 4 hours (expressed in amperes).
- R1.2.** Set transmission line relays so they do not operate at or below 115% of the highest seasonal 15-minute Facility Rating² of a circuit (expressed in amperes).
- R1.3.** Set transmission line relays so they do not operate at or below 115% of the maximum theoretical power transfer capability (using a 90-degree angle between the sending-end and receiving-end voltages and either reactance or complex impedance) of the circuit (expressed in amperes) using one of the following to perform the power transfer calculation:
- R1.3.1.** An infinite source (zero source impedance) with a 1.00 per unit bus voltage at each end of the line.
- R1.3.2.** An impedance at each end of the line, which reflects the actual system source impedance with a 1.05 per unit voltage behind each source impedance.
- R1.4.** Set transmission line relays on series compensated transmission lines so they do not operate at or below the maximum power transfer capability of the line, determined as the greater of:
- 115% of the highest emergency rating of the series capacitor.
 - 115% of the maximum power transfer capability of the circuit (expressed in amperes), calculated in accordance with R1.3, using the full line inductive reactance.
- R1.5.** Set transmission line relays on weak source systems so they do not operate at or below 170% of the maximum end-of-line three-phase fault magnitude (expressed in amperes).
- R1.6.** Set transmission line relays applied on transmission lines connected to generation stations remote to load so they do not operate at or below 230% of the aggregated generation nameplate capability.
- R1.7.** Set transmission line relays applied at the load center terminal, remote from generation stations, so they do not operate at or below 115% of the maximum current flow from the load to the generation source under any system configuration.

² When a 15-minute rating has been calculated and published for use in real-time operations, the 15-minute rating can be used to establish the loadability requirement for the protective relays.

- R1.8.** Set transmission line relays applied on the bulk system-end of transmission lines that serve load remote to the system so they do not operate at or below 115% of the maximum current flow from the system to the load under any system configuration.
- R1.9.** Set transmission line relays applied on the load-end of transmission lines that serve load remote to the bulk system so they do not operate at or below 115% of the maximum current flow from the load to the system under any system configuration.
- R1.10.** Set transformer fault protection relays and transmission line relays on transmission lines terminated only with a transformer so that they do not operate at or below the greater of:
- 150% of the applicable maximum transformer nameplate rating (expressed in amperes), including the forced cooled ratings corresponding to all installed supplemental cooling equipment.
 - 115% of the highest operator established emergency transformer rating.
- R1.11.** For transformer overload protection relays that do not comply with R1.10 set the relays according to one of the following:
- Set the relays to allow the transformer to be operated at an overload level of at least 150% of the maximum applicable nameplate rating, or 115% of the highest operator established emergency transformer rating, whichever is greater. The protection must allow this overload for at least 15 minutes to allow for the operator to take controlled action to relieve the overload.
 - Install supervision for the relays using either a top oil or simulated winding hot spot temperature element. The setting should be no less than 100° C for the top oil or 140° C for the winding hot spot temperature³.
- R1.12.** When the desired transmission line capability is limited by the requirement to adequately protect the transmission line, set the transmission line distance relays to a maximum of 125% of the apparent impedance (at the impedance angle of the transmission line) subject to the following constraints:
- R1.12.1.** Set the maximum torque angle (MTA) to 90 degrees or the highest supported by the manufacturer.
- R1.12.2.** Evaluate the relay loadability in amperes at the relay trip point at 0.85 per unit voltage and a power factor angle of 30 degrees.
- R1.12.3.** Include a relay setting component of 87% of the current calculated in R1.12.2 in the Facility Rating determination for the circuit.
- R1.13.** Where other situations present practical limitations on circuit capability, set the phase protection relays so they do not operate at or below 115% of such limitations.
- R2.** The Transmission Owner, Generator Owner, or Distribution Provider that uses a circuit capability with the practical limitations described in R1.6, R1.7, R1.8, R1.9, R1.12, or R1.13 shall use the calculated circuit capability as the Facility Rating of the circuit and shall obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator

³ IEEE standard C57.115, Table 3, specifies that transformers are to be designed to withstand a winding hot spot temperature of 180 degrees C, and cautions that bubble formation may occur above 140 degrees C.

with the calculated circuit capability. [Violation Risk Factor: Medium] [Time Horizon: Long Term Planning]

- R3.** The Planning Coordinator shall determine which of the facilities (transmission lines operated at 100 kV to 200 kV and transformers with low voltage terminals connected at 100 kV to 200 kV) in its Planning Coordinator Area are critical to the reliability of the Bulk Electric System to identify the facilities from 100 kV to 200 kV that must meet Requirement 1 to prevent potential cascade tripping that may occur when protective relay settings limit transmission loadability. [Violation Risk Factor: Medium] [Time Horizon: Long Term Planning]

R3.1. The Planning Coordinator shall have a process to determine the facilities that are critical to the reliability of the Bulk Electric System.

R3.1.1. This process shall consider input from adjoining Planning Coordinators and affected Reliability Coordinators.

R3.2. The Planning Coordinator shall maintain a current list of facilities determined according to the process described in R3.1.

R3.3. The Planning Coordinator shall provide a list of facilities to its Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within 30 days of the establishment of the initial list and within 30 days of any changes to the list.

C. Measures

M1. The Transmission Owner, Generator Owner, and Distribution Provider shall each have evidence to show that each of its transmission relays are set according to one of the criteria in R1.1 through R1.13. (R1)

M2. The Transmission Owner, Generator Owner, and Distribution Provider with transmission relays set according to the criteria in R1.6, R1.7, R1.8, R1.9, R1.12, or R.13 shall have evidence that the resulting Facility Rating was agreed to by its associated Planning Coordinator, Transmission Operator, and Reliability Coordinator. (R2)

M3. The Planning Coordinator shall have a documented process for the determination of facilities as described in R3. The Planning Coordinator shall have a current list of such facilities and shall have evidence that it provided the list to the appropriate Reliability Coordinators, Transmission Operators, Generator Operators, and Distribution Providers. (R3)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

1.1.1 Compliance Enforcement Authority

1.2. Compliance Monitoring Period and Reset Time Frame

One calendar year.

1.3. Data Retention

The Transmission Owner, Generator Owner, and Distribution Provider shall each retain documentation for three years.

The Planning Coordinator shall retain documentation of the most recent review process required in R3. The Planning Coordinator shall retain the most recent list of facilities that are critical to the reliability of the electric system determined per R3.

The Compliance Monitor shall retain its compliance documentation for three years.

1.4. Additional Compliance Information

The Transmission Owner, Generator Owner, Planning Coordinator, and Distribution Provider shall each demonstrate compliance through annual self-certification, or compliance audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Enforcement Authority.

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2. Violation Severity Levels:

Requirement	Lower	Moderate	High	Severe
R1		Evidence that relay settings comply with criteria in R1.1 through R1.13 exists, but evidence is incomplete or incorrect for one or more of the subrequirements.		Relay settings do not comply with any of the sub requirements R1.1 through R1.13 OR Evidence does not exist to support that relay settings comply with one of the criteria in subrequirements R1.1 through R1.13.
R2	Criteria described in R1.6, R1.7, R1.8, R1.9, R1.12, or R1.13 was used but evidence does not exist that agreement was obtained in accordance with R2.			
R3		Provided the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers between 31 days and 45 days after the list was established or updated.	Provided the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers between 46 days and 60 days after list was established or updated.	Does not have a process in place to determine facilities that are critical to the reliability of the Bulk Electric System. OR Does not maintain a current list of facilities critical to the reliability of the Bulk Electric System, OR Did not provide the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers, or provided the list more than 60 days after the list was established or updated.

E. Regional Differences

None

F. Supplemental Technical Reference Document

1. The following document is an explanatory supplement to the standard. It provides the technical rationale underlying the requirements in this standard. The reference document contains methodology examples for illustration purposes it does not preclude other technically comparable methodologies

“Determination and Application of Practical Relaying Loadability Ratings,” Version 1.0, January 9, 2007, prepared by the System Protection and Control Task Force of the NERC Planning Committee, available at: <http://www.nerc.com/~filez/reports.html>.

Version History

Version	Date	Action	Change Tracking
1	February 12, 2008	Approved by Board of Trustees	New
1	March 19, 2008	Corrected typo in last sentence of Severe VSL for Requirement 3 — “then” should be “than.”	Errata
1	March 18, 2010	Approved by FERC	

Attachment A

1. This standard includes any protective functions which could trip with or without time delay, on load current, including but not limited to:
 - 1.1. Phase distance.
 - 1.2. Out-of-step tripping.
 - 1.3. Switch-on-to-fault.
 - 1.4. Overcurrent relays.
 - 1.5. Communications aided protection schemes including but not limited to:
 - 1.5.1 Permissive overreach transfer trip (POTT).
 - 1.5.2 Permissive under-reach transfer trip (PUTT).
 - 1.5.3 Directional comparison blocking (DCB).
 - 1.5.4 Directional comparison unblocking (DCUB).
2. This standard includes out-of-step blocking schemes which shall be evaluated to ensure that they do not block trip for faults during the loading conditions defined within the requirements.
3. The following protection systems are excluded from requirements of this standard:
 - 3.1. Relay elements that are only enabled when other relays or associated systems fail. For example:
 - Overcurrent elements that are only enabled during loss of potential conditions.
 - Elements that are only enabled during a loss of communications.
 - 3.2. Protection systems intended for the detection of ground fault conditions.
 - 3.3. Protection systems intended for protection during stable power swings.
 - 3.4. Generator protection relays that are susceptible to load.
 - 3.5. Relay elements used only for Special Protection Systems applied and approved in accordance with NERC Reliability Standards PRC-012 through PRC-017.
 - 3.6. Protection systems that are designed only to respond in time periods which allow operators 15 minutes or greater to respond to overload conditions.
 - 3.7. Thermal emulation relays which are used in conjunction with dynamic Facility Ratings.
 - 3.8. Relay elements associated with DC lines.
 - 3.9. Relay elements associated with DC converter transformers.

A. Introduction

1. **Title:** **Planned Outage Coordination**
2. **Number:** TOP-003-1
3. **Purpose:** Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators.
4. **Applicability**
 - 4.1. Generator Operators.
 - 4.2. Transmission Operators.
 - 4.3. Balancing Authorities.
 - 4.4. Reliability Coordinators.

5. **Proposed Effective Date:**

In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1. Generator Operators and Transmission Operators shall provide planned outage information.
 - R1.1. Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.
 - R1.2. Each Transmission Operator shall provide outage information daily to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation.
 - R1.3. Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.
- R2. Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required.
- R3. Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.
- R4. Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts.

C. Measures

- M1.** Evidence that the Generator Operator, Transmission Operator, and Balancing Authority reported and coordinated scheduled outage information as indicated in the requirements above.

D. Compliance

1. Compliance Monitoring Process

Each Regional Reliability Organization shall conduct a review every three years to ensure that each responsible entity has a process in place to provide planned generator and/or bulk transmission outage information to their Reliability Coordinator, and with neighboring Transmission Operators and Balancing Authorities.

Investigation: At the discretion of the Regional Reliability Organization or NERC, an investigation may be initiated to review the planned outage process of a monitored entity due to a complaint of non-compliance by another entity. Notification of an investigation must be made by the Regional Reliability Organization to the entity being investigated as soon as possible, but no later than 60 days after the event. The form and manner of the investigation will be set by NERC and/or the Regional Reliability Organization.

1.1. Compliance Monitoring Responsibility

A Reliability Coordinator makes a request for an outage to “not be taken” because of a reliability impact on the grid and the outage is still taken. The Reliability Coordinator must provide all its documentation within three business days to the Regional Reliability Organization. Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC Compliance Reporting process.

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year without a violation from the time of the violation.

1.3. Data Retention

One calendar year.

1.4. Additional Compliance Information

Not specified.

2. Violation Severity Levels:

R#	Lower	Moderate	High	Severe
R1	N/A	N/A	N/A	The Generator Operator failed to provide outage information, in accordance with its Transmission Operators established outage reporting requirements, to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW).
R1.1	N/A	N/A	N/A	The Transmission Operator failed to provide outage information, in accordance with its Reliability Coordinators established outage reporting requirement, to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation.
R1.2	The responsible entity failed to provide the information by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	N/A	N/A	N/A

Standard-TOP-003-1 — Planned Outage Coordination

R#	Lower	Moderate	High	Severe
R1.3	N/A	N/A	N/A	The responsible entity failed to plan or coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators when required.
R2	The responsible entity planned and coordinated scheduled outages of telemetering and control equipment and associated communication channels with its Reliability Coordinator, but failed to coordinate with affected neighboring Transmission Operators, Balancing Authorities, and Generator Operators.	N/A	N/A	The responsible entity failed to plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.
R3	N/A	N/A	N/A	The Reliability Coordinator failed to resolve any scheduling of potential reliability conflicts.
R4	The Transmission Operator entering an unknown operating state (i.e., any state for which valid operating limits have not been determined), failed to restore operations to respect proven reliable power system limits for more than 30 minutes but less than or equal to 35 minutes.	The Transmission Operator entering an unknown operating state (i.e., any state for which valid operating limits have not been determined), failed to restore operations to respect proven reliable power system limits for more than 35 minutes but less than or equal to 40 minutes.	The Transmission Operator entering an unknown operating state (i.e., any state for which valid operating limits have not been determined), failed to restore operations to respect proven reliable power system limits for more than 40 minutes but less than or equal to 45 minutes.	The Transmission Operator entering an unknown operating state (i.e., any state for which valid operating limits have not been determined), failed to restore operations to respect proven reliable power system limits for more than 45 minutes.

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1		Modified R1.2 Modified M1 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs)	Revised
1	October 17, 2008	Adopted by NERC Board of Trustees	
1	March 23, 2011	Order issued by FERC approving TOP-003-1 (approval effective 5/23/11)	

A. Introduction

- 1. Title:** **Operational Reliability Information**
- 2. Number:** TOP-005-1.1a
- 3. Purpose:** To ensure reliability entities have the operating data needed to monitor system conditions within their areas.
- 4. Applicability**
 - 4.1.** Transmission Operators.
 - 4.2.** Balancing Authorities.
 - 4.3.** Reliability Coordinators.
 - 4.4.** Purchasing Selling Entities.
- 5. Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1.** Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area.
 - R1.1.** Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1-TOP-005-0 “Electric System Reliability Data” and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area.
- R2.** As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for “Electric System Reliability Data.”
- R3.** Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.
- R4.** Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations.

C. Measures

- M1.** Evidence that the Reliability Coordinator, Balancing Authority, Transmission Operator, and Purchasing-Selling Entity is providing the information required, within the time intervals specified, and in a format agreed upon by the requesting entities.

D. Compliance

- 1. Compliance Monitoring Process**
 - 1.1. Compliance Monitoring Responsibility**

Standard TOP-005-1.1a — Operational Reliability Information

Self-Certification: Entities shall annually self-certify compliance to the measures as required by its Regional Reliability Organization.

Exception Reporting: Each Region shall report compliance and violations to NERC via the NERC compliance reporting process.

1.2. Compliance Monitoring Period and Reset Time Frame

Periodic Review: Entities will be selected for operational reviews at least every three years. One calendar year without a violation from the time of the violation.

1.3. Data Retention

Not specified.

1.4. Additional Compliance Information

Not specified.

2. Levels of Non-Compliance

2.1. Level 1: Each entity responsible for reporting information under Requirements R1 to R4 is providing the requesting entities with the data required, in specified time intervals and format, but there are problems with consistency of delivery identified in the measuring process that need remedy (e.g., the data is not supplied consistently due to equipment malfunctions, or scaling is incorrect).

2.2. Level 2: N/A.

2.3. Level 3: N/A.

2.4. Level 4: Each entity responsible for reporting information under Requirements R1 to R4 is not providing the requesting entities with data with the specified content, timeliness, or format. The information missing is included in the requesting entity's list of data.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed "Proposed" from Effective Date	Errata
1	November 6, 2007	Revised D.2.1 and D.2.4 reference "Requirements R1 to R5" "to Requirements R1 to R4."	Errata
1.1	October 29, 2008	BOT adopted errata changes; updated version number to "1.1"	Errata
1.1	May 13, 2009	FERC Approved – Updated Effective Date and Footer	Revised
1.1a	November 5, 2009	Added Appendix 2 – Interpretation of R3 approved by BOT on November 5, 2009	Interpretation
1.1a	April 21, 2011	FERC Order issued approving Interpretation	Interpretation

Standard TOP-005-1.1a — Operational Reliability Information

		(approval effective May 26, 2011)	
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Attachment 1 — TOP-005-1.1
Electric System Reliability Data

This Attachment lists the types of data that Reliability Coordinators, Balancing Authorities, and Transmission Operators are expected to provide, and are expected to share with each other.

1. The following information shall be updated at least every ten minutes:
 - 1.1. Transmission data. Transmission data for all Interconnections plus all other facilities considered key, from a reliability standpoint:
 - 1.1.1 Status.
 - 1.1.2 MW or ampere loadings.
 - 1.1.3 MVA capability.
 - 1.1.4 Transformer tap and phase angle settings.
 - 1.1.5 Key voltages.
 - 1.2. Generator data.
 - 1.2.1 Status.
 - 1.2.2 MW and MVAR capability.
 - 1.2.3 MW and MVAR net output.
 - 1.2.4 Status of automatic voltage control facilities.
 - 1.3. Operating reserve.
 - 1.3.1 MW reserve available within ten minutes.
 - 1.4. Balancing Authority demand.
 - 1.4.1 Instantaneous.
 - 1.5. Interchange.
 - 1.5.1 Instantaneous actual interchange with each Balancing Authority.
 - 1.5.2 Current Interchange Schedules with each Balancing Authority by individual Interchange Transaction, including Interchange identifiers, and reserve responsibilities.
 - 1.5.3 Interchange Schedules for the next 24 hours.
 - 1.6. Area Control Error and frequency.
 - 1.6.1 Instantaneous area control error.
 - 1.6.2 Clock hour area control error.
 - 1.6.3 System frequency at one or more locations in the Balancing Authority.
2. Other operating information updated as soon as available.
 - 2.1. Interconnection Reliability Operating Limits and System Operating Limits in effect.
 - 2.2. Forecast of operating reserve at peak, and time of peak for current day and next day.
 - 2.3. Forecast peak demand for current day and next day.
 - 2.4. Forecast changes in equipment status.

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- 2.5. New facilities in place.
- 2.6. New or degraded special protection systems.
- 2.7. Emergency operating procedures in effect.
- 2.8. Severe weather, fire, or earthquake.
- 2.9. Multi-site sabotage.

Appendix 2

Requirement Number and Text of Requirement

TOP-005-1 Requirement R3

Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.

The above-referenced Attachment 1 — TOP-005-0 specifies the following data as item 2.6: New or degraded special protection systems. [Underline added for emphasis.]

IRO-005-1 Requirement R12

R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected. [Underline added for emphasis.]

PRC-012-0 Requirements R1 and R1.3

R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:

R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.

Background Information for Interpretation

The TOP-005-1 standard focuses on two key obligations. The first key obligation (Requirement R1) is a “responsibility mandate.” Requirement R1 establishes who is responsible for the obligation to provide operating data “required” by a Reliability Coordinator within the framework of the Reliability Coordinator requirements defined in the IRO standards. The second key obligation (Requirement R3) is a “performance mandate.” Requirement R3 defines the obligation to provide data “requested” by other reliability entities that is needed “to perform assessments and to coordinate operations.”

The Attachment to TOP-005-1 is provided as a guideline of what “can be shared.” The Attachment is not an obligation of “what must be shared.” Enforceable NERC Requirements must be explicitly contained within a given Standard’s approved requirements. In this case, the standard only requires data “upon request.” If a Reliability Coordinator or other reliability entity were to request data such as listed in the Attachment, then the entity being asked would be mandated by Requirements R1 and R3 to provide that data (including item 2.6, whether it is or is not in some undefined “degraded” state).

Standard TOP-005-1.1a — Operational Reliability Information

IRO-002-1 requires the Reliability Coordinator to have processes in place to support its reliability obligations (Requirement R2). Requirement R4 mandates that the Reliability Coordinator have communications processes in place to meet its reliability obligations, and Requirement R5 et al mandate the Reliability Coordinator to have the tools to carry out these reliability obligations.

IRO-003-2 (Requirements R1 and R2) requires the Reliability Coordinator to monitor the state of its system.

IRO-004-1 requires that the Reliability Coordinator carry out studies to identify Interconnection Reliability Operating Limits (Requirement R1) and to be aware of system conditions via monitoring tools and information exchange.

IRO-005-1 mandates that each Reliability Coordinator monitor predefined base conditions (Requirement R1), collect additional data when operating limits are or may be exceeded (Requirement R3), and identify actual or potential threats (Requirement R5). The basis for that request is left to each Reliability Coordinator. The Purpose statement of IRO-005-1 focuses on the Reliability Coordinator's obligation to be aware of conditions that may have a "significant" impact upon its area and to communicate that information to others (Requirements R7 and R9). Please note: it is from this communication that Transmission Operators and Balancing Authorities would either obtain or would know to ask for SPS information from another Transmission Operator.

The IRO-005-1 (Requirement R12) standard implies that degraded is a condition that will result in a failure to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

Conclusion

The TOP-005-1 standard does not provide, nor does it require, a definition for the term "degraded."

The IRO-005-1 (R12) standard implies that degraded is a condition that will result in a failure of an SPS to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed, then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

To request a formal definition of the term degraded, the Reliability Standards Development Procedure requires the submittal of a Standards Authorization Request.

A. Introduction

1. **Title:** **Operational Reliability Information**
2. **Number:** TOP-005-2a
3. **Purpose:** To ensure reliability entities have the operating data needed to monitor system conditions within their areas.
4. **Applicability**
 - 4.1. Transmission Operators.
 - 4.2. Balancing Authorities.
 - 4.3. Purchasing Selling Entities.
5. **Proposed Effective Date:** In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1. As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for “Electric System Reliability Data.”
- R2. Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.
- R3. Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations.

C. Measures

- M1. Evidence that the Balancing Authority, Transmission Operator, and Purchasing-Selling Entity is providing the information required, within the time intervals specified, and in a format agreed upon by the requesting entities.

D. Compliance

1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**

Self-Certification: Entities shall annually self-certify compliance to the measures as required by its Regional Reliability Organization.

Exception Reporting: Each Region shall report compliance and violations to NERC via the NERC compliance reporting process.

1.2. Compliance Monitoring Period and Reset Time Frame

Periodic Review: Entities will be selected for operational reviews at least every three years. One calendar year without a violation from the time of the violation.

1.3. Data Retention

Not specified.

1.4. Additional Compliance Information

Not specified.

Standard TOP-005-2a — Operational Reliability Information

2. Violation Severity Levels:

R#	Lower	Moderate	High	Severe
R1	N/A	N/A	N/A	The ISN data recipient failed to sign the NERC Confidentiality Agreement for “Electric System Reliability Data”.
R2	The responsible entity failed to provide any of the data requested by other Balancing Authorities or Transmission Operators.	N/A	N/A	The responsible entity failed to provide all of the data requested by its host Balancing Authority or Transmission Operator.
R3	The responsible entity failed to provide any of the data requested by other Balancing Authorities or Transmission Operators.	N/A	N/A	The responsible entity failed to provide all of the data requested by its host Balancing Authority or Transmission Operator.

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1		Removed the Reliability Coordinator from the list of responsible functional entities Deleted R1 and R1.1 Modified M1 to omit the reference to the Reliability Coordinator Deleted VSLs for R1 and R1.1	Revised
2	March 23, 2011	Order issued by FERC approving TOP-005-2 (approval effective 5/23/11)	
2a	April 21, 2011	Added FERC approved Interpretation	

Attachment 1-TOP-005

Electric System Reliability Data

This Attachment lists the types of data that Balancing Authorities, and Transmission Operators are expected to share with other Balancing Authorities and Transmission Operators.

1. The following information shall be updated at least every ten minutes:
 - 1.1. Transmission data. Transmission data for all Interconnections plus all other facilities considered key, from a reliability standpoint:
 - 1.1.1 Status.
 - 1.1.2 MW or ampere loadings.
 - 1.1.3 MVA capability.
 - 1.1.4 Transformer tap and phase angle settings.
 - 1.1.5 Key voltages.
 - 1.2. Generator data.
 - 1.2.1 Status.
 - 1.2.2 MW and MVAR capability.
 - 1.2.3 MW and MVAR net output.
 - 1.2.4 Status of automatic voltage control facilities.
 - 1.3. Operating reserve.
 - 1.3.1 MW reserve available within ten minutes.
 - 1.4. Balancing Authority demand.
 - 1.4.1 Instantaneous.
 - 1.5. Interchange.
 - 1.5.1 Instantaneous actual interchange with each Balancing Authority.
 - 1.5.2 Current Interchange Schedules with each Balancing Authority by individual Interchange Transaction, including Interchange identifiers, and reserve responsibilities.
 - 1.5.3 Interchange Schedules for the next 24 hours.
 - 1.6. Area Control Error and frequency.
 - 1.6.1 Instantaneous area control error.
 - 1.6.2 Clock hour area control error.
 - 1.6.3 System frequency at one or more locations in the Balancing Authority.
2. Other operating information updated as soon as available.
 - 2.1. Interconnection Reliability Operating Limits and System Operating Limits in effect.
 - 2.2. Forecast of operating reserve at peak, and time of peak for current day and next day.
 - 2.3. Forecast peak demand for current day and next day.
 - 2.4. Forecast changes in equipment status.

- 2.5. New facilities in place.
- 2.6. New or degraded special protection systems.
- 2.7. Emergency operating procedures in effect.
- 2.8. Severe weather, fire, or earthquake.
- 2.9. Multi-site sabotage.

Appendix 2

Requirement Number and Text of Requirement
<p>TOP-005-1 Requirement R3¹</p> <p>Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.</p> <p><i>The above-referenced Attachment 1 — TOP-005-0 specifies the following data as item 2.6: New or <u>degraded</u> special protection systems. [Underline added for emphasis.]</i></p> <p>IRO-005-1 Requirement R12</p> <p>R12. Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any <u>degradation</u> or potential failure to operate as expected. [Underline added for emphasis.]</p> <p>PRC-012-0 Requirements R1 and R1.3</p> <p>R1. Each Regional Reliability Organization with a Transmission Owner, Generator Owner, or Distribution Providers that uses or is planning to use an SPS shall have a documented Regional Reliability Organization SPS review procedure to ensure that SPSs comply with Regional criteria and NERC Reliability Standards. The Regional SPS review procedure shall include:</p> <p style="padding-left: 40px;">R1.3. Requirements to demonstrate that the SPS shall be designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the interconnected transmission system from meeting the performance requirements defined in Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.</p>
Background Information for Interpretation
<p>The TOP-005-1 standard focuses on two key obligations. The first key obligation (Requirement R1) is a “responsibility mandate.” Requirement R1 establishes who is responsible for the obligation to provide operating data “required” by a Reliability Coordinator within the framework of the Reliability Coordinator requirements defined in the IRO standards. The second key obligation (Requirement R3) is a “performance mandate.” Requirement R3 defines the obligation to provide data “requested” by other reliability entities that is needed “to perform assessments and to coordinate operations.”</p> <p>The Attachment to TOP-005-1 is provided as a guideline of what “can be shared.” The Attachment is not an obligation of “what must be shared.” Enforceable NERC Requirements must be explicitly contained within a given Standard’s approved requirements. In this case, the standard only requires data “upon request.” If a Reliability Coordinator or other reliability entity were to request data such as listed in the</p>

¹ In the current version of the Standard (TOP-005-2a), this requirement is R2.

Attachment, then the entity being asked would be mandated by Requirements R1 and R3 to provide that data (including item 2.6, whether it is or is not in some undefined “degraded” state).

IRO-002-1 requires the Reliability Coordinator to have processes in place to support its reliability obligations (Requirement R2). Requirement R4 mandates that the Reliability Coordinator have communications processes in place to meet its reliability obligations, and Requirement R5 et al mandate the Reliability Coordinator to have the tools to carry out these reliability obligations.

IRO-003-2 (Requirements R1 and R2) requires the Reliability Coordinator to monitor the state of its system.

IRO-004-1 requires that the Reliability Coordinator carry out studies to identify Interconnection Reliability Operating Limits (Requirement R1) and to be aware of system conditions via monitoring tools and information exchange.

IRO-005-1 mandates that each Reliability Coordinator monitor predefined base conditions (Requirement R1), collect additional data when operating limits are or may be exceeded (Requirement R3), and identify actual or potential threats (Requirement R5). The basis for that request is left to each Reliability Coordinator. The Purpose statement of IRO-005-1 focuses on the Reliability Coordinator’s obligation to be aware of conditions that may have a “significant” impact upon its area and to communicate that information to others (Requirements R7 and R9). Please note: it is from this communication that Transmission Operators and Balancing Authorities would either obtain or would know to ask for SPS information from another Transmission Operator.

The IRO-005-1 (Requirement R12) standard implies that degraded is a condition that will result in a failure to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

Conclusion

The TOP-005-1 standard does not provide, nor does it require, a definition for the term “degraded.”

The IRO-005-1 (R12) standard implies that degraded is a condition that will result in a failure of an SPS to operate as designed. If the loss of a communication channel will result in the failure of an SPS to operate as designed, then the Transmission Operator would be mandated to report that information. On the other hand, if the loss of a communication channel will not result in the failure of the SPS to operate as designed, then such a condition can be, but is not mandated to be, reported.

To request a formal definition of the term degraded, the Reliability Standards Development Procedure requires the submittal of a Standards Authorization Request.

A. Introduction

1. **Title:** **Monitoring System Conditions**
2. **Number:** TOP-006-2
3. **Purpose:** To ensure critical reliability parameters are monitored in real-time.
4. **Applicability**
 - 4.1. Transmission Operators.
 - 4.2. Balancing Authorities.
 - 4.3. Generator Operators.
 - 4.4. Reliability Coordinators.
5. **Proposed Effective Date:** In those jurisdictions where no regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after BOT adoption.

In those jurisdictions where regulatory approval is required, the standard shall become effective on the latter of either April 1, 2009 or the first day of the first calendar quarter, three months after applicable regulatory approval.

B. Requirements

- R1. Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.
 - R1.1. Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.
 - R1.2. Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.
- R2. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.
- R3. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.
- R4. Each Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.
- R5. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.
- R6. Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.
- R7. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.

C. Measures

- M1.** The Generator Operator shall have and provide upon request evidence that could include but is not limited to, operator logs, voice recordings, electronic communications, or other equivalent evidence that will be used to confirm that it informed its Host Balancing Authority and Transmission Operator of all generation resources available for use. (Requirement 1.1)
- M2.** Each Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, operator logs, voice recordings, electronic communications, or other equivalent evidence that will be used to confirm that it informed its Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use. (Requirement 1.2)
- M3.** Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, computer printouts or other equivalent evidence that will be used to confirm that it monitored each of the applicable items listed in Requirement 2.
- M4.** Each Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, printouts, training documents, description documents or other equivalent evidence that will be used to confirm that it has weather forecasts and past load patterns, available to predict the system's near-term load pattern. (Requirement 4)
- M5.** Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, a description of its EMS alarm capability, training documents, or other equivalent evidence that will be used to confirm that important deviations in operating conditions and the need for corrective actions will be brought to the attention of its operators. (Requirement 5)
- M6.** Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have and provide upon request evidence that could include but is not limited to, a list of the frequency monitoring points available to the shift-operators or other equivalent evidence that will be used to confirm that it monitors system frequency. (Requirement 7)

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organizations shall be responsible for compliance monitoring.

1.2. Compliance Monitoring and Reset Time Frame

One or more of the following methods will be used to assess compliance:

- Self-certification (Conducted annually with submission according to schedule.)
- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)
- Periodic Audit (Conducted once every three years according to schedule.)
- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.)

The Performance-Reset Period shall be 12 months from the last finding of non-compliance.

1.3. Data Retention

Each Generator Operator shall keep 90 days of historical data (evidence) for Measure 1.

Each Transmission Operator and Balancing Authority shall keep 90 days of historical data (evidence) for Measure 2.

Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have current documents as evidence for Measure 3, 5 and 6.

Each Transmission Operator and Balancing Authority shall have current documents as evidence of compliance to Measure 4.

If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer.

Evidence used as part of a triggered investigation shall be retained by the entity being investigated for one year from the date that the investigation is closed, as determined by the Compliance Monitor,

The Compliance Monitor shall keep the last periodic audit report and all supporting compliance data

1.4. Additional Compliance Information

None.

Standard TOP-006-2 — Monitoring System Conditions

2. Violation Severity Levels:

R#	Lower	Moderate	High	Severe
R1	N/A	N/A	N/A	The responsible entity failed to know the status of all generation and transmission resources available for use, even though said information was reported by the Generator Operator, Transmission Operator, or Balancing Authority.
R1.1	N/A	N/A	N/A	The Generator Operator failed to inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.
R1.2	N/A	N/A	N/A	The responsible entity failed to inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.
R2	N/A	The responsible entity monitors the applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, but is not aware of the status of rotating and static reactive resources.	The responsible entity fails to monitor all of the applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of all rotating and static reactive resources.	The responsible entity fails to monitor any of the applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.
R3	The responsible entity failed to provide any of the appropriate technical information concerning protective relays to their operating personnel.	N/A	N/A	The responsible entity failed to provide all of the appropriate technical information concerning protective relays to their operating personnel.

Standard TOP-006-2 — Monitoring System Conditions

R#	Lower	Moderate	High	Severe
R4	N/A	N/A	The responsible entity has either weather forecasts or past load patterns, available to predict the system's near-term load pattern, but not both.	The responsible entity failed to have both weather forecasts and past load patterns, available to predict the system's near-term load pattern.
R5	N/A	N/A	The responsible entity used monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions, but does not have indication of the need for corrective action.	The responsible entity failed to use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions.
R6	N/A	N/A	N/A	The responsible entity failed to use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.
R7	N/A	N/A	N/A	The responsible entity failed to monitor system frequency.

Standard TOP-006-2 — Monitoring System Conditions

E. Regional Variances

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
0	August 8, 2005	Removed “Proposed” from Effective Date	Errata
1	November 1, 2006	Adopted by Board of Trustees	Revised
2		Modified R4 Modified M4 Modified Data Retention for M4 Replaced Levels of Non-compliance with the Feb 28, BOT approved Violation Severity Levels (VSLs)	Revised
2	October 17, 2008	Adopted by NERC Board of Trustees	
2	March 23, 2011	Order issued by FERC approving TOP-006-2 (approval effective 5/23/11)	

A. Introduction

1. **Title:** Voltage and Reactive Control
2. **Number:** VAR-001-2
3. **Purpose:** To ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection.
4. **Applicability:**
 - 4.1. Transmission Operators.
 - 4.2. Purchasing-Selling Entities.
 - 4.3. Load Serving Entities.
5. **(Proposed) Effective Date:** The first day of the first calendar quarter six months after applicable regulatory approval; or in those jurisdictions where no regulatory approval is required, the first day of the first calendar quarter six months after Board of Trustees' adoption.

B. Requirements

- R1. Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and Mvar flows within their individual areas and with the areas of neighboring Transmission Operators.
- R2. Each Transmission Operator shall acquire sufficient reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching;, and controllable load – within its area to protect the voltage levels under normal and Contingency conditions. This includes the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.
- R3. The Transmission Operator shall specify criteria that exempts generators from compliance with the requirements defined in Requirement 4, and Requirement 6.1.
 - R3.1. Each Transmission Operator shall maintain a list of generators in its area that are exempt from following a voltage or Reactive Power schedule.
 - R3.2. For each generator that is on this exemption list, the Transmission Operator shall notify the associated Generator Owner.
- R4. Each Transmission Operator shall specify a voltage or Reactive Power schedule ¹ at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).
- R5. Each Purchasing-Selling Entity and Load Serving Entity shall arrange for (self-provide or purchase) reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching;, and controllable load– to satisfy its reactive requirements identified by its Transmission Service Provider.

¹ The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.

Standard VAR-001-2 — Voltage and Reactive Control

- R6.** The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.
- R6.1.** When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.
- R7.** The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.
- R8.** Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; controllable load; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.
- R9.** Each Transmission Operator shall maintain reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load– to support its voltage under first Contingency conditions.
- R9.1.** Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.
- R10.** Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.
- R11.** After consultation with the Generator Owner regarding necessary step-up transformer tap changes, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.
- R12.** The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.

C. Measures

- M1.** The Transmission Operator shall have evidence it provided a voltage or Reactive Power schedule as specified in Requirement 4 to each Generator Operator it requires to follow such a schedule.
- M2.** The Transmission Operator shall have evidence to show that, for each generating unit in its area that is exempt from following a voltage or Reactive Power schedule, the associated Generator Owner was notified of this exemption in accordance with Requirement 3.2.
- M3.** The Transmission Operator shall have evidence to show that it issued directives as specified in Requirement 6.1 when notified by a Generator Operator of the loss of an automatic voltage regulator control.
- M4.** The Transmission Operator shall have evidence that it provided documentation to the Generator Owner when a change was needed to a generating unit's step-up transformer tap in accordance with Requirement 11.

D. Compliance

- 1. Compliance Monitoring Process**

Standard VAR-001-2 — Voltage and Reactive Control

1.1. Compliance Enforcement Authority

Regional Entity.

1.2. Compliance Monitoring Period and Reset Time Frame

One calendar year.

1.3. Compliance Monitoring and Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

1.4. Data Retention

The Transmission Operator shall retain evidence for Measures 1 through 4 for 12 months.

The Compliance Monitor shall retain any audit data for three years.

1.5. Additional Compliance Information

The Transmission Operator shall demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Violation Severity Levels (no changes)

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking
0	April 1, 2005	Effective Date	New
1	August 2, 2006	BOT Adoption	Revised
1	July 3, 2007	Added “Generator Owners” and “Generator Operators” to Applicability section.	Errata
1	August 23, 2007	Removed “Generator Owners” and “Generator Operators” to Applicability section.	Errata
2	TBD	Modified to address Order No. 693 Directives contained in paragraphs 1858 and 1879.	Revised.

Standard VAR-002-1.1b — Generator Operation for Maintaining Network Voltage Schedules

A. Introduction

1. **Title:** Generator Operation for Maintaining Network Voltage Schedules
2. **Number:** VAR-002-1.1b
3. **Purpose:** To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within applicable Facility Ratings to protect equipment and the reliable operation of the Interconnection.
4. **Applicability**
 - 4.1. Generator Operator.
 - 4.2. Generator Owner.
5. **Effective Date:** Immediately after approval of applicable regulatory authorities.

B. Requirements

- R1. The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.
- R2. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings¹) as directed by the Transmission Operator.
 - R2.1. When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.
 - R2.2. When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.
- R3. Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following:
 - R3.1. A status or capability change on any generator Reactive Power resource, including the status of each automatic voltage regulator and power system stabilizer and the expected duration of the change in status or capability.
 - R3.2. A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.
- R4. The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request.
 - R4.1. For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:
 - R4.1.1. Tap settings.
 - R4.1.2. Available fixed tap ranges.

¹ When a Generator is operating in manual control, reactive power capability may change based on stability considerations and this will lead to a change in the associated Facility Ratings.

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R4.1.3. Impedance data.

R4.1.4. The +/- voltage range with step-change in % for load-tap changing transformers.

R5. After consultation with the Transmission Operator regarding necessary step-up transformer tap changes, the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator, unless such action would violate safety, an equipment rating, a regulatory requirement, or a statutory requirement.

R5.1. If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.

C. Measures

M1. The Generator Operator shall have evidence to show that it notified its associated Transmission Operator any time it failed to operate a generator in the automatic voltage control mode as specified in Requirement 1.

M2. The Generator Operator shall have evidence to show that it controlled its generator voltage and reactive output to meet the voltage or Reactive Power schedule provided by its associated Transmission Operator as specified in Requirement 2.

M3. The Generator Operator shall have evidence to show that it responded to the Transmission Operator's directives as identified in Requirement 2.1 and Requirement 2.2.

M4. The Generator Operator shall have evidence it notified its associated Transmission Operator within 30 minutes of any of the changes identified in Requirement 3.

M5. The Generator Owner shall have evidence it provided its associated Transmission Operator and Transmission Planner with information on its step-up transformers and auxiliary transformers as required in Requirements 4.1.1 through 4.1.4

M6. The Generator Owner shall have evidence that its step-up transformer taps were modified per the Transmission Operator's documentation as identified in Requirement 5.

M7. The Generator Operator shall have evidence that it notified its associated Transmission Operator when it couldn't comply with the Transmission Operator's step-up transformer tap specifications as identified in Requirement 5.1.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Time Frame

One calendar year.

1.3. Data Retention

The Generator Operator shall maintain evidence needed for Measure 1 through Measure 5 and Measure 7 for the current and previous calendar years.

The Generator Owner shall keep its latest version of documentation on its step-up and auxiliary transformers. (Measure 6)

The Compliance Monitor shall retain any audit data for three years.

1.4. Additional Compliance Information

The Generator Owner and Generator Operator shall each demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Levels of Non-Compliance for Generator Operator

2.1. Level 1: There shall be a Level 1 non-compliance if any of the following conditions exist:

- 2.1.1** One incident of failing to notify the Transmission Operator as identified in , R3.1, R3.2 or R5.1.
- 2.1.2** One incident of failing to maintain a voltage or reactive power schedule (R2).

2.2. Level 2: There shall be a Level 2 non-compliance if any of the following conditions exist:

- 2.2.1** More than one but less than five incidents of failing to notify the Transmission as identified in R1, R3.1,R3.2 or R5.1.
- 2.2.2** More than one but less than five incidents of failing to maintain a voltage or reactive power schedule (R2).

2.3. Level 3: There shall be a Level 3 non-compliance if any of the following conditions exist:

- 2.3.1** More than five but less than ten incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.
- 2.3.2** More than five but less than ten incidents of failing to maintain a voltage or reactive power schedule (R2).

2.4. Level 4: There shall be a Level 4 non-compliance if any of the following conditions exist:

- 2.4.1** Failed to comply with the Transmission Operator’s directives as identified in R2.
- 2.4.2** Ten or more incidents of failing to notify the Transmission Operator as identified in R1, R3.1, R3.2 or R5.1.
- 2.4.3** Ten or more incidents of failing to maintain a voltage or reactive power schedule (R2).

3. Levels of Non-Compliance for Generator Owner:

- 3.1.1 Level One:** Not applicable.
- 3.1.2 Level Two:** Documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage was missing two of the data types identified in R4.1.1 through R4.1.4.
- 3.1.3 Level Three:** No documentation of generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage
- 3.1.4 Level Four:** Did not ensure generating unit step-up transformer settings were changed in compliance with the specifications provided by the Transmission Operator as identified in R5.

Standard VAR-002-1.1b — Generator Operation for Maintaining Network Voltage Schedules

E. Regional Differences

None identified.

F. Associated Documents

1. Appendix 1 – Interpretation of Requirements R1 and R2 (August 1, 2007).

Version History

Version	Date	Action	Change Tracking
1	May 15, 2006	Added “(R2)” to the end of levels on non-compliance 2.1.2, 2.2.2, 2.3.2, and 2.4.3.	July 5, 2006
1a	December 19, 2007	Added Appendix 1 – Interpretation of R1 and R2 approved by BOT on August 1, 2007	Revised
1a	January 16, 2007	In Section A.2., Added “a” to end of standard number. Section F: added “1.”; and added date.	Errata
1.1a	October 29, 2008	BOT adopted errata changes; updated version number to “1.1a”	Errata
1.1b	March 3, 2009	Added Appendix 2 – Interpretation of VAR-002-1.1a approved by BOT on February 10, 2009	Revised

Appendix 1

Interpretation of Requirements R1 and R2

Request:

Requirement R1 of Standard VAR-002-1 states that Generation Operators shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (*automatic voltage regulator in service and controlling voltage*) unless the Generator Operator has notified the Transmission Operator.

Requirement R2 goes on to state that each Generation Operator shall maintain the generator voltage *or Reactive Power output* as directed by the Transmission Operator.

The two underlined phrases are the reasons for this interpretation request.

Most generation excitation controls include a device known as the Automatic Voltage Regulator, or AVR. This is the device which is referred to by the R1 requirement above. Most AVR's have the option of being set in various operating modes, such as constant voltage, constant power factor, and constant Mvar.

In the course of helping members of the WECC insure that they are in full compliance with NERC Reliability Standards, I have discovered both Transmission Operators and Generation Operators who have interpreted this standard to mean that AVR operation in the constant power factor or constant Mvar modes complies with the R1 and R2 requirements cited above. Their rationale is as follows:

- The AVR is clearly in service because it is operating in one of its operating modes
- The AVR is clearly controlling voltage because to maintain constant PF or constant Mvar, it controls the generator terminal voltage
- R2 clearly gives the Transmission Operator the option of directing the Generation Operator to maintain a constant reactive power output rather than a constant voltage.

Other parties have interpreted this standard to require operation in the constant voltage mode only. Their rationale stems from the belief that the purpose of the VAR-002-1 standard is to insure the automatic delivery of additional reactive to the system whenever a voltage decline begins to occur.

The material impact of misinterpretation of these standards is twofold.

- First, misinterpretation may result in reduced reactive response during system disturbances, which in turn may contribute to voltage collapse.
- Second, misinterpretation may result in substantial financial penalties imposed on generation operators and transmission operators who believe that they are in full compliance with the standard.

In accordance with the NERC Reliability Standards Development Procedure, I am requesting that a formal interpretation of the VAR-002-1 standard be provided. Two specific questions need to be answered.

- First, does AVR operation in the constant PF or constant Mvar modes comply with R1?
- Second, does R2 give the Transmission Operator the option of directing the Generation Owner to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

Standard VAR-002-1.1b — Generator Operation for Maintaining Network Voltage Schedules

Interpretation:

1. First, does AVR operation in the constant PF or constant Mvar modes comply with R1?

Interpretation: No, only operation in constant voltage mode meets this requirement. This answer is predicated on the assumption that the generator has the physical equipment that will allow such operation and that the Transmission Operator has not directed the generator to run in a mode other than constant voltage.

2. Second, does R2 give the Transmission Operator the option of directing the Generation Owner (sic) to operate the AVR in the constant Pf or constant Mvar modes rather than the constant voltage mode?

Interpretation: Yes, if the Transmission Operator specifically directs a Generator Operator to operate the AVR in a mode other than constant voltage mode, then that directed mode of AVR operation is allowed.

Appendix 2

Interpretation of VAR-002-1a

Request:

VAR-002 — Generator Operation for Maintaining Network Voltage Schedules, addresses the generator's provision of voltage and VAR control. Confusion exists in the industry and regions as to which requirements in this standard apply to Generator Operators that operate generators that do not have automatic voltage regulation capability.

The Standard's requirements do not identify the subset of generator operators that need to comply – forcing some generator operators that do not have any automatic voltage regulation capability to demonstrate how they complied with the requirements, even when they aren't physically able to comply with the requirements. Generator owners want clarification to verify that they are not expected to acquire AVR devices to comply with the requirements in this standard.

Many generators do not have automatic voltage regulators and do not receive voltage schedules. These entities are at a loss as to how to comply with these requirements and are expending resources attempting to demonstrate compliance with these requirements. A clarification will avoid challenges and potential litigation stemming from sanctions and penalties applied to entities that are being audited for compliance with this standard, but who do not fall within the scope or intent of the standard itself.

Please identify which requirements apply to generators that do not operate generators equipped with AVRs.

Response: All the requirements and associated subrequirements in VAR-002-1a apply to Generator Owners and Generator Operators that own or operate generators whether equipped with an automatic voltage regulator or not. The standard is predicated on the assumption that the generator has the physical equipment (automatic voltage regulator) that is capable of automatic operation. A generator that is not equipped with an automatic voltage regulator results in a functionally equivalent condition to a generator equipped with an automatic voltage regulator that is out of service due to maintenance or failure.

There are no requirements in the standard that require a generator to have an automatic voltage regulator, nor are there any requirements for a Generator Owner to modify its generator to add an automatic voltage regulator. Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings) as directed by the Transmission Operator.

3.) Updated NERC Glossary of Terms

Glossary of Terms Used in NERC Reliability Standards

Updated August 4, 2011

Introduction:

This Glossary lists each term that was defined for use in one or more of NERC's continent-wide or Regional Reliability Standards and adopted by the NERC Board of Trustees from February 8, 2005 through August 4, 2011.

This reference is divided into two sections, and each section is organized in alphabetical order. The first section identifies all terms that have been adopted by the NERC Board of Trustees for use in continent-wide standards; the second section identifies all terms that have been adopted by the NERC Board of Trustees for use in regional standards. (WECC, NPCC and ReliabilityFirst are the only Regions that have definitions approved by the NERC Board of Trustees. If other Regions develop definitions for approved Regional Standards using a NERC-approved standards development process, those definitions will be added to the Regional Definitions section of this glossary.)

Most of the terms identified in this glossary were adopted as part of the development of NERC's initial set of reliability standards, called the "Version 0" standards. Subsequent to the development of Version 0 standards, new definitions have been developed and approved following NERC's Reliability Standards Development Process, and added to this glossary following board adoption, with the "FERC approved" date added following a final Order approving the definition.

Immediately under each term is a link to the archive for the development of that term.

Definitions that have been adopted by the NERC Board of Trustees but have not been approved by FERC, or FERC has not approved but has directed be modified, are shaded in blue. Definitions that have been remanded or retired are shaded in orange.

Any comments regarding this glossary should be reported to the following: sarcomm@nerc.com with "Glossary Comment" in the subject line.

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Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Adequacy [Archive]		2/8/2005	3/16/2007	The ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.
Adjacent Balancing Authority [Archive]		2/8/2005	3/16/2007	A Balancing Authority Area that is interconnected another Balancing Authority Area either directly or via a multi-party agreement or transmission tariff.
Adverse Reliability Impact [Archive]		2/7/2006	3/16/2007	The impact of an event that results in frequency-related instability; unplanned tripping of load or generation; or uncontrolled separation or cascading outages that affects a widespread area of the Interconnection.
Adverse Reliability Impact [Archive]		8/4/2011		The impact of an event that results in Bulk Electric System instability or Cascading.
After the Fact [Archive]	ATF	10/29/2008	12/17/2009	A time classification assigned to an RFI when the submittal time is greater than one hour after the start time of the RFI.
Agreement [Archive]		2/8/2005	3/16/2007	A contract or arrangement, either written or verbal and sometimes enforceable by law.
Altitude Correction Factor [Archive]		2/7/2006	3/16/2007	A multiplier applied to specify distances, which adjusts the distances to account for the change in relative air density (RAD) due to altitude from the RAD used to determine the specified distance. Altitude correction factors apply to both minimum worker approach distances and to minimum vegetation clearance distances.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Ancillary Service [Archive]		2/8/2005	3/16/2007	Those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Service Provider's transmission system in accordance with good utility practice. (From FERC order 888-A.)
Anti-Aliasing Filter [Archive]		2/8/2005	3/16/2007	An analog filter installed at a metering point to remove the high frequency components of the signal over the AGC sample period.
Area Control Error [Archive]	ACE	2/8/2005	3/16/2007	The instantaneous difference between a Balancing Authority's net actual and scheduled interchange, taking into account the effects of Frequency Bias and correction for meter error.
Area Interchange Methodology [Archive]		08/22/2008	11/24/2009	The Area Interchange methodology is characterized by determination of incremental transfer capability via simulation, from which Total Transfer Capability (TTC) can be mathematically derived. Capacity Benefit Margin, Transmission Reliability Margin, and Existing Transmission Commitments are subtracted from the TTC, and Postbacks and counterflows are added, to derive Available Transfer Capability. Under the Area Interchange Methodology, TTC results are generally reported on an area to area basis.
Arranged Interchange [Archive]		5/2/2006	3/16/2007	The state where the Interchange Authority has received the Interchange information (initial or revised).
Automatic Generation Control [Archive]	AGC	2/8/2005	3/16/2007	Equipment that automatically adjusts generation in a Balancing Authority Area from a central location to maintain the Balancing Authority's interchange schedule plus Frequency Bias. AGC may also accommodate automatic inadvertent payback and time error correction.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Available Flowgate Capability [Archive]	AFC	08/22/2008	11/24/2009	A measure of the flow capability remaining on a Flowgate for further commercial activity over and above already committed uses. It is defined as TFC less Existing Transmission Commitments (ETC), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, and plus counterflows.
Available Transfer Capability [Archive]	ATC	2/8/2005	3/16/2007	A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less existing transmission commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin.
Available Transfer Capability [Archive]	ATC	08/22/2008	11/24/2009	A measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses. It is defined as Total Transfer Capability less Existing Transmission Commitments (including retail customer service), less a Capacity Benefit Margin, less a Transmission Reliability Margin, plus Postbacks, plus counterflows.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approval Date	FERC Approval Date	Definition
Available Transfer Capability Implementation Document [Archive]	ATCID	08/22/2008	11/24/2009	A document that describes the implementation of a methodology for calculating ATC or AFC, and provides information related to a Transmission Service Provider's calculation of ATC or AFC.
ATC Path [Archive]		08/22/2008	Not approved; Modification directed 11/24/09	Any combination of Point of Receipt and Point of Delivery for which ATC is calculated; and any Posted Path ¹ .

¹ See 18 CFR 37.6(b)(1)

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Balancing Authority [Archive]	BA	2/8/2005	3/16/2007	The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.
Balancing Authority Area [Archive]		2/8/2005	3/16/2007	The collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.
Base Load [Archive]		2/8/2005	3/16/2007	The minimum amount of electric power delivered or required over a given period at a constant rate.
Blackstart Capability Plan [Archive]		2/8/2005 Approved Retirement when EOP-005-2 becomes effective 8/5/2009	3/16/2007	A documented procedure for a generating unit or station to go from a shutdown condition to an operating condition delivering electric power without assistance from the electric system. This procedure is only a portion of an overall system restoration plan.
Blackstart Resource [Archive]		8/5/2009		A generating unit(s) and its associated set of equipment which has the ability to be started without support from the System or is designed to remain energized without connection to the remainder of the System, with the ability to energize a bus, meeting the Transmission Operator's restoration plan needs for real and reactive power capability, frequency and voltage control, and that has been included in the Transmission Operator's restoration plan

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Block Dispatch [Archive]		08/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, the capacity of a given generator is segmented into loadable "blocks," each of which is grouped and ordered relative to other blocks (based on characteristics including, but not limited to, efficiency, run of river or fuel supply considerations, and/or "must-run" status).
Bulk Electric System [Archive]		2/8/2005	3/16/2007	As defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition.
Burden [Archive]		2/8/2005	3/16/2007	Operation of the Bulk Electric System that violates or is expected to violate a System Operating Limit or Interconnection Reliability Operating Limit in the Interconnection, or that violates any other NERC, Regional Reliability Organization, or local operating reliability standards or criteria.
Business Practices [Archive]		8/22/2008	Not approved; Modification directed 11/24/09	Those business rules contained in the Transmission Service Provider's applicable tariff, rules, or procedures; associated Regional Reliability Organization or regional entity business practices; or NAESB Business Practices.
Bus-tie Breaker [Archive]		8/4/2011		A circuit breaker that is positioned to connect two individual substation bus configurations.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Capacity Benefit Margin [Archive]	CBM	2/8/2005	3/16/2007	The amount of firm transmission transfer capability preserved by the transmission provider for Load-Serving Entities (LSEs), whose loads are located on that Transmission Service Provider's system, to enable access by the LSEs to generation from interconnected systems to meet generation reliability requirements. Preservation of CBM for an LSE allows that entity to reduce its installed generating capacity below that which may otherwise have been necessary without interconnections to meet its generation reliability requirements. The transmission transfer capability preserved as CBM is intended to be used by the LSE only in times of emergency generation deficiencies.
Capacity Benefit Margin Implementation Document [Archive]	CBMID	11/13/2008	11/24/2009	A document that describes the implementation of a Capacity Benefit Margin methodology.
Capacity Emergency [Archive]		2/8/2005	3/16/2007	A capacity emergency exists when a Balancing Authority Area's operating capacity, plus firm purchases from other systems, to the extent available or limited by transfer capability, is inadequate to meet its demand plus its regulating requirements.
Cascading [Archive]		2/8/2005	3/16/2007	The uncontrolled successive loss of system elements triggered by an incident at any location. Cascading results in widespread electric service interruption that cannot be restrained from sequentially spreading beyond an area predetermined by studies.

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Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Cascading Outages [Archive]		11/1/2006 Withdrawn 2/12/2008	FERC Remanded 12/27/2007	The uncontrolled successive loss of Bulk Electric System Facilities triggered by an incident (or condition) at any location resulting in the interruption of electric service that cannot be restrained from spreading beyond a pre-determined area.
Clock Hour [Archive]		2/8/2005	3/16/2007	The 60-minute period ending at :00. All surveys, measurements, and reports are based on Clock Hour periods unless specifically noted.
Cogeneration [Archive]		2/8/2005	3/16/2007	Production of electricity from steam, heat, or other forms of energy produced as a by-product of another process.
Compliance Monitor [Archive]		2/8/2005	3/16/2007	The entity that monitors, reviews, and ensures compliance of responsible entities with reliability standards.
Confirmed Interchange [Archive]		5/2/2006	3/16/2007	The state where the Interchange Authority has verified the Arranged Interchange.
Congestion Management Report [Archive]		2/8/2005	3/16/2007	A report that the Interchange Distribution Calculator issues when a Reliability Coordinator initiates the Transmission Loading Relief procedure. This report identifies the transactions and native and network load curtailments that must be initiated to achieve the loading relief requested by the initiating Reliability Coordinator.
Consequential Load Loss [Archive]		8/4/2011		All Load that is no longer served by the Transmission system as a result of Transmission Facilities being removed from service by a Protection System operation designed to isolate the fault.
Constrained Facility [Archive]		2/8/2005	3/16/2007	A transmission facility (line, transformer, breaker, etc.) that is approaching, is at, or is beyond its System Operating Limit or Interconnection Reliability Operating Limit.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Contingency [Archive]		2/8/2005	3/16/2007	The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element.
Contingency Reserve [Archive]		2/8/2005	3/16/2007	The provision of capacity deployed by the Balancing Authority to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Organization contingency requirements.
Contract Path [Archive]		2/8/2005	3/16/2007	An agreed upon electrical path for the continuous flow of electrical power between the parties of an Interchange Transaction.
Control Performance Standard [Archive]	CPS	2/8/2005	3/16/2007	The reliability standard that sets the limits of a Balancing Authority's Area Control Error over a specified time period.
Corrective Action Plan [Archive]		2/7/2006	3/16/2007	A list of actions and an associated timetable for implementation to remedy a specific problem.
Cranking Path [Archive]		5/2/2006	3/16/2007	A portion of the electric system that can be isolated and then energized to deliver electric power from a generation source to enable the startup of one or more other generating units.
Critical Assets [Archive]		5/2/2006	1/18/2008	Facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the Bulk Electric System.
Critical Cyber Assets [Archive]		5/2/2006	1/18/2008	Cyber Assets essential to the reliable operation of Critical Assets.
Curtailment [Archive]		2/8/2005	3/16/2007	A reduction in the scheduled capacity or energy delivery of an Interchange Transaction.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Curtailment Threshold [Archive]		2/8/2005	3/16/2007	The minimum Transfer Distribution Factor which, if exceeded, will subject an Interchange Transaction to curtailment to relieve a transmission facility constraint.
Cyber Assets [Archive]		5/2/2006	1/18/2008	Programmable electronic devices and communication networks including hardware, software, and data.
Cyber Security Incident [Archive]		5/2/2006	1/18/2008	Any malicious act or suspicious event that: <ul style="list-style-type: none"> • Compromises, or was an attempt to compromise, the Electronic Security Perimeter or Physical Security Perimeter of a Critical Cyber Asset, or, • Disrupts, or was an attempt to disrupt, the operation of a Critical Cyber Asset.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Delayed Fault Clearing [Archive]		11/1/2006	12/27/2007	Fault clearing consistent with correct operation of a breaker failure protection system and its associated breakers, or of a backup protection system with an intentional time delay.
Demand [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time. 2. The rate at which energy is being used by the customer.
Demand-Side Management [Archive]	DSM	2/8/2005	3/16/2007	The term for all activities or programs undertaken by Load-Serving Entity or its customers to influence the amount or timing of electricity they use.
Direct Control Load Management [Archive]	DCLM	2/8/2005	3/16/2007	Demand-Side Management that is under the direct control of the system operator. DCLM may control the electric supply to individual appliances or equipment on customer premises. DCLM as defined here does not include Interruptible Demand.
Dispatch Order [Archive]		08/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, each generator is ranked by priority.
Dispersed Load by Substations [Archive]		2/8/2005	3/16/2007	Substation load information configured to represent a system for power flow or system dynamics modeling purposes, or both.
Distribution Factor [Archive]	DF	2/8/2005	3/16/2007	The portion of an Interchange Transaction, typically expressed in per unit that flows across a transmission facility (Flowgate).

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Distribution Provider [Archive]		2/8/2005	3/16/2007	Provides and operates the “wires” between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the Distribution Provider. Thus, the Distribution Provider is not defined by a specific voltage, but rather as performing the Distribution function at any voltage.
Disturbance [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. An unplanned event that produces an abnormal system condition. 2. Any perturbation to the electric system. 3. The unexpected change in ACE that is caused by the sudden failure of generation or interruption of load.
Disturbance Control Standard [Archive]	DCS	2/8/2005	3/16/2007	The reliability standard that sets the time limit following a Disturbance within which a Balancing Authority must return its Area Control Error to within a specified range.
Disturbance Monitoring Equipment [Archive]	DME	8/2/2006	3/16/2007	<p>Devices capable of monitoring and recording system data pertaining to a Disturbance. Such devices include the following categories of recorders²:</p> <ul style="list-style-type: none"> • Sequence of event recorders which record equipment response to the event • Fault recorders, which record actual waveform data replicating the system primary voltages and currents. This may include protective relays. • Dynamic Disturbance Recorders (DDRs), which record incidents that portray power system behavior during dynamic events such as low-frequency (0.1 Hz – 3 Hz) oscillations and abnormal frequency or voltage excursions

² Phasor Measurement Units and any other equipment that meets the functional requirements of DMEs may qualify as DMEs.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Dynamic Interchange Schedule or Dynamic Schedule [Archive]		2/8/2005	3/16/2007	A telemetered reading or value that is updated in real time and used as a schedule in the AGC/ACE equation and the integrated value of which is treated as a schedule for interchange accounting purposes. Commonly used for scheduling jointly owned generation to or from another Balancing Authority Area.
Dynamic Transfer [Archive]		2/8/2005	3/16/2007	The provision of the real-time monitoring, telemetering, computer software, hardware, communications, engineering, energy accounting (including inadvertent interchange), and administration required to electronically move all or a portion of the real energy services associated with a generator or load out of one Balancing Authority Area into another.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Economic Dispatch [Archive]		2/8/2005	3/16/2007	The allocation of demand to individual generating units on line to effect the most economical production of electricity.
Electrical Energy [Archive]		2/8/2005	3/16/2007	The generation or use of electric power by a device over a period of time, expressed in kilowatthours (kWh), megawatthours (MWh), or gigawatthours (GWh).
Electronic Security Perimeter [Archive]		5/2/2006	1/18/2008	The logical border surrounding a network to which Critical Cyber Assets are connected and for which access is controlled.
Element [Archive]		2/8/2005	3/16/2007	Any electrical device with terminals that may be connected to other electrical devices such as a generator, transformer, circuit breaker, bus section, or transmission line. An element may be comprised of one or more components.
Emergency or BES Emergency [Archive]		2/8/2005	3/16/2007	Any abnormal system condition that requires automatic or immediate manual action to prevent or limit the failure of transmission facilities or generation supply that could adversely affect the reliability of the Bulk Electric System.
Emergency Rating [Archive]		2/8/2005	3/16/2007	The rating as defined by the equipment owner that specifies the level of electrical loading or output, usually expressed in megawatts (MW) or Mvar or other appropriate units, that a system, facility, or element can support, produce, or withstand for a finite period. The rating assumes acceptable loss of equipment life or other physical or safety limitations for the equipment involved.
Emergency Request for Interchange (Emergency RFI) [Archive]		10/29/2008	12/17/2009	Request for Interchange to be initiated for Emergency or Energy Emergency conditions.

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Energy Emergency [Archive]		2/8/2005	3/16/2007	A condition when a Load-Serving Entity has exhausted all other options and can no longer provide its customers' expected energy requirements.
Equipment Rating [Archive]		2/7/2006	3/16/2007	The maximum and minimum voltage, current, frequency, real and reactive power flows on individual equipment under steady state, short-circuit and transient conditions, as permitted or assigned by the equipment owner.
Existing Transmission Commitments [Archive]	ETC	08/22/2008	11/24/2009	Committed uses of a Transmission Service Provider's Transmission system considered when determining ATC or AFC.

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Facility [Archive]		2/7/2006	3/16/2007	A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)
Facility Rating [Archive]		2/8/2005	3/16/2007	The maximum or minimum voltage, current, frequency, or real or reactive power flow through a facility that does not violate the applicable equipment rating of any equipment comprising the facility.
Fault [Archive]		2/8/2005	3/16/2007	An event occurring on an electric system such as a short circuit, a broken wire, or an intermittent connection.
Fire Risk [Archive]		2/7/2006	3/16/2007	The likelihood that a fire will ignite or spread in a particular geographic area.
Firm Demand [Archive]		2/8/2005	3/16/2007	That portion of the Demand that a power supplier is obligated to provide except when system reliability is threatened or during emergency conditions.
Firm Transmission Service [Archive]		2/8/2005	3/16/2007	The highest quality (priority) service offered to customers under a filed rate schedule that anticipates no planned interruption.
Flashover [Archive]		2/7/2006	3/16/2007	An electrical discharge through air around or over the surface of insulation, between objects of different potential, caused by placing a voltage across the air space that results in the ionization of the air space.
Flowgate [Archive]		2/8/2005	3/16/2007	A designated point on the transmission system through which the Interchange Distribution Calculator calculates the power flow from Interchange Transactions.

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Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Flowgate [Archive]		08/22/2008	11/24/2009	<p>1.) A portion of the Transmission system through which the Interchange Distribution Calculator calculates the power flow from Interchange Transactions.</p> <p>2.) A mathematical construct, comprised of one or more monitored transmission Facilities and optionally one or more contingency Facilities, used to analyze the impact of power flows upon the Bulk Electric System.</p>
Flowgate Methodology [Archive]		08/22/2008	11/24/2009	The Flowgate methodology is characterized by identification of key Facilities as Flowgates. Total Flowgate Capabilities are determined based on Facility Ratings and voltage and stability limits. The impacts of Existing Transmission Commitments (ETCs) are determined by simulation. The impacts of ETC, Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) are subtracted from the Total Flowgate Capability, and Postbacks and counterflows are added, to determine the Available Flowgate Capability (AFC) value for that Flowgate. AFCs can be used to determine Available Transfer Capability (ATC).
Forced Outage [Archive]		2/8/2005	3/16/2007	<p>1. The removal from service availability of a generating unit, transmission line, or other facility for emergency reasons.</p> <p>2. The condition in which the equipment is unavailable due to unanticipated failure.</p>
Frequency Bias [Archive]		2/8/2005	3/16/2007	A value, usually expressed in megawatts per 0.1 Hertz (MW/0.1 Hz), associated with a Balancing Authority Area that approximates the Balancing Authority Area's response to Interconnection frequency error.

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Frequency Bias Setting [Archive]		2/8/2005	3/16/2007	A value, usually expressed in MW/0.1 Hz, set into a Balancing Authority ACE algorithm that allows the Balancing Authority to contribute its frequency response to the Interconnection.
Frequency Deviation [Archive]		2/8/2005	3/16/2007	A change in Interconnection frequency.
Frequency Error [Archive]		2/8/2005	3/16/2007	The difference between the actual and scheduled frequency. ($F_A - F_S$)
Frequency Regulation [Archive]		2/8/2005	3/16/2007	The ability of a Balancing Authority to help the Interconnection maintain Scheduled Frequency. This assistance can include both turbine governor response and Automatic Generation Control.
Frequency Response [Archive]		2/8/2005	3/16/2007	(Equipment) The ability of a system or elements of the system to react or respond to a change in system frequency. (System) The sum of the change in demand, plus the change in generation, divided by the change in frequency, expressed in megawatts per 0.1 Hertz (MW/0.1 Hz).

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Generator Operator [Archive]		2/8/2005	3/16/2007	The entity that operates generating unit(s) and performs the functions of supplying energy and Interconnected Operations Services.
Generator Owner [Archive]		2/8/2005	3/16/2007	Entity that owns and maintains generating units.
Generator Shift Factor [Archive]	GSF	2/8/2005	3/16/2007	A factor to be applied to a generator's expected change in output to determine the amount of flow contribution that change in output will impose on an identified transmission facility or Flowgate.
Generator-to-Load Distribution Factor [Archive]	GLDF	2/8/2005	3/16/2007	The algebraic sum of a Generator Shift Factor and a Load Shift Factor to determine the total impact of an Interchange Transaction on an identified transmission facility or Flowgate.
Generation Capability Import Requirement [Archive]	GCIR	11/13/2008	11/24/2009	The amount of generation capability from external sources identified by a Load-Serving Entity (LSE) or Resource Planner (RP) to meet its generation reliability or resource adequacy requirements as an alternative to internal resources.
Host Balancing Authority [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. A Balancing Authority that confirms and implements Interchange Transactions for a Purchasing Selling Entity that operates generation or serves customers directly within the Balancing Authority's metered boundaries. 2. The Balancing Authority within whose metered boundaries a jointly owned unit is physically located.
Hourly Value [Archive]		2/8/2005	3/16/2007	Data measured on a Clock Hour basis.

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Implemented Interchange [Archive]		5/2/2006	3/16/2007	The state where the Balancing Authority enters the Confirmed Interchange into its Area Control Error equation.
Inadvertent Interchange [Archive]		2/8/2005	3/16/2007	The difference between the Balancing Authority's Net Actual Interchange and Net Scheduled Interchange. ($I_A - I_S$)
Independent Power Producer [Archive]	IPP	2/8/2005	3/16/2007	Any entity that owns or operates an electricity generating facility that is not included in an electric utility's rate base. This term includes, but is not limited to, cogenerators and small power producers and all other nonutility electricity producers, such as exempt wholesale generators, who sell electricity.
Institute of Electrical and Electronics Engineers, Inc. [Archive]	IEEE	2/7/2006	3/16/2007	
Interchange [Archive]		5/2/2006	3/16/2007	Energy transfers that cross Balancing Authority boundaries.
Interchange Authority [Archive]		5/2/2006	3/16/2007	The responsible entity that authorizes implementation of valid and balanced Interchange Schedules between Balancing Authority Areas, and ensures communication of Interchange information for reliability assessment purposes.
Interchange Distribution Calculator [Archive]	IDC	2/8/2005	3/16/2007	The mechanism used by Reliability Coordinators in the Eastern Interconnection to calculate the distribution of Interchange Transactions over specific Flowgates. It includes a database of all Interchange Transactions and a matrix of the Distribution Factors for the Eastern Interconnection.

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Interchange Schedule [Archive]		2/8/2005	3/16/2007	An agreed-upon Interchange Transaction size (megawatts), start and end time, beginning and ending ramp times and rate, and type required for delivery and receipt of power and energy between the Source and Sink Balancing Authorities involved in the transaction.
Interchange Transaction [Archive]		2/8/2005	3/16/2007	An agreement to transfer energy from a seller to a buyer that crosses one or more Balancing Authority Area boundaries.
Interchange Transaction Tag or Tag [Archive]		2/8/2005	3/16/2007	The details of an Interchange Transaction required for its physical implementation.
Interconnected Operations Service [Archive]		2/8/2005	3/16/2007	A service (exclusive of basic energy and transmission services) that is required to support the reliable operation of interconnected Bulk Electric Systems.
Interconnection [Archive]		2/8/2005	3/16/2007	When capitalized, any one of the three major electric system networks in North America: Eastern, Western, and ERCOT.
Interconnection Reliability Operating Limit [Archive]	IROL	2/8/2005	3/16/2007 Retired 12/27/2007	The value (such as MW, MVar, Amperes, Frequency or Volts) derived from, or a subset of the System Operating Limits, which if exceeded, could expose a widespread area of the Bulk Electric System to instability, uncontrolled separation(s) or cascading outages.
Interconnection Reliability Operating Limit [Archive]	IROL	11/1/2006	12/27/2007	A System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading Outages that adversely impact the reliability of the Bulk Electric System.

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Interconnection Reliability Operating Limit T_v [Archive]	IROL T_v	11/1/2006	12/27/2007	The maximum time that an Interconnection Reliability Operating Limit can be violated before the risk to the interconnection or other Reliability Coordinator Area(s) becomes greater than acceptable. Each Interconnection Reliability Operating Limit's T_v shall be less than or equal to 30 minutes.
Intermediate Balancing Authority [Archive]		2/8/2005	3/16/2007	A Balancing Authority Area that has connecting facilities in the Scheduling Path between the Sending Balancing Authority Area and Receiving Balancing Authority Area and operating agreements that establish the conditions for the use of such facilities
Interruptible Load or Interruptible Demand [Archive]		11/1/2006	3/16/2007	Demand that the end-use customer makes available to its Load-Serving Entity via contract or agreement for curtailment.
Joint Control [Archive]		2/8/2005	3/16/2007	Automatic Generation Control of jointly owned units by two or more Balancing Authorities.

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Limiting Element [Archive]		2/8/2005	3/16/2007	The element that is 1.)Either operating at its appropriate rating, or 2,) Would be following the limiting contingency. Thus, the Limiting Element establishes a system limit.
Load [Archive]		2/8/2005	3/16/2007	An end-use device or customer that receives power from the electric system.
Load Shift Factor [Archive]	LSF	2/8/2005	3/16/2007	A factor to be applied to a load's expected change in demand to determine the amount of flow contribution that change in demand will impose on an identified transmission facility or monitored Flowgate.
Load-Serving Entity [Archive]		2/8/2005	3/16/2007	Secures energy and transmission service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers.
Long-Term Transmission Planning Horizon [Archive]		8/4/2011		Transmission planning period that covers years six through ten or beyond when required to accommodate any known longer lead time projects that may take longer than ten years to complete.
Market Flow [Archive]		11/4/2010	4/21/2011	The total amount of power flowing across a specified Facility or set of Facilities due to a market dispatch of generation internal to the market to serve load internal to the market.
Misoperation [Archive]		2/7/2006	3/16/2007	<ul style="list-style-type: none"> ▪ Any failure of a Protection System element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection. ▪ Any operation for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone). ▪ Any unintentional Protection System operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity.

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Native Load [Archive]		2/8/2005	3/16/2007	The end-use customers that the Load-Serving Entity is obligated to serve.
Near-Term Transmission Planning Horizon [Archive]		1/24/2011		The transmission planning period that covers Year One through five.
Net Actual Interchange [Archive]		2/8/2005	3/16/2007	The algebraic sum of all metered interchange over all interconnections between two physically Adjacent Balancing Authority Areas.
Net Energy for Load [Archive]		2/8/2005	3/16/2007	Net Balancing Authority Area generation, plus energy received from other Balancing Authority Areas, less energy delivered to Balancing Authority Areas through interchange. It includes Balancing Authority Area losses but excludes energy required for storage at energy storage facilities.
Net Interchange Schedule [Archive]		2/8/2005	3/16/2007	The algebraic sum of all Interchange Schedules with each Adjacent Balancing Authority.
Net Scheduled Interchange [Archive]		2/8/2005	3/16/2007	The algebraic sum of all Interchange Schedules across a given path or between Balancing Authorities for a given period or instant in time.
Network Integration Transmission Service [Archive]		2/8/2005	3/16/2007	Service that allows an electric transmission customer to integrate, plan, economically dispatch and regulate its network reserves in a manner comparable to that in which the Transmission Owner serves Native Load customers.
Non-Consequential Load Loss [Archive]		8/4/2011		Non-Interruptible Load loss that does not include: (1) Consequential Load Loss, (2) the response of voltage sensitive Load, or (3) Load that is disconnected from the System by end-user equipment.

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Non-Firm Transmission Service [Archive]		2/8/2005	3/16/2007	Transmission service that is reserved on an as-available basis and is subject to curtailment or interruption.
Non-Spinning Reserve [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. That generating reserve not connected to the system but capable of serving demand within a specified time. 2. Interruptible load that can be removed from the system in a specified time.
Normal Clearing [Archive]		11/1/2006	12/27/2007	A protection system operates as designed and the fault is cleared in the time normally expected with proper functioning of the installed protection systems.
Normal Rating [Archive]		2/8/2005	3/16/2007	The rating as defined by the equipment owner that specifies the level of electrical loading, usually expressed in megawatts (MW) or other appropriate units that a system, facility, or element can support or withstand through the daily demand cycles without loss of equipment life.
Nuclear Plant Generator Operator [Archive]		5/2/2007	10/16/2008	Any Generator Operator or Generator Owner that is a Nuclear Plant Licensee responsible for operation of a nuclear facility licensed to produce commercial power.
Nuclear Plant Off-site Power Supply (Off-site Power) [Archive]		5/2/2007	10/16/2008	The electric power supply provided from the electric system to the nuclear power plant distribution system as required per the nuclear power plant license.

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Nuclear Plant Licensing Requirements (NPLRs) [Archive]		5/2/2007	10/16/2008	Requirements included in the design basis of the nuclear plant and statutorily mandated for the operation of the plant, including nuclear power plant licensing requirements for: <ol style="list-style-type: none"> 1) Off-site power supply to enable safe shutdown of the plant during an electric system or plant event; and 2) Avoiding preventable challenges to nuclear safety as a result of an electric system disturbance, transient, or condition.
Nuclear Plant Interface Requirements (NPIRs) [Archive]		5/2/2007	10/16/2008	The requirements based on NPLRs and Bulk Electric System requirements that have been mutually agreed to by the Nuclear Plant Generator Operator and the applicable Transmission Entities.

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Off-Peak [Archive]		2/8/2005	3/16/2007	Those hours or other periods defined by NAESB business practices, contract, agreements, or guides as periods of lower electrical demand.
On-Peak [Archive]		2/8/2005	3/16/2007	Those hours or other periods defined by NAESB business practices, contract, agreements, or guides as periods of higher electrical demand.
Open Access Same Time Information Service [Archive]	OASIS	2/8/2005	3/16/2007	An electronic posting system that the Transmission Service Provider maintains for transmission access data and that allows all transmission customers to view the data simultaneously.
Open Access Transmission Tariff [Archive]	OATT	2/8/2005	3/16/2007	Electronic transmission tariff accepted by the U.S. Federal Energy Regulatory Commission requiring the Transmission Service Provider to furnish to all shippers with non-discriminating service comparable to that provided by Transmission Owners to themselves.
Operating Plan [Archive]		2/7/2006	3/16/2007	A document that identifies a group of activities that may be used to achieve some goal. An Operating Plan may contain Operating Procedures and Operating Processes. A company-specific system restoration plan that includes an Operating Procedure for black-starting units, Operating Processes for communicating restoration progress with other entities, etc., is an example of an Operating Plan.

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Operating Procedure [Archive]		2/7/2006	3/16/2007	A document that identifies specific steps or tasks that should be taken by one or more specific operating positions to achieve specific operating goal(s). The steps in an Operating Procedure should be followed in the order in which they are presented, and should be performed by the position(s) identified. A document that lists the specific steps for a system operator to take in removing a specific transmission line from service is an example of an Operating Procedure.
Operating Process [Archive]		2/7/2006	3/16/2007	A document that identifies general steps for achieving a generic operating goal. An Operating Process includes steps with options that may be selected depending upon Real-time conditions. A guideline for controlling high voltage is an example of an Operating Process.
Operating Reserve [Archive]		2/8/2005	3/16/2007	That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non-spinning reserve.
Operating Reserve – Spinning [Archive]		2/8/2005	3/16/2007	The portion of Operating Reserve consisting of: <ul style="list-style-type: none"> • Generation synchronized to the system and fully available to serve load within the Disturbance Recovery Period following the contingency event; or • Load fully removable from the system within the Disturbance Recovery Period following the contingency event.

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Operating Reserve – Supplemental [Archive]		2/8/2005	3/16/2007	The portion of Operating Reserve consisting of: <ul style="list-style-type: none"> • Generation (synchronized or capable of being synchronized to the system) that is fully available to serve load within the Disturbance Recovery Period following the contingency event; or • Load fully removable from the system within the Disturbance Recovery Period following the contingency event.
Operating Voltage [Archive]		2/7/2006	3/16/2007	The voltage level by which an electrical system is designated and to which certain operating characteristics of the system are related; also, the effective (root-mean-square) potential difference between any two conductors or between a conductor and the ground. The actual voltage of the circuit may vary somewhat above or below this value.
Operational Planning Analysis [Archive]		10/17/2008		An analysis of the expected system conditions for the next day's operation. (That analysis may be performed either a day ahead or as much as 12 months ahead.) Expected system conditions include things such as load forecast(s), generation output levels, and known system constraints (transmission facility outages, generator outages, equipment limitations, etc.).
Outage Transfer Distribution Factor [Archive]	OTDF	8/22/2008	11/24/2009	In the post-contingency configuration of a system under study, the electric Power Transfer Distribution Factor (PTDF) with one or more system Facilities removed from service (outaged).
Overlap Regulation Service [Archive]		2/8/2005	3/16/2007	A method of providing regulation service in which the Balancing Authority providing the regulation service incorporates another Balancing Authority's actual interchange, frequency response, and schedules into providing Balancing Authority's AGC/ACE equation.

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Participation Factors [Archive]		8/22/2008	11/24/2009	A set of dispatch rules such that given a specific amount of load to serve, an approximate generation dispatch can be determined. To accomplish this, generators are assigned a percentage that they will contribute to serve load.
Peak Demand [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. The highest hourly integrated Net Energy For Load within a Balancing Authority Area occurring within a given period (e.g., day, month, season, or year). 2. The highest instantaneous demand within the Balancing Authority Area.
Performance-Reset Period [Archive]		2/7/2006	3/16/2007	The time period that the entity being assessed must operate without any violations to reset the level of non compliance to zero.
Physical Security Perimeter [Archive]		5/2/2006	1/18/2008	The physical, completely enclosed (“six-wall”) border surrounding computer rooms, telecommunications rooms, operations centers, and other locations in which Critical Cyber Assets are housed and for which access is controlled.
Planning Assessment [Archive]		8/4/2011		Documented evaluation of future Transmission system performance and Corrective Action Plans to remedy identified deficiencies.
Planning Authority [Archive]		2/8/2005	3/16/2007	The responsible entity that coordinates and integrates transmission facility and service plans, resource plans, and protection systems.
Planning Coordinator [Archive]		8/22/2008	11/24/2009	See Planning Authority.
Point of Delivery [Archive]	POD	2/8/2005	3/16/2007	A location that the Transmission Service Provider specifies on its transmission system where an Interchange Transaction leaves or a Load-Serving Entity receives its energy.

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Point of Receipt [Archive]	POR	2/8/2005	3/16/2007	A location that the Transmission Service Provider specifies on its transmission system where an Interchange Transaction enters or a Generator delivers its output.
Point to Point Transmission Service [Archive]	PTP	2/8/2005	3/16/2007	The reservation and transmission of capacity and energy on either a firm or non-firm basis from the Point(s) of Receipt to the Point(s) of Delivery.
Postback [Archive]		08/22/2008	Not approved; Modification directed 11/24/09	Positive adjustments to ATC or AFC as defined in Business Practices. Such Business Practices may include processing of redirects and unscheduled service.
Power Transfer Distribution Factor [Archive]	PTDF	08/22/2008	11/24/2009	In the pre-contingency configuration of a system under study, a measure of the responsiveness or change in electrical loadings on transmission system Facilities due to a change in electric power transfer from one area to another, expressed in percent (up to 100%) of the change in power transfer
Pro Forma Tariff [Archive]		2/8/2005	3/16/2007	Usually refers to the standard OATT and/or associated transmission rights mandated by the U.S. Federal Energy Regulatory Commission Order No. 888.
Protection System [Archive]		2/7/2006	3/17/07	Protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry.

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Protection System [Archive]		11/19/2010		Protection System – <ul style="list-style-type: none"> • Protective relays which respond to electrical quantities, • Communications systems necessary for correct operation of protective functions • Voltage and current sensing devices providing inputs to protective relays, • Station dc supply associated with protective functions (including batteries, battery chargers, and non-battery-based dc supply), and • Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.
Pseudo-Tie [Archive]		2/8/2005	3/16/2007	A telemetered reading or value that is updated in real time and used as a “virtual” tie line flow in the AGC/ACE equation but for which no physical tie or energy metering actually exists. The integrated value is used as a metered MWh value for interchange accounting purposes.
Purchasing-Selling Entity [Archive]		2/8/2005	3/16/2007	The entity that purchases or sells, and takes title to, energy, capacity, and Interconnected Operations Services. Purchasing-Selling Entities may be affiliated or unaffiliated merchants and may or may not own generating facilities.
Ramp Rate or Ramp [Archive]		2/8/2005	3/16/2007	(Schedule) The rate, expressed in megawatts per minute, at which the interchange schedule is attained during the ramp period. (Generator) The rate, expressed in megawatts per minute, that a generator changes its output.
Rated Electrical Operating Conditions [Archive]		2/7/2006	3/16/2007	The specified or reasonably anticipated conditions under which the electrical system or an individual electrical circuit is intend/designed to operate

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Rating [Archive]		2/8/2005	3/16/2007	The operational limits of a transmission system element under a set of specified conditions.
Rated System Path Methodology [Archive]		08/22/2008	11/24/2009	The Rated System Path Methodology is characterized by an initial Total Transfer Capability (TTC), determined via simulation. Capacity Benefit Margin, Transmission Reliability Margin, and Existing Transmission Commitments are subtracted from TTC, and Postbacks and counterflows are added as applicable, to derive Available Transfer Capability. Under the Rated System Path Methodology, TTC results are generally reported as specific transmission path capabilities.
Reactive Power [Archive]		2/8/2005	3/16/2007	The portion of electricity that establishes and sustains the electric and magnetic fields of alternating-current equipment. Reactive power must be supplied to most types of magnetic equipment, such as motors and transformers. It also must supply the reactive losses on transmission facilities. Reactive power is provided by generators, synchronous condensers, or electrostatic equipment such as capacitors and directly influences electric system voltage. It is usually expressed in kilovars (kvar) or megavars (Mvar).
Real Power [Archive]		2/8/2005	3/16/2007	The portion of electricity that supplies energy to the load.
Reallocation [Archive]		2/8/2005	3/16/2007	The total or partial curtailment of Transactions during TLR Level 3a or 5a to allow Transactions using higher priority to be implemented.
Real-time [Archive]		2/7/2006	3/16/2007	Present time as opposed to future time. (From Interconnection Reliability Operating Limits standard.)
Real-time Assessment [Archive]		10/17/2008		An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data

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Receiving Balancing Authority [Archive]		2/8/2005	3/16/2007	The Balancing Authority importing the Interchange.
Regional Reliability Organization [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. An entity that ensures that a defined area of the Bulk Electric System is reliable, adequate and secure. 2. A member of the North American Electric Reliability Council. The Regional Reliability Organization can serve as the Compliance Monitor.
Regional Reliability Plan [Archive]		2/8/2005	3/16/2007	The plan that specifies the Reliability Coordinators and Balancing Authorities within the Regional Reliability Organization, and explains how reliability coordination will be accomplished.
Regulating Reserve [Archive]		2/8/2005	3/16/2007	An amount of reserve responsive to Automatic Generation Control, which is sufficient to provide normal regulating margin.
Regulation Service [Archive]		2/8/2005	3/16/2007	The process whereby one Balancing Authority contracts to provide corrective response to all or a portion of the ACE of another Balancing Authority. The Balancing Authority providing the response assumes the obligation of meeting all applicable control criteria as specified by NERC for itself and the Balancing Authority for which it is providing the Regulation Service.
Reliability Adjustment RFI [Archive]		10/29/2008	12/17/2009	Request to modify an Implemented Interchange Schedule for reliability purposes.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Reliability Coordinator [Archive]		2/8/2005	3/16/2007	The entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the Wide Area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator's vision.
Reliability Coordinator Area [Archive]		2/8/2005	3/16/2007	The collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.
Reliability Coordinator Information System [Archive]	RCIS	2/8/2005	3/16/2007	The system that Reliability Coordinators use to post messages and share operating information in real time.
Remedial Action Scheme [Archive]	RAS	2/8/2005	3/16/2007	See "Special Protection System"
Reportable Disturbance [Archive]		2/8/2005	3/16/2007	Any event that causes an ACE change greater than or equal to 80% of a Balancing Authority's or reserve sharing group's most severe contingency. The definition of a reportable disturbance is specified by each Regional Reliability Organization. This definition may not be retroactively adjusted in response to observed performance.
Request for Interchange [Archive]	RFI	5/2/2006	3/16/2007	A collection of data as defined in the NAESB RFI Datasheet, to be submitted to the Interchange Authority for the purpose of implementing bilateral Interchange between a Source and Sink Balancing Authority.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Reserve Sharing Group [Archive]		2/8/2005	3/16/2007	A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating reserves required for each Balancing Authority's use in recovering from contingencies within the group. Scheduling energy from an Adjacent Balancing Authority to aid recovery need not constitute reserve sharing provided the transaction is ramped in over a period the supplying party could reasonably be expected to load generation in (e.g., ten minutes). If the transaction is ramped in quicker (e.g., between zero and ten minutes) then, for the purposes of Disturbance Control Performance, the Areas become a Reserve Sharing Group.
Resource Planner [Archive]		2/8/2005	3/16/2007	The entity that develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area.
Response Rate [Archive]		2/8/2005	3/16/2007	The Ramp Rate that a generating unit can achieve under normal operating conditions expressed in megawatts per minute (MW/Min).
Right-of-Way (ROW) [Archive]		2/7/2006	3/16/2007	A corridor of land on which electric lines may be located. The Transmission Owner may own the land in fee, own an easement, or have certain franchise, prescription, or license rights to construct and maintain lines.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Scenario [Archive]		2/7/2006	3/16/2007	Possible event.
Schedule [Archive]		2/8/2005	3/16/2007	(Verb) To set up a plan or arrangement for an Interchange Transaction. (Noun) An Interchange Schedule.
Scheduled Frequency [Archive]		2/8/2005	3/16/2007	60.0 Hertz, except during a time correction.
Scheduling Entity [Archive]		2/8/2005	3/16/2007	An entity responsible for approving and implementing Interchange Schedules.
Scheduling Path [Archive]		2/8/2005	3/16/2007	The Transmission Service arrangements reserved by the Purchasing-Selling Entity for a Transaction.
Sending Balancing Authority [Archive]		2/8/2005	3/16/2007	The Balancing Authority exporting the Interchange.
Sink Balancing Authority [Archive]		2/8/2005	3/16/2007	The Balancing Authority in which the load (sink) is located for an Interchange Transaction. (This will also be a Receiving Balancing Authority for the resulting Interchange Schedule.)
Source Balancing Authority [Archive]		2/8/2005	3/16/2007	The Balancing Authority in which the generation (source) is located for an Interchange Transaction. (This will also be a Sending Balancing Authority for the resulting Interchange Schedule.)

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Special Protection System (Remedial Action Scheme) [Archive]		2/8/2005	3/16/2007	An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and Mvar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.
Spinning Reserve [Archive]		2/8/2005	3/16/2007	Unloaded generation that is synchronized and ready to serve additional demand.
Stability [Archive]		2/8/2005	3/16/2007	The ability of an electric system to maintain a state of equilibrium during normal and abnormal conditions or disturbances.
Stability Limit [Archive]		2/8/2005	3/16/2007	The maximum power flow possible through some particular point in the system while maintaining stability in the entire system or the part of the system to which the stability limit refers.
Supervisory Control and Data Acquisition [Archive]	SCADA	2/8/2005	3/16/2007	A system of remote control and telemetry used to monitor and control the transmission system.
Supplemental Regulation Service [Archive]		2/8/2005	3/16/2007	A method of providing regulation service in which the Balancing Authority providing the regulation service receives a signal representing all or a portion of the other Balancing Authority's ACE.
Surge [Archive]		2/8/2005	3/16/2007	A transient variation of current, voltage, or power flow in an electric circuit or across an electric system.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Sustained Outage [Archive]		2/7/2006	3/16/2007	The deenergized condition of a transmission line resulting from a fault or disturbance following an unsuccessful automatic reclosing sequence and/or unsuccessful manual reclosing procedure.
System [Archive]		2/8/2005	3/16/2007	A combination of generation, transmission, and distribution components.
System Operating Limit [Archive]		2/8/2005	3/16/2007	The value (such as MW, MVar, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to: <ul style="list-style-type: none"> • Facility Ratings (Applicable pre- and post-Contingency equipment or facility ratings) • Transient Stability Ratings (Applicable pre- and post-Contingency Stability Limits) • Voltage Stability Ratings (Applicable pre- and post-Contingency Voltage Stability) • System Voltage Limits (Applicable pre- and post-Contingency Voltage Limits)
System Operator [Archive]		2/8/2005	3/16/2007	An individual at a control center (Balancing Authority, Transmission Operator, Generator Operator, Reliability Coordinator) whose responsibility it is to monitor and control that electric system in real time.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Telemetry [Archive]		2/8/2005	3/16/2007	The process by which measurable electrical quantities from substations and generating stations are instantaneously transmitted to the control center, and by which operating commands from the control center are transmitted to the substations and generating stations.
Thermal Rating [Archive]		2/8/2005	3/16/2007	The maximum amount of electrical current that a transmission line or electrical facility can conduct over a specified time period before it sustains permanent damage by overheating or before it sags to the point that it violates public safety requirements.
Tie Line [Archive]		2/8/2005	3/16/2007	A circuit connecting two Balancing Authority Areas.
Tie Line Bias [Archive]		2/8/2005	3/16/2007	A mode of Automatic Generation Control that allows the Balancing Authority to 1.) maintain its Interchange Schedule and 2.) respond to Interconnection frequency error.
Time Error [Archive]		2/8/2005	3/16/2007	The difference between the Interconnection time measured at the Balancing Authority(ies) and the time specified by the National Institute of Standards and Technology. Time error is caused by the accumulation of Frequency Error over a given period.
Time Error Correction [Archive]		2/8/2005	3/16/2007	An offset to the Interconnection's scheduled frequency to return the Interconnection's Time Error to a predetermined value.
TLR Log [Archive]		2/8/2005	3/16/2007	Report required to be filed after every TLR Level 2 or higher in a specified format. The NERC IDC prepares the report for review by the issuing Reliability Coordinator. After approval by the issuing Reliability Coordinator, the report is electronically filed in a public area of the NERC Web site.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Total Flowgate Capability [Archive]	TFC	08/22/2008	11/24/2009	The maximum flow capability on a Flowgate, is not to exceed its thermal rating, or in the case of a flowgate used to represent a specific operating constraint (such as a voltage or stability limit), is not to exceed the associated System Operating Limit.
Total Transfer Capability [Archive]	TTC	2/8/2005	3/16/2007	The amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions.
Transaction [Archive]		2/8/2005	3/16/2007	See Interchange Transaction.
Transfer Capability [Archive]		2/8/2005	3/16/2007	The measure of the ability of interconnected electric systems to move or transfer power <i>in a reliable manner</i> from one area to another over all transmission lines (or paths) between those areas under specified system conditions. The units of transfer capability are in terms of electric power, generally expressed in megawatts (MW). The transfer capability from "Area A" to "Area B" is <i>not</i> generally equal to the transfer capability from "Area B" to "Area A."
Transfer Distribution Factor [Archive]		2/8/2005	3/16/2007	See Distribution Factor.
Transmission [Archive]		2/8/2005	3/16/2007	An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Transmission Constraint [Archive]		2/8/2005	3/16/2007	A limitation on one or more transmission elements that may be reached during normal or contingency system operations.
Transmission Customer [Archive]		2/8/2005	3/16/2007	<ol style="list-style-type: none"> 1. Any eligible customer (or its designated agent) that can or does execute a transmission service agreement or can or does receive transmission service. 2. Any of the following responsible entities: Generator Owner, Load-Serving Entity, or Purchasing-Selling Entity.
Transmission Line [Archive]		2/7/2006	3/16/2007	A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances.
Transmission Operator [Archive]		2/8/2005	3/16/2007	The entity responsible for the reliability of its "local" transmission system, and that operates or directs the operations of the transmission facilities.
Transmission Operator Area [Archive]		08/22/2008	11/24/2009	The collection of Transmission assets over which the Transmission Operator is responsible for operating.
Transmission Owner [Archive]		2/8/2005	3/16/2007	The entity that owns and maintains transmission facilities.
Transmission Planner [Archive]		2/8/2005	3/16/2007	The entity that develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Transmission Reliability Margin [Archive]	TRM	2/8/2005	3/16/2007	The amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.
Transmission Reliability Margin Implementation Document [Archive]	TRMID	08/22/2008	11/24/2009	A document that describes the implementation of a Transmission Reliability Margin methodology, and provides information related to a Transmission Operator's calculation of TRM.
Transmission Service [Archive]		2/8/2005	3/16/2007	Services provided to the Transmission Customer by the Transmission Service Provider to move energy from a Point of Receipt to a Point of Delivery.
Transmission Service Provider [Archive]		2/8/2005	3/16/2007	The entity that administers the transmission tariff and provides Transmission Service to Transmission Customers under applicable transmission service agreements.
Vegetation [Archive]		2/7/2006	3/16/2007	All plant material, growing or not, living or dead.
Vegetation Inspection [Archive]		2/7/2006	3/16/2007	The systematic examination of a transmission corridor to document vegetation conditions.
Wide Area [Archive]		2/8/2005	3/16/2007	The entire Reliability Coordinator Area as well as the critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of Interconnected Reliability Operating Limits.

Glossary of Terms Used in NERC Reliability Standards

Continent-wide Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Year One [Archive]		1/24/2011		The first twelve month period that a Planning Coordinator or a Transmission Planner is responsible for assessing. For an assessment started in a given calendar year, Year One includes the forecasted peak Load period for one of the following two calendar years. For example, if a Planning Assessment was started in 2011, then Year One includes the forecasted peak Load period for either 2012 or 2013.

ReliabilityFirst Regional Definitions

The following definitions were developed for use in ReliabilityFirst Regional Standards.

RFC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Resource Adequacy [Archive]		08/05/2009	03/17/2011	The ability of supply-side and demand-side resources to meet the aggregate electrical demand (including losses)
Net Internal Demand [Archive]		08/05/2009	03/17/2011	Total of all end-use customer demand and electric system losses within specified metered boundaries, less Direct Control Management and Interruptible Demand
Peak Period [Archive]		08/05/2009	03/17/2011	A period consisting of two (2) or more calendar months but less than seven (7) calendar months, which includes the period during which the responsible entity's annual peak demand is expected to occur
Year One [Archive]		08/05/2009	03/17/2011	The planning year that begins with the upcoming annual Peak Period

NPCC Regional Definitions

The following definitions were developed for use in NPCC Regional Standards.

NPCC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Current Zero Time [Archive]		11/04/2010		The time of the final current zero on the last phase to interrupt.
Generating Plant [Archive]		11/04/2010		One or more generators at a single physical location whereby any single contingency can affect all the generators at that location.

WECC Regional Definitions

The following definitions were developed for use in WECC Regional Standards.

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Area Control Error [†] [Archive]	ACE	3/12/2007	6/8/2007	Means the instantaneous difference between net actual and scheduled interchange, taking into account the effects of Frequency Bias including correction for meter error.
Automatic Generation Control [†] [Archive]	AGC	3/12/2007	6/8/2007	Means equipment that automatically adjusts a Control Area's generation from a central location to maintain its interchange schedule plus Frequency Bias.
Automatic Time Error Correction [Archive]		3/26/2008	5/21/2009	A frequency control automatic action that a Balancing Authority uses to offset its frequency contribution to support the Interconnection's scheduled frequency.
Average Generation [†] [Archive]		3/12/2007	6/8/2007	Means the total MWh generated within the Balancing Authority Operator's Balancing Authority Area during the prior year divided by 8760 hours (8784 hours if the prior year had 366 days).
Business Day [†] [Archive]		3/12/2007	6/8/2007	Means any day other than Saturday, Sunday, or a legal public holiday as designated in section 6103 of title 5, U.S. Code.
Disturbance [†] [Archive]		3/12/2007	6/8/2007	Means (i) any perturbation to the electric system, or (ii) the unexpected change in ACE that is caused by the sudden loss of generation or interruption of load.

Glossary of Terms Used in NERC Reliability Standards

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Extraordinary Contingency [†] [Archive]		3/12/2007	6/8/2007	Shall have the meaning set out in Excuse of Performance, section B.4.c. language in section B.4.c: <i>means any act of God, actions by a non-affiliated third party, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, earthquake, explosion, accident to or breakage, failure or malfunction of machinery or equipment, or any other cause beyond the Reliability Entity's reasonable control; provided that prudent industry standards (e.g. maintenance, design, operation) have been employed; and provided further that no act or cause shall be considered an Extraordinary Contingency if such act or cause results in any contingency contemplated in any WECC Reliability Standard (e.g., the "Most Severe Single Contingency" as defined in the WECC Reliability Criteria or any lesser contingency).</i>
Frequency Bias [†] [Archive]		3/12/2007	6/8/2007	Means a value, usually given in megawatts per 0.1 Hertz, associated with a Control Area that relates the difference between scheduled and actual frequency to the amount of generation required to correct the difference.
Generating Unit Capability [†] [Archive]		3/12/2007	6/8/2007	Means the MVA nameplate rating of a generator.
Non-spinning Reserve [†] [Archive]		3/12/2007	6/8/2007	Means that Operating Reserve not connected to the system but capable of serving demand within a specified time, or interruptible load that can be removed from the system in a specified time.
Normal Path Rating [†] [Archive]		3/12/2007	6/8/2007	Is the maximum path rating in MW that has been demonstrated to WECC through study results or actual operation, whichever is greater. For a path with transfer capability limits that vary seasonally, it is the maximum of all the seasonal values.

Glossary of Terms Used in NERC Reliability Standards

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Operating Reserve [†] [Archive]		3/12/2007	6/8/2007	Means that capability above firm system demand required to provide for regulation, load-forecasting error, equipment forced and scheduled outages and local area protection. Operating Reserve consists of Spinning Reserve and Nonspinning Reserve.
Operating Transfer Capability Limit [†] [Archive]	OTC	3/12/2007	6/8/2007	Means the maximum value of the most critical system operating parameter(s) which meets: (a) precontingency criteria as determined by equipment loading capability and acceptable voltage conditions, (b) transient criteria as determined by equipment loading capability and acceptable voltage conditions, (c) transient performance criteria, and (d) post-contingency loading and voltage criteria.
Primary Inadvertent Interchange [Archive]		3/26/2008	5/21/2009	The component of area (n) inadvertent interchange caused by the regulating deficiencies of the area (n).
Secondary Inadvertent Interchange [Archive]		3/26/2008	5/21/2009	The component of area (n) inadvertent interchange caused by the regulating deficiencies of area (i).
Spinning Reserve [†] [Archive]		3/12/2007	6/8/2007	Means unloaded generation which is synchronized and ready to serve additional demand. It consists of Regulating reserve and Contingency reserve (as each are described in Sections B.a.i and ii).
WECC Table 2 [†] [Archive]		3/12/2007	6/8/2007	Means the table maintained by the WECC identifying those transfer paths monitored by the WECC regional Reliability coordinators. As of the date set out therein, the transmission paths identified in Table 2 are as listed in Attachment A to this Standard.

Glossary of Terms Used in NERC Reliability Standards

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Functionally Equivalent Protection System [Archive]	FEPS	10/29/2008	4/21/2011	A Protection System that provides performance as follows: <ul style="list-style-type: none"> • Each Protection System can detect the same faults within the zone of protection and provide the clearing times and coordination needed to comply with all Reliability Standards. • Each Protection System may have different components and operating characteristics.
Functionally Equivalent RAS [Archive]	FERAS	10/29/2008	4/21/2011	A Remedial Action Scheme (“RAS”) that provides the same performance as follows: <ul style="list-style-type: none"> • Each RAS can detect the same conditions and provide mitigation to comply with all Reliability Standards. • Each RAS may have different components and operating characteristics.
Security-Based Misoperation [Archive]		10/29/2008	4/21/2011	A Misoperation caused by the incorrect operation of a Protection System or RAS. Security is a component of reliability and is the measure of a device’s certainty not to operate falsely.
Dependability-Based Misoperation [Archive]		10/29/2008	4/21/2011	Is the absence of a Protection System or RAS operation when intended. Dependability is a component of reliability and is the measure of a device’s certainty to operate when required.
Commercial Operation [Archive]		10/29/2008	4/21/2011	Achievement of this designation indicates that the Generator Operator or Transmission Operator of the synchronous generator or synchronous condenser has received all approvals necessary for operation after completion of initial start-up testing.
Qualified Transfer Path Curtailment Event [Archive]		2/10/2009	3/17/2011	Each hour that a Transmission Operator calls for Step 4 or higher for one or more consecutive hours (See Attachment 1 IRO-006-WECC-1) during which the curtailment tool is functional.

Glossary of Terms Used in NERC Reliability Standards

WECC Regional Term	Acronym	BOT Approved Date	FERC Approved Date	Definition
Relief Requirement [Archive]		2/10/2009	3/17/2011	The expected amount of the unscheduled flow reduction on the Qualified Transfer Path that would result by curtailing each Sink Balancing Authority's Contributing Schedules by the percentages listed in the columns of WECC Unscheduled Flow Mitigation Summary of Actions Table in Attachment 1 WECC IRO-006-WECC-1.
Transfer Distribution Factor [Archive]	TDF	2/10/2009	3/17/2011	The percentage of USF that flows across a Qualified Transfer Path when an Interchange Transaction (Contributing Schedule) is implemented. [See the WECC Unscheduled Flow Mitigation Summary of Actions Table (Attachment 1 WECC IRO-006-WECC-1).]
Contributing Schedule [Archive]		2/10/2009	3/17/2011	A Schedule not on the Qualified Transfer Path between a Source Balancing Authority and a Sink Balancing Authority that contributes unscheduled flow across the Qualified Transfer Path.
Qualified Transfer Path [Archive]		2/10/2009	3/17/2011	A transfer path designated by the WECC Operating Committee as being qualified for WECC unscheduled flow mitigation.
Qualified Controllable Device [Archive]		2/10/2009	3/17/2011	A controllable device installed in the Interconnection for controlling energy flow and the WECC Operating Committee has approved using the device for controlling the USF on the Qualified Transfer Paths.

Glossary of Terms Used in NERC Reliability Standards

Endnotes

[†] FERC approved the WECC Tier One Reliability Standards in the Order Approving Regional Reliability Standards for the Western Interconnection and Directing Modifications, 119 FERC ¶ 61,260 (June 8, 2007). In that Order, FERC directed WECC to address the inconsistencies between the regional definitions and the NERC Glossary in developing permanent replacement standards. The replacement standards designed to address the shortcomings were filed with FERC in 2009.

Exhibit C

Current Critical Infrastructure Protection Implementation Plans for Version 3

Implementation Plan for Newly Identified Critical Cyber Assets and Newly Registered Entities

This Implementation Plan applies to Cyber Security Standards CIP-002-2 through CIP-009-2 and CIP-002-3 through CIP-009-3.

The term “Compliant” in this Implementation Plan is used in the same way that it is used in the (Revised) Implementation Plan for Cyber Security Standards CIP-002-1 through CIP-009-1: “Compliant means the entity meets the full intent of the requirements and is beginning to maintain required “data,” “documents,” “documentation,” “logs,” and “records.”

The Implementation Plan for Newly Identified Critical Cyber Assets and Newly Registered Entities (hereafter referred to as ‘this Implementation Plan’) defines the schedule for compliance with the requirements of either Version 2 or Version 3 of the NERC Reliability Standards CIP-003 through CIP-009¹ on Cyber Security for (a) newly Registered Entities and (b) newly identified Critical Cyber Assets by an existing Registered Entity after the Registered Entity’s applicable *Compliant* milestone date has already passed.

There are no *Compliant* milestones specified in Table 2 of this Implementation Plan for compliance with NERC Standard CIP-002, since all Responsible Entities are required to be compliant with NERC Standard CIP-002 based on a previous or existing version-specific Implementation Plan².

Implementation Plan for Newly Identified Critical Cyber Assets

This Implementation Plan defines the *Compliant* milestone dates in terms of the number of calendar months after designation of the newly identified Cyber Asset as a Critical Cyber Asset, following the process stated in NERC Standard CIP-002. These *Compliant* Milestone dates are included in Table 2 of this Implementation Plan.

The term ‘newly identified Critical Cyber Asset’ is used when a Registered Entity has been required to be compliant with NERC Reliability Standard CIP-002 for at least one application of the risk-based Critical Asset identification methodology. Upon a subsequent annual application of the risk-based Critical Asset identification method in compliance with requirements of NERC Reliability Standard CIP-002, either a previously non-critical asset has now been determined to be a Critical Asset, and its associated essential Cyber Assets have now been determined to be Critical Cyber Assets, or Cyber Assets associated with an existing Critical Asset have now been identified as Critical Cyber Assets. These newly determined Critical Cyber Assets are referred to in this Implementation Plan as ‘newly identified Critical Cyber Assets’.

¹ The reference in this Implementation Plan to ‘NERC Standards CIP-002 through CIP-009’ is to all versions (i.e., Version 1, Version 2, and Version 3) of those standards. If reference to only a specific version of a standard or set of standards is required, a version number (i.e., ‘-1’, ‘-2’, or ‘-3’) will be applied to that particular reference.

² Each version of NERC Standards CIP-002 through CIP-009 has its own implementation plan and/or designated effective date when approved by the NERC Board of Trustees or appropriate government authorities.

Table 2 defines the *Compliant* milestone dates for all of the requirements defined in the NERC Reliability Standards CIP-003 through CIP-009 in terms of the number of months following the designation of a newly identified Critical Cyber Asset a Responsible Entity has to become compliant with that requirement. Table 2 further defines the *Compliant* milestone dates for the NERC Reliability Standards CIP-003 through CIP-009 based on the ‘Milestone Category’, which characterizes the scenario by which the Critical Cyber Asset was identified.

For those NERC Reliability Standard requirements that have an entry in Table 2 annotated as *existing*, the designation of a newly identified Critical Cyber Asset has no bearing on its *Compliant* milestone date, since Responsible Entities are required to be compliant with those requirements as part of an existing CIP compliance implementation program³, independent of the determination of a newly identified Critical Cyber Asset.

In all cases where a *Compliant* milestone is specified in Table 2 (i.e., not annotated as *existing*), the Responsible Entity is expected to have all audit records required to demonstrate compliance (i.e., to be ‘Auditably Compliant’⁴) one year following the *Compliant* milestone listed in this Implementation Plan.

Implementation Plan for Newly Registered Entities

A newly Registered Entity is one that has registered with NERC in April 2008 or thereafter and has not previously undergone the NERC CIP-002 Critical Asset Identification Process. As such, it is presumed that no Critical Cyber Assets have been previously identified and no previously established CIP compliance implementation program exists. The *Compliant* milestone schedule defined in Table 3 of this Implementation Plan document defines the applicable compliance schedule for the newly Registered Entity to the NERC Reliability Standards CIP-002 through CIP-009.

Implementation Milestone Categories

The Implementation Plan milestones and schedule to achieve compliance with the NERC Reliability Standards CIP-002 through CIP-009 for newly identified Critical Cyber Assets and newly Registered Entities are provided in Tables 2 and 3 of this Implementation Plan document.

The Implementation Plan milestones defined in Table 2 are divided into categories based on the scenario by which the Critical Cyber Asset was newly identified. The scenarios that represent the milestone categories are briefly defined as follows:

³ The term ‘CIP compliance implementation program’ is used to mean that a Responsible Entity has programs and procedures in place to comply with the requirements of NERC Reliability Standards CIP-003 through CIP-009 for Critical Cyber Assets. All entities are required to be Compliant with NERC Reliability Standard CIP-002 according to a version specific Implementation Plan.

⁴ The term ‘Auditably Compliant’ (AC) used in this Implementation Plan for newly identified Critical Cyber Assets and newly Registered Entities means “the entity meets the full intent of the requirement and can demonstrate compliance to an auditor, including 12-calendar-months of auditable ‘data,’ ‘documents,’ ‘documentation,’ ‘logs,’ and ‘records.’” [see (Revised) Implementation Plan for Cyber Security Standards CIP-002-1 through CIP-009-1]. Since in all cases, the ‘Auditably Compliant’ dates are one calendar year following the ‘Compliant’ (C) date, the Auditably Compliant dates are not specified in this plan. The terms ‘Begin Work’ (BW) and ‘Substantially Compliant’ (SC) used in the Version 1 Implementation Plan are no longer used, and therefore are not referenced in this Implementation Plan.

1. A Cyber Asset is designated as the first Critical Cyber Asset by a Responsible Entity according to the process defined in NERC Reliability Standard CIP-002. No existing CIP compliance implementation program for Standards CIP-003 through CIP-009 is assumed to exist at the Responsible Entity. This category would also apply in the case of a newly Registered Entity (not resulting from a merger or acquisition), if any Critical Cyber Asset was identified according to the process defined in NERC Reliability Standard CIP-002.
2. An existing Cyber Asset becomes subject to the NERC Reliability Standards CIP-003 through CIP-009, *not due to a planned change in the electric system or Cyber Assets by the Responsibility Entity* (unplanned changes due to emergency response are handled separately). A CIP compliance implementation program already exists at the Responsible Entity.
3. A new or existing Cyber Asset becomes subject to the NERC Reliability Standards CIP-003 through CIP-009, *due to a planned change in the electric system or Cyber Assets by the Responsibility Entity*. A CIP compliance implementation program already exists at the Responsible Entity.

Note that the phrase ‘Cyber Asset becomes subject to the NERC Reliability Standards CIP-003 through CIP-009’ as used above applies to all Critical Cyber Assets, as well as other (non-critical) Cyber Assets within an Electronic Security Perimeter that must comply with the applicable requirements of NERC Reliability Standards CIP-003 through CIP-009.

Note also that the phrase ‘planned change in the electric system or Cyber Assets by the Responsible Entity’ refers to any changes of the electric system or Cyber Assets which were planned and implemented by the Responsible Entity.

For example, if a particular transmission substation has been designated a Critical Asset, but there are no Cyber Assets at that transmission substation, then there are no Critical Cyber Assets associated with the Critical Asset at the transmission substation. If an automation modernization activity is performed at that same transmission substation, whereby Cyber Assets are installed that meet the requirements as Critical Cyber Assets, then those newly identified Critical Cyber Assets have been implemented as a result of a planned change of the Critical Asset, and must therefore be in Compliance with NERC Reliability Standards CIP-003 through CIP-009 upon the commissioning of the modernized transmission substation.(Compliant Upon Commissioning below.)

If, however, a particular transmission substation with Cyber Assets does not meet the criteria as a Critical Asset, its associated Cyber Assets are *not* Critical Cyber Assets, as described in the requirements of NERC Reliability Standard CIP-002. Further, if an action is performed outside of that particular transmission substation, such as a transmission line is constructed or retired, a generation plant is modified changing its rated output, or load patterns shift resulting in corresponding transmission flow changes through that transmission substation, that unchanged transmission substation may become a Critical Asset based on established criteria or thresholds in the Responsible Entity’s existing risk-based Critical Asset identification method (required by CIP-002 R1). (Note that the actions that cause the change in power flows may have been performed by a neighboring entity without the full knowledge of the affected Responsible

Entity.) Application of that risk-based Critical Asset Identification process is required annually (by CIP-002 R2), and, as such, it may not be immediately apparent that that particular transmission substation has become a Critical Asset until after the required annual application of the identification methodology. Category 1 Scenario below applies if there was no pre-existing Critical Cyber Assets subject to the standard, and therefore, there was no existing full CIP program. Category 2 Scenario below applies if a CIP program for existing Critical Cyber Assets has been implemented for that Registered Entity.

Figure 1 shows an overall process flow for determining which milestone category a Critical Cyber Asset identification scenario must follow. Following the figure is a more detailed description of each category.

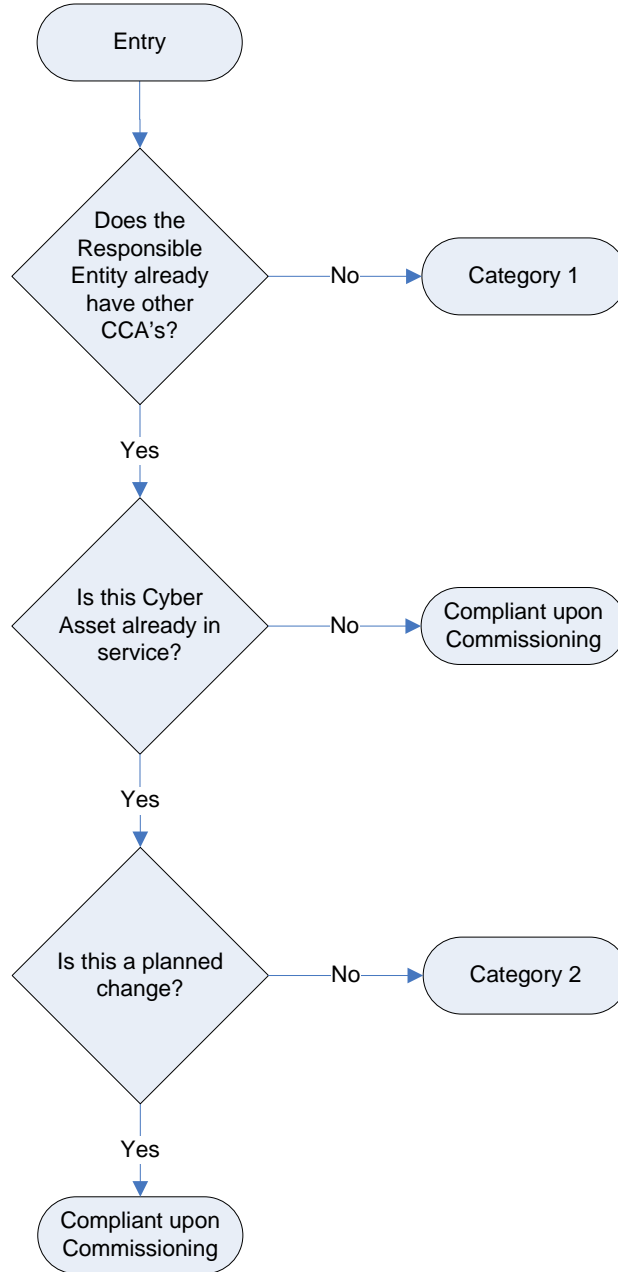


Figure 1: Category Selection Process Flow

Implementation Milestone Categories and Schedules

Based on the Critical Cyber Asset identification scenarios identified above, the implementation milestone categories and schedules for those scenarios are defined and distinguished below for entities with existing registrations in the NERC Compliance Registry. Scenarios resulting from the formation of newly Registered Entities are discussed in a subsequent section of this Implementation Plan.

- 1. Category 1 Scenario:** A Responsible Entity that previously has undergone the NERC Reliability Standard CIP-002 Critical Asset identification process for at least one annual review and approval period without ever having previously identified any Critical Cyber Assets associated with Critical Assets, but has now identified one or more Critical Cyber Assets. As such, it is presumed that the Responsible Entity does not have a previously established CIP compliance implementation program.

The *Compliant* milestones defined for this Category are defined in Table 2 (Milestone Category 1) of this Implementation Plan document.

- 2. Category 2 Scenario:** A Responsible Entity has an established NERC Reliability Standards CIP compliance implementation program in place, and has newly identified additional existing Cyber Assets that need to be added to its Critical Cyber Asset list and therefore subject to compliance to the NERC Reliability CIP Standards due to unplanned changes in the electric system or the Cyber Assets. Since the Responsible Entity already has a CIP compliance implementation program, it needs only to implement the NERC Reliability CIP standards for the newly identified Critical Cyber Asset(s). The existing Critical Cyber Assets may remain in service while the relevant requirements of the NERC Reliability CIP Standards are implemented for the newly identified Critical Cyber Asset(s).

This category applies only when additional in-service Critical Cyber Assets or applicable other Cyber Assets are *identified* as Critical Cyber Assets according to the process defined in the NERC Reliability Standard CIP-002. This category does not apply if the newly identified Critical Cyber Assets are not already in-service, or if the additional Critical Cyber Assets resulted from planned changes to the electric system or the Cyber Assets. In the case where the Critical Cyber Asset is not in service, the Responsible Entity must be compliant with the NERC Reliability Standards CIP-003 through CIP-009 upon commissioning of the new cyber or electric system assets (see “Compliant upon Commissioning” below).

Unplanned changes due to emergency response, disaster recovery or system restoration activities are handled separately (see “Disaster Recovery and Restoration Activities” below).

- 3. Compliant upon Commissioning:** When a Responsible Entity has an established NERC Reliability Standards CIP compliance implementation program and implements a new or replacement Critical Cyber Asset associated with a previously identified or newly

constructed Critical Asset, the Critical Cyber Asset shall be compliant when it is commissioned or activated. This scenario shall apply for the following scenarios:

- a) 'Greenfield' construction of an asset that will be declared a Critical Asset (based on planning or impact studies) upon its commissioning or activation
- b) Replacement or upgrade of an existing Critical Cyber Asset (or other Cyber Asset within an Electronic Security Perimeter) associated with a previously identified Critical Asset
- c) Upgrade or replacement of an existing non-cyber asset with a Cyber Asset (e.g., replacement of an electro-mechanical relay with a microprocessor-based relay) associated with a previously identified Critical Asset and meets other criteria for identification as a Critical Cyber Asset
- d) Planned addition of:
 - i. a Critical Cyber Asset, or,
 - ii. another (i.e., non-critical) Cyber Asset within an established Electronic Security Perimeter

In summary, this scenario applies in any case where a Critical Cyber Asset or applicable other Cyber Asset is being added or modified associated with an existing or new Critical Asset and where that Entity has an established NERC Reliability Standard CIP compliance implementation program.

A special case of a 'greenfield' construction exists where the asset under construction was planned and construction started under the assumption that the asset would not be a Critical Asset. During construction, conditions changed, and the asset will now be a Critical Asset upon its commissioning. In this case, the Responsible Entity must follow the Category 2 milestones from the date of the determination that the asset is a Critical Asset.

Since the assets must be compliant with the NERC Reliability Standards CIP-003 through CIP-009 upon commissioning, no implementation milestones or schedules are provided herein.

Disaster Recovery and Restoration Activities

A special case of restoration as part of a disaster recovery situation (such as storm restoration) shall follow the emergency provisions of the Responsible Entity's policy required by CIP-003 R1.1.

The rationale for this is that the primary task following a disaster is the restoration of the power system, and the ability to serve customer load. Cyber security provisions are implemented to support reliability and operations. If restoration were to be slowed to ensure full implementation of the CIP compliance implementation program, restoration could be hampered, and reliability could be harmed.

However, following the completion of the restoration activities, the entity is obligated to implement the CIP compliance implementation program at the restored facilities, and be able to

demonstrate full compliance in a spot-check or audit; or, file a self-report of non-compliance with a mitigation plan describing how and when full compliance will be achieved.

Newly Registered Entity Scenarios

Based on the Critical Cyber Asset identification scenarios identified above, the implementation milestone categories and schedules for those scenarios as they apply to newly Registered Entities are defined and distinguished below.

The following examples of business merger and asset acquisition scenarios may be helpful in explaining the expectations in each of the scenarios. Note that in each case, the predecessor Registered Entities are assumed to already be in compliance with NERC Reliability Standard CIP-002, and have existing risk-based Critical Asset identification methodologies.

1. Newly Registered Entity Scenario 1 (Application of Category 1 Milestones):

A Merger of Two or More Registered Entities where None of the Predecessor Registered Entities has Identified any Critical Cyber Asset

In the case of a business merger or asset acquisition, because there are no identified Critical Cyber Assets in any of the predecessor Registered Entities, a CIP compliance implementation program is not assumed to exist. The only program component required is the NERC Reliability Standard CIP-002 risk-based Critical Asset identification methodology implementation by each predecessor Responsible Entity.

The merged Registered Entity has one calendar year from the effective date of the business merger asset acquisition to continue to operate the separate risk-based Critical Asset identification methodology implementation while determining how to either combine the risk-based Critical Asset identification methodologies, or at a minimum, operate separate risk-based Critical Asset identification methodologies under a common Senior Manager and governance structure. It would be preferred that a single program be the result of this analysis, however, Registered Entity-specific circumstances may dictate or allow multiple programs to continue separately. These decisions may be subject to review as part of compliance with NERC Reliability Standard CIP-002.

The merged Registered Entity must ensure that it maintains the required 'annual application' of risk-based Critical Asset identification methodology(ies) as required in CIP-002 R2, even if that annual application timeframe is within the one calendar year allowed to determine if the merged Responsible Entity will combine the separate methodologies, or continue to operate them separately. Following the one calendar year allowance, the merged Responsible Entity must remain compliant with the program as it is determined to be implemented as a result of the one calendar year analysis of the disposition of the programs from the predecessor Responsible Entities.

If either predecessor Registered Entities has identified Critical Assets (but without associated Critical Cyber Assets), the merged Registered Entity must continue to perform annual application of the risk-based Critical Asset identification methodology as required in CIP-002 R2, as well as to annually verify whether associated Cyber Assets meet the requirements as newly identified Critical Cyber Assets as required by CIP-002 R3. If

newly identified Critical Cyber Assets are found at any point in this process (i.e., during the one calendar year allowance period, or after that one calendar year allowance period), then the implementation milestones, categories and schedules of this Implementation Plan apply regardless of when this newly identified Critical Cyber Assets are determined, and independent of any merger and acquisition discussions contained in this Implementation Plan.

2. Newly Registered Entity Scenario 2:

A Merger of Two or More Registered Entities where Only One of the Predecessor Registered Entities has Identified at Least One Critical Cyber Asset

Since only one of the predecessor Registered Entities has previously identified Critical Cyber Assets, it is assumed that none of the other predecessor Registered Entities have CIP compliance implementation programs (since they are not required to have them). In this case, the CIP compliance implementation program from the predecessor Registered Entity with the previously identified Critical Cyber Asset would be expected to be implemented as the CIP compliance implementation program for the merged Registered Entity, and would be expected to apply to any Critical Cyber Assets identified after the effective date of the merger. Since the other predecessor Registered Entities did not have any Critical Cyber Assets, this should present no conflict in any CIP compliance implementation programs.

Note that the discussion of the disposition of any NERC Reliability Standard CIP-002 risk-based Critical Asset identification methodology from Scenario 1 above would apply in this case as well.

3. Newly Registered Entity Scenario 3:

A Merger of Two or More Registered Entities where Two or More of the Predecessor Registered Entities has Identified at Least One Critical Cyber Asset

This scenario is the most complicated of the three, since it applies to a merged Registered Entity that has more than one existing risk-based Critical Asset identification methodology and more than one CIP compliance implementation program, which are most likely not in complete agreement with each other. These differences could be due to any number of issues, ranging from something as 'simple' as selection of different anti-virus tools, to something as 'complicated' as risk-based Critical Asset identification methodology. This scenario will be discussed in two sections, the first dealing with the combination of risk-based Critical Asset identification methodologies; the second dealing with combining the CIP compliance implementation programs.

- (a) **Combining the risk-based Critical Asset identification methodologies:** The merged Responsible Entity has one calendar year from the effective date of the business merger or asset acquisition to continue to operate the separate risk-based Critical Asset identification methodologies while determining how to either combine the risk-based Critical Asset identification methodologies, or at a minimum, operate the separate risk-based Critical Asset identification methodologies under a common Senior Manager and governance structure. It would be preferred that a single program be the result of this

analysis, however, Registered Entity specific circumstances may dictate or allow the two programs to continue separately. These decisions may be subject to review as part of compliance with NERC Reliability Standard CIP-002.

Registered Entities are encouraged when combining separate risk-based Critical Asset identification methodologies to ensure that, absent extraordinary circumstances, the resulting methodology produces a resultant list of Critical Assets that contains at least the same Critical Assets as were identified by all the predecessor Registered Entity's risk-based Critical Asset identification methodologies, as well as at least the same list of Critical Cyber Assets associated with the Critical Assets. The combined risk-based Critical Asset identification methodology and resultant Critical Asset list and Critical Cyber Asset list will be subject to review as part of compliance with NERC Reliability Standard CIP-002 R2 and R3. If additional Critical Assets are identified as a result of the application of the merged risk-based Critical Asset identification methodology, they should be treated as newly identified Critical Cyber Assets, as discussed elsewhere in this Implementation Plan, and subject to the CIP compliance implementation program merger determination as discussed next.

- (b) Combining the CIP compliance implementation programs:** The merged Responsible Entity has one calendar year from the effective date of the business merger to continue to operate the separate CIP compliance implementation programs while determining how to either combine the CIP compliance implementation programs, or at a minimum, operate the CIP compliance implementation programs under a common Senior Manager and governance structure.

Following the one year analysis period, if the decision is made to continue the operation of separate CIP compliance implementation programs under a common Senior Manager and governance structure, the merged Responsible Entity must update any required Senior Manager and governance issues, and clearly identify which CIP compliance implementation program components apply to each individual Critical Cyber Asset. This is essential to the implementation of the CIP compliance implementation program at the merged Responsible Entity, so that the correct and proper program components are implemented on the appropriate Critical Cyber Assets, as well as to allow the ERO compliance program (in a spot-check or audit) to determine if the CIP compliance implementation program has been properly implemented for each Critical Cyber Asset. Absent this clear identification, it would be possible for the wrong CIP compliance implementation program to be applied to a Critical Cyber Asset, or the wrong CIP compliance implementation program be evaluated in a spot-check or audit, leading to a possible technical non-compliance without real cause.

However, if after the one year analysis period, the decision is made to combine the operation of the separate CIP compliance implementation programs into a single CIP compliance implementation program, the merged Responsible Entity must develop a plan for merging of the separate CIP compliance implementation programs into a single CIP compliance implementation program, with a schedule and milestones for completion. The programs should be combined as expeditiously as possible, but without causing harm to reliability or operability of the Bulk power System. This 'merge plan' must be made

available to the ERO compliance program upon request, and as documentation for any spot-check or audit conducted while the merge plan is being performed. Progress towards meeting milestones and completing the merge plan will be verified during any spot-checks or audits conducted while the plan is being executed.

Example Scenarios

Note that there are no implementation milestones or schedules specified for a Responsible Entity that has a newly designated Critical Asset, but no newly designated Critical Cyber Assets. This situation exists because no action is required by the Responsible Entity upon designation of a Critical Asset without associated Critical Cyber Assets. Only upon designation of Critical Cyber Assets does a Responsible Entity need to become compliant with the NERC Reliability Standards CIP-003 through CIP-009.

As an example, Table 1 provides some sample scenarios, and provides the milestone category for each of the described situations.

Table 1: Example Scenarios

Scenarios	CIP Compliance Implementation Program:	
	No Program (note 1)	Existing Program
Existing Cyber Asset reclassified as Critical Cyber Asset due to change in assessment methodology	Category 1	Category 2
Existing asset becomes Critical Asset; associated Cyber Assets become Critical Cyber Assets	Category 1	Category 2
New asset comes online as a Critical Asset; associated Cyber Assets become Critical Cyber Asset	Category 1	Compliant upon Commissioning
Existing Cyber Asset moves into the Electronic Security Perimeter due to network reconfiguration	N/A	Compliant upon Commissioning
New Cyber Asset – never before in service and not a replacement for an existing Cyber Asset – added into a new or existing Electronic Security Perimeter	Category 1	Compliant upon Commissioning
New Cyber Asset replacing an existing Cyber Asset within the Electronic Security Perimeter	N/A	Compliant upon Commissioning
Planned modification or upgrade to existing Cyber Asset that causes it to be reclassified as a Critical Cyber Asset	Category 1	Compliant upon Commissioning
Asset under construction as an other (non-critical) asset becomes declared as a Critical Asset during construction	Category 1	Category 2
Unplanned modification such as emergency restoration invoked under a disaster recovery situation or storm restoration	N/A	Per emergency provisions as required by CIP-003 R1.1

Note: 1) assumes the entity is already compliant with CIP-002

Table 2 provides the compliance milestones for each of the two identified milestone categories.

Table 2: Implementation milestones for Newly Identified Critical Cyber Assets

CIP Standard Requirement	Milestone Category 1	Milestone Category 2
Standard CIP-002-2 — Critical Cyber Asset Identification		
R1	N/A	N/A
R2	N/A	N/A
R3	N/A	N/A
R4	N/A	N/A
Standard CIP-003-2 — Security Management Controls		
R1	24 months	<i>existing</i>
R2	N/A	<i>existing</i>
R3	24 months	<i>existing</i>
R4	24 months	6 months
R5	24 months	6 months
R6	24 months	6 months
Standard CIP-004-2 — Personnel and Training		
R1	24 months	<i>existing</i>
R2	24 months	18 months
R3	24 months	18 months
R4	24 months	18 months
Standard CIP-005-2 — Electronic Security Perimeter		
R1	24 months	12 months
R2	24 months	12 months
R3	24 months	12 months
R4	24 months	12 months
R5	24 months	12 months
Standard CIP-006-2 — Physical Security		
R1	24 months	12 months
R2	24 months	12 months
R3	24 months	12 months
R4	24 months	12 months
R5	24 months	12 months
R6	24 months	12 months
R7	24 months	12 months
R8	24 months	12 months

CIP Standard Requirement	Milestone Category 1	Milestone Category 2
Standard CIP-007-2 — Systems Security Management		
R1	24 months	12 months
R2	24 months	12 months
R3	24 months	12 months
R4	24 months	12 months
R5	24 months	12 months
R6	24 months	12 months
R7	24 months	12 months
R8	24 months	12 months
R9	24 months	12 months
Standard CIP-008-2 — Incident Reporting and Response Planning		
R1	24 months	6 months
R2	24 months	6 months
Standard CIP-009-2 — Recovery Plans for Critical Cyber Assets		
R1	24 months	6 months
R2	24 months	12 months
R3	24 months	12 months
R4	24 months	6 months
R5	24 months	6 months

Table 3⁵				
Compliance Schedule for Standards CIP-002-2 through CIP-009-2 or CIP-002-3 through CIP-009-3				
For Entities Registering in April 2008 and Thereafter				
	Registration + 12 months	Registration + 24 months		
	All Facilities	All Facilities		
CIP-002-2 or CIP-002-3 — Critical Cyber Assets				
All Requirements		Compliant		
Standard CIP-003-2 or CIP-003-3 — Security Management Controls				
All Requirements Except R2		Compliant		
R2	Compliant			
Standard CIP-004-2 or CIP-004-3 — Personnel & Training				
All Requirements		Compliant		
Standard CIP-005-2 or CIP-005-3 — Electronic Security				
All Requirements		Compliant		
Standard CIP-006-2 or CIP-006-3 — Physical Security				
All Requirements		Compliant		
Standard CIP-007-2 or CIP-007-3 — Systems Security Management				
All Requirements		Compliant		
Standard CIP-008-2 or CIP-008-3 — Incident Reporting and Response Planning				
All Requirements		Compliant		
Standard CIP-009-2 or CIP-009-3 — Recovery Plans				
All Requirements		Compliant		

⁵ Note: This table only specifies a 'Compliant' date, consistent with the convention used elsewhere in this Implementation Plan. The Compliant dates are consistent with those specified in Table 4 of the Version 1 Implementation Plan. Other compliance states referenced in the Version 1 Implementation Plan are no longer used.



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Revised Implementation Plan for Version 3 of Cyber Security Standards CIP-002-3 through CIP-009-3 Adopted by the Board of Trustees: August 5, 2010

Prerequisite Approvals

There are no other reliability standards or Standard Authorization Requests (SARs), in progress or approved, that must be implemented before this standard can be implemented.

Applicable Standards

The following standards are covered by this Implementation Plan:

- CIP-002-3 — Cyber Security — Critical Cyber Asset Identification
- CIP-003-3 — Cyber Security — Security Management Controls
- CIP-004-3 — Cyber Security — Personnel and Training
- CIP-005-3 — Cyber Security — Electronic Security Perimeter(s)
- CIP-006-3 — Cyber Security — Physical Security
- CIP-007-3 — Cyber Security — Systems Security Management
- CIP-008-3 — Cyber Security — Incident Reporting and Response Planning
- CIP-009-3 — Cyber Security — Recovery Plans for Critical Cyber Assets

These standards are posted for ballot by NERC together with this Implementation Plan. When these standards become effective, all prior versions of these standards are retired.

Compliance with Standards

Once these standards become effective, the Responsible Entities identified in the Applicability section of the standard must comply with the requirements. These Responsible Entities include:

- Reliability Coordinator
- Balancing Authority
- Interchange Authority
- Transmission Service Provider
- Transmission Owner
- Transmission Operator
- Generator Owner
- Generator Operator
- Load Serving Entity
- NERC
- Regional Entity

Proposed Effective Date

The Responsible Entities shall be compliant with all requirements on the Effective Date specified in each standard.

Implementation Plan for Newly Identified Critical Cyber Assets and Newly Registered Entities

Concurrently submitted with Version 3 of Cyber Security Standards CIP-002-3 through CIP-009-3 is a separate Implementation Plan document that would be used by the Responsible Entities to bring any newly identified Critical Cyber Assets into compliance with the Cyber Security Standards, as those assets are identified. This Implementation plan closes the compliance gap created in the Version 1 Implementation Plan whereby Responsible Entities were required to annually determine their list of Critical Cyber Assets, yet the implication from the Version 1 Implementation Plan was that any newly identified Critical Cyber Assets were to be immediately 'Auditably Compliant', thereby not allowing Responsible Entities the necessary time to achieve the Auditably Compliant state.

The Implementation Plan for newly identified Critical Cyber Assets provides a reasonable schedule for the Responsible Entity to achieve the 'Compliant' state for those newly identified Critical Cyber Assets.


The Implementation Plan for newly identified Critical Cyber Assets also addresses how to achieve the 'Compliant' state for: 1) Responsible Entities that merge with or are acquired by other Responsible Entities; and 2) Responsible Entities that register in the NERC Compliance Registry during or following the completion of the Implementation Plan for Version 3 of the NERC Cyber Security Standards CIP-002-3 to CIP-009-3.

Prior Version Implementation Plan Retirement

By December 31, 2009, CIP Version 1's Table 1, 2, and 3 Registered Entities that registered prior to December 31, 2007 will have reached the "Compliant" milestone for all CIP Version 1 Requirements. Timetables for reaching the "Auditably Compliant" milestone will still be in effect for these Entities going forward until said timetables expire. As such, when Table 3 Registered Entities reach the Auditably Compliant milestone on December 31, 2010, the Version 1 Implementation Plan is in practice retired. Table 4 of the CIP Version 1 Implementation Plan is applicable only for newly Registered Entities, and compliance milestones for newly Registered Entities is included in CIP Version 2's Implementation Plan for Newly Identified Critical Cyber Assets and Newly Registered Entities effective on April 1, 2010. CIP Version 3 milestones, are effective after FERC approval.

Implementation of CIP Version 2 and 3 Standards for U.S Nuclear Power Plant Owners and Operators

On September 15, 2009, NERC filed for FERC approval an implementation plan for the CIP Version 1 standards (CIP-002-1 through CIP-009-1) for owners and operators of US nuclear power plants in compliance with Order 706-B. In the plan, compliance with the Version 1 standards is predicated upon the latter of the effective date of the order approving the implementation plan plus



eighteen months; the determination of the scope of systems, structures, and components within the NERC and NRC jurisdictions plus ten months; or within six months following the completion of the first refueling outage beyond eighteen months from FERC approval of the implementation plan for those requirements requiring a refueling outage. Since that September 15, 2009 filing of the Version 1 implementation plan, FERC approved Version 2 of the NERC CIP standards on September 30, 2009 and NERC filed for FERC approval Version 3 CIP standards on December 29, 2009.

In its December 17, 2009 order on NERC's September 15, 2009 Version 1 implementation plan filing, FERC noted that the implementation timeline for the Version 2 CIP standards should be the same as the Implementation Plan for the Version 1 CIP standards. Consistent with this order and considering that only incremental modifications were made to Version 2 and Version 3 of the CIP standards relative to Version 1, compliance to Version 2 or Version 3 CIP-002 through CIP-009 standards (whichever is in effect at that time) for owners and operators of U.S. nuclear power plants will occur on the same schedule as the Version 1 CIP standards.

For example, if FERC approves the Version 1 implementation plan effective on May 1, 2010¹ and using the operative date for compliance to Version 1 standards as the FERC effective date of the order plus eighteen months, then compliance to the Version 1 standards would be required on November 1, 2011. However, since Version 1 will have been replaced by Version 2 and perhaps Version 3 by November, 2011, compliance to the Version 2 or Version 3 standards (whichever the current version is effective at that time) would therefore be required on November 1, 2011.

Using the hypothetical May 1, 2010 FERC effective date applied to a requirement linked to a refueling outage, compliance to the requirement would be required six months following the end of the first refueling outage that is beyond eighteen months from FERC approval of the implementation plan. In this case, the completion of the first refueling outage of the unit beyond November 1, 2011 would initiate the six month period. For purposes of this example, if the unit refueling outage occurred in the Spring, 2012 and ended on April 12, 2012, compliance with the requirement linked that outage would be required on October 12, 2012.

¹ These dates are provided as examples only and the FERC order effective date and compliance dates are hypothetical. Actual dates will be established based on FERC approval of the NERC Version 1 implementation schedule.

Exhibit D

Matrix of Violation Risk Factors for Information

Standard Number	Requirement Number	Text of Requirement	Violation Risk Factor
BAL-001-0.1a	R1.	Each Balancing Authority shall operate such that, on a rolling 12-month basis, the average of the clock-minute averages of the Balancing Authority's Area Control Error (ACE) divided by 10B (B is the clock-minute average of the Balancing Authority Area's Frequency Bias) times the corresponding clock-minute averages of the Interconnection's Frequency Error is less than a specific limit. This limit e12 is a constant derived from a targeted frequency bound (separately calculated for each Interconnection) that is reviewed and set as necessary by the NERC Operating Committee. See Standard for Formula.	MEDIUM
BAL-001-0.1a	R2.	Each Balancing Authority shall operate such that its average ACE for at least 90% of clock-ten-minute periods (6 non-overlapping periods per hour) during a calendar month is within a specific limit, referred to as L ₁₀ . See Standard for Formula.	MEDIUM
BAL-001-0.1a	R3.	Each Balancing Authority providing Overlap Regulation Service shall evaluate Requirement R1 (i.e., Control Performance Standard 1 or CPS1) and Requirement R2 (i.e., Control Performance Standard 2 or CPS2) using the characteristics of the combined ACE and combined Frequency Bias Settings.	LOWER
BAL-001-0.1a	R4.	Any Balancing Authority receiving Overlap Regulation Service shall not have its control performance evaluated (i.e. from a control performance perspective, the Balancing Authority has shifted all control requirements to the Balancing Authority providing Overlap Regulation Service).	LOWER
BAL-002-0	R1.	Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.	HIGH

BAL-002-0	R1.1.	A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002.	HIGH
BAL-002-0	R2.	Each Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:	MEDIUM
BAL-002-0	R2.1.	The minimum reserve requirement for the group.	HIGH
BAL-002-0	R2.2.	Its allocation among members.	LOWER
BAL-002-0	R2.3.	The permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.	LOWER
BAL-002-0	R2.4.	The procedure for applying Contingency Reserve in practice.	LOWER
BAL-002-0	R2.5.	The limitations, if any, upon the amount of interruptible load that may be included.	LOWER
BAL-002-0	R2.6.	The same portion of resource capacity (e.g., reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.	MEDIUM
BAL-002-0	R3.	Each Balancing Authority or Reserve Sharing Group shall activate sufficient Contingency Reserve to comply with the DCS.	HIGH
BAL-002-0	R3.1.	As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently than annually, their probable contingencies to determine their prospective most severe single contingencies.	HIGH

BAL-002-0	R4.	A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:	MEDIUM
BAL-002-0	R4.1.	A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero. For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.	MEDIUM
BAL-002-0	R4.2.	The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance. This period may be adjusted to better suit the needs of an Interconnection based on analysis approved by the NERC Operating Committee.	No VRF Assigned
BAL-002-0	R5.	Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more other group members. (If a group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:	LOWER
BAL-002-0	R5.1.	The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS. To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	No VRF Assigned
BAL-002-0	R5.2.	The Reserve Sharing Group reviews each member's ACE in response to the activation of reserves. To be in compliance, a member's ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	No VRF Assigned

BAL-002-0	R6.	A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within the Contingency Reserve Restoration Period for its Interconnection.	MEDIUM
BAL-002-0	R6.1.	The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.	No VRF Assigned
BAL-002-0	R6.2.	The default Contingency Reserve Restoration Period is 90 minutes. This period may be adjusted to better suit the reliability targets of the Interconnection based on analysis approved by the NERC Operating Committee.	No VRF Assigned
BAL-002-1	R1.	Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.	HIGH
BAL-002-1	R1.1.	A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002.	HIGH
BAL-002-1	R2.	Each Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:	MEDIUM
BAL-002-1	R2.1.	The minimum reserve requirement for the group.	HIGH
BAL-002-1	R2.2.	Its allocation among members.	LOWER
BAL-002-1	R2.3.	The permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.	LOWER
BAL-002-1	R2.4.	The procedure for applying Contingency Reserve in practice.	LOWER

BAL-002-1	R2.5.	The limitations, if any, upon the amount of interruptible load that may be included.	LOWER
BAL-002-1	R2.6.	The same portion of resource capacity (e.g. reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.	MEDIUM
BAL-002-1	R3.	Each Balancing Authority or Reserve Sharing Group shall activate sufficient Contingency Reserve to comply with the DCS.	HIGH
BAL-002-1	R3.1.	As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently than annually, their probable contingencies to determine their prospective most severe single contingencies.	HIGH
BAL-002-1	R4.	A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:	MEDIUM
BAL-002-1	R4.1.	A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero. For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.	MEDIUM
BAL-002-1	R4.2.	The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance.	No VRF Assigned
BAL-002-1	R5.	Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more other group members. (If a group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:	LOWER

BAL-002-1	R5.1.	The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS. To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	No VRF Assigned
BAL-002-1	R5.2.	The Reserve Sharing Group reviews each member's ACE in response to the activation of reserves. To be in compliance, a member's ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	No VRF Assigned
BAL-002-1	R6.	A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within the Contingency Reserve Restoration Period for its Interconnection.	MEDIUM
BAL-002-1	R6.1.	The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.	No VRF Assigned
BAL-002-1	R6.2.	The default Contingency Reserve Restoration Period is 90 minutes.	No VRF Assigned

BAL-STD-002-0	WR1.	<p>The reliable operation of the interconnected power system requires that adequate generating capacity be available at all times to maintain scheduled frequency and avoid loss of firm load following transmission or generation contingencies. This generating capacity is necessary to: supply requirements for load variations. replace generating capacity and energy lost due to forced outages of generation or transmission equipment. meet on-demand obligations. replace energy lost due to curtailment of interruptible imports.</p> <p>a. Minimum Operating Reserve. Each Balancing Authority shall maintain minimum Operating Reserve which is the sum of the following: (i) Regulating reserve. Sufficient Spinning Reserve, immediately responsive to Automatic Generation Control (AGC) to provide sufficient regulating margin to allow the Balancing Authority to meet NERC's Control Performance Criteria (see BAL-001-0). (ii) Contingency reserve. An amount of Spinning Reserve and Nonspinning Reserve (at least half of which must be Spinning Reserve), sufficient to meet the NERC Disturbance Control Standard BAL-002-0, equal to the greater of: (a) The loss of generating capacity due to forced outages of generation or transmission equipment that would result from the most severe single contingency; or (b) The sum of five percent of the load responsibility served by hydro generation and seven percent of the load responsibility served by thermal generation. generating capacity must be capable of responding to the Spinning Reserve requirement of that Balancing Authority within ten minutes (iii) Additional reserve for interruptible imports. An amount of reserve, which can be made effective within ten minutes, equal to interruptible imports. (iv) Additional reserve for on-demand obligations. An amount of reserve, which can be made effective within ten minutes, equal to on-demand obligations to other entities or Balancing Authorities.</p> <p>b. Acceptable types of Nonspinning Reserve. The Nonspinning Reserve obligations identified in subsections a(ii), a(iii), and a(iv), if any, can be met by use of the following: (i) interruptible load; (ii) interruptible exports; (iii) on-demand rights from other entities or Balancing Authorities; (iv) Spinning Reserve in excess of requirements in subsections a(i) and a(ii); or (v) off-line generation which qualifies as Nonspinning Reserve.</p> <p>c. Knowledge of Operating Reserve. Operating Reserves shall be calculated such that the amount available which can be fully activated in the next ten minutes will be known at all times.</p> <p>d. Restoration of Operating Reserve. After the occurrence of any event necessitating the use of Operating Reserve, that reserve shall be restored as promptly as practicable. The time taken to restore reserves shall not</p>	
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		exceed 60 minutes (Source: WECC Criterion)	
BAL-003-0.1b	R4.2.	The Balancing Authorities that have a fixed schedule (B and C) but do not contain the Jointly Owned Unit shall not include their share of the governor droop response in their Frequency Bias Setting. See Standard for Graphic.	LOWER
BAL-003-0.1b	R1.	Each Balancing Authority shall review its Frequency Bias Settings by January 1 of each year and recalculate its setting to reflect any change in the Frequency Response of the Balancing Authority Area.	LOWER
BAL-003-0.1b	R1.1.	The Balancing Authority may change its Frequency Bias Setting, and the method used to determine the setting, whenever any of the factors used to determine the current bias value change.	LOWER
BAL-003-0.1b	R1.2.	Each Balancing Authority shall report its Frequency Bias Setting, and method for determining that setting, to the NERC Operating Committee.	LOWER

BAL-003-0.1b	R2.	Each Balancing Authority shall establish and maintain a Frequency Bias Setting that is as close as practical to, or greater than, the Balancing Authority's Frequency Response. Frequency Bias may be calculated several ways:	MEDIUM
BAL-003-0.1b	R2.1.	The Balancing Authority may use a fixed Frequency Bias value which is based on a fixed, straight-line function of Tie Line deviation versus Frequency Deviation. The Balancing Authority shall determine the fixed value by observing and averaging the Frequency Response for several Disturbances during on-peak hours.	LOWER
BAL-003-0.1b	R2.2.	The Balancing Authority may use a variable (linear or non-linear) bias value, which is based on a variable function of Tie Line deviation to Frequency Deviation. The Balancing Authority shall determine the variable frequency bias value by analyzing Frequency Response as it varies with factors such as load, generation, governor characteristics, and frequency.	LOWER
BAL-003-0.1b	R3.	Each Balancing Authority shall operate its Automatic Generation Control (AGC) on Tie Line Frequency Bias, unless such operation is adverse to system or Interconnection reliability.	MEDIUM
BAL-003-0.1b	R4.	Balancing Authorities that use Dynamic Scheduling or Pseudo-ties for jointly owned units shall reflect their respective share of the unit governor droop response in their respective Frequency Bias Setting.	LOWER
BAL-003-0.1b	R4.1.	Fixed schedules for Jointly Owned Units mandate that Balancing Authority (A) that contains the Jointly Owned Unit must incorporate the respective share of the unit governor droop response for any Balancing Authorities that have fixed schedules (B and C). See the diagram below. See Standard for Graphic.	LOWER
BAL-003-0.1b	R5.	Balancing Authorities that serve native load shall have a monthly average Frequency Bias Setting that is at least 1% of the Balancing Authority's estimated yearly peak demand per 0.1 Hz change.	MEDIUM

BAL-003-0.1b	R5.1.	Balancing Authorities that do not serve native load shall have a monthly average Frequency Bias Setting that is at least 1% of its estimated maximum generation level in the coming year per 0.1 Hz change.	MEDIUM
BAL-003-0.1b	R6.	A Balancing Authority that is performing Overlap Regulation Service shall increase its Frequency Bias Setting to match the frequency response of the entire area being controlled. A Balancing Authority shall not change its Frequency Bias Setting when performing Supplemental Regulation Service.	MEDIUM
BAL-004-0	R1.	Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.	LOWER
BAL-004-0	R2.	The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.	LOWER
BAL-004-0	R3.	Each Balancing Authority, when requested, shall participate in a Time Error Correction by one of the following methods:	MEDIUM
BAL-004-0	R3.1.	The Balancing Authority shall offset its frequency schedule by 0.02 Hertz, leaving the Frequency Bias Setting normal; or	LOWER
BAL-004-0	R3.2.	The Balancing Authority shall offset its Net Interchange Schedule (MW) by an amount equal to the computed bias contribution during a 0.02 Hertz Frequency Deviation (i.e. 20% of the Frequency Bias Setting).	LOWER
BAL-004-0	R4.	Any Reliability Coordinator in an Interconnection shall have the authority to request the Interconnection Time Monitor to terminate a Time Error Correction in progress, or a scheduled Time Error Correction that has not begun, for reliability considerations.	LOWER

BAL-004-0	R4.1.	Balancing Authorities that have reliability concerns with the execution of a Time Error Correction shall notify their Reliability Coordinator and request the termination of a Time Error Correction in progress.	LOWER
BAL-004-WECC-01	R1.	Each BA that operates synchronously to the Western Interconnection shall continuously operate utilizing Automatic Time Error Correction (ATEC) in its Automatic Generation Control (AGC) system. See Standard for Formula	LOWER
BAL-004-WECC-01	R1.2.	Large accumulations of primary inadvertent point to an invalid implementation of ATEC, loose control, metering or accounting errors. A BA in such a situation should identify the source of the error(s) and make the corrections, recalculate the primary inadvertent from the time of the error, adjust the accumulated primary inadvertent caused by the error(s), validate the implementation of ATEC, set Lmax equal to L10 and continue to operate with ATEC reducing the accumulation as system parameters allow.	
BAL-004-WECC-01	R2.	Each BA that is synchronously connected to the Western Interconnection and operates in any AGC operating mode other than ATEC shall notify all other BAs of its operating mode through the designated Interconnection communication system. Each BA while synchronously connected to the Western Interconnection will be allowed to have ATEC out of service for a maximum of 24 hours per calendar quarter, for reasons including maintenance and testing.	LOWER
BAL-004-WECC-01	R3.	BAs in the Western Interconnection shall be able to change their AGC operating mode between Flat Frequency (for blackout restoration); Flat Tie Line (for loss of frequency telemetry); Tie Line Bias; Tie Line Bias plus Time Error control (used in ATEC mode). The ACE used for NERC reports shall be the same ACE as the AGC operating mode in use.	LOWER
BAL-004-WECC-01	R4.	Regardless of the AGC operating mode each BA in the Western Interconnection shall compute its hourly Primary Inadvertent Interchange when hourly checkout is complete. If hourly checkout is not complete by 50 minutes after the hour, compute Primary Inadvertent Interchange with best available data. This hourly value shall be added to the appropriate accumulated Primary Inadvertent Interchange balance for either On-Peak or Off-Peak periods.	LOWER

BAL-004-WECC-01	R4.1.	Each BA in the Western Interconnection shall use the change in Time Error distributed by the Interconnection Time Monitor.	
BAL-004-WECC-01	R4.2.	All corrections to any previous hour Primary Inadvertent Interchange shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent Interchange.	
BAL-004-WECC-01	R4.3.	Month end Inadvertent Adjustments are 100% Primary Inadvertent Interchange and shall be added to the appropriate On- or Off-Peak accumulated Primary Inadvertent Interchange, unless such adjustments can be pinpointed to specific hours in which case R4.2 applies.	
BAL-004-WECC-01	R4.4.	Each BA in the Western Interconnection shall synchronize its Time Error to the nearest 0.001 seconds of the system Time Error by comparing its reading at the designated time each day to the reading broadcast by the Interconnection Time Monitor. Any difference shall be applied as an adjustment to its current Time Error.	
BAL-005-0.1b	R1.	All generation, transmission, and load operating within an Interconnection must be included within the metered boundaries of a Balancing Authority Area.	No VRF Assigned
BAL-005-0.1b	R1.1.	Each Generator Operator with generation facilities operating in an Interconnection shall ensure that those generation facilities are included within the metered boundaries of a Balancing Authority Area.	MEDIUM
BAL-005-0.1b	R1.2.	Each Transmission Operator with transmission facilities operating in an Interconnection shall ensure that those transmission facilities are included within the metered boundaries of a Balancing Authority Area.	MEDIUM
BAL-005-0.1b	R1.3.	Each Load-Serving Entity with load operating in an Interconnection shall ensure that those loads are included within the metered boundaries of a Balancing Authority Area.	MEDIUM
BAL-005-0.1b	R2.	Each Balancing Authority shall maintain Regulating Reserve that can be controlled by AGC to meet the Control Performance Standard.	HIGH

BAL-005-0.1b	R3.	A Balancing Authority providing Regulation Service shall ensure that adequate metering, communications, and control equipment are employed to prevent such service from becoming a Burden on the Interconnection or other Balancing Authority Areas.	MEDIUM
BAL-005-0.1b	R4.	A Balancing Authority providing Regulation Service shall notify the Host Balancing Authority for whom it is controlling if it is unable to provide the service, as well as any Intermediate Balancing Authorities.	MEDIUM
BAL-005-0.1b	R5.	A Balancing Authority receiving Regulation Service shall ensure that backup plans are in place to provide replacement Regulation Service should the supplying Balancing Authority no longer be able to provide this service.	MEDIUM
BAL-005-0.1b	R6.	The Balancing Authority's AGC shall compare total Net Actual Interchange to total Net Scheduled Interchange plus Frequency Bias obligation to determine the Balancing Authority's ACE. Single Balancing Authorities operating asynchronously may employ alternative ACE calculations such as (but not limited to) flat frequency control. If a Balancing Authority is unable to calculate ACE for more than 30 minutes it shall notify its Reliability Coordinator.	MEDIUM
BAL-005-0.1b	R7.	The Balancing Authority shall operate AGC continuously unless such operation adversely impacts the reliability of the Interconnection. If AGC has become inoperative, the Balancing Authority shall use manual control to adjust generation to maintain the Net Scheduled Interchange.	MEDIUM
BAL-005-0.1b	R8.	The Balancing Authority shall ensure that data acquisition for and calculation of ACE occur at least every six seconds.	MEDIUM
BAL-005-0.1b	R8.1.	Each Balancing Authority shall provide redundant and independent frequency metering equipment that shall automatically activate upon detection of failure of the primary source. This overall installation shall provide a minimum availability of 99.95%.	MEDIUM

BAL-005-0.1b	R9.	The Balancing Authority shall include all Interchange Schedules with Adjacent Balancing Authorities in the calculation of Net Scheduled Interchange for the ACE equation.	LOWER
BAL-005-0.1b	R9.1.	Balancing Authorities with a high voltage direct current (HVDC) link to another Balancing Authority connected asynchronously to their Interconnection may choose to omit the Interchange Schedule related to the HVDC link from the ACE equation if it is modeled as internal generation or load.	LOWER
BAL-005-0.1b	R10.	The Balancing Authority shall include all Dynamic Schedules in the calculation of Net Scheduled Interchange for the ACE equation.	HIGH
BAL-005-0.1b	R11.	Balancing Authorities shall include the effect of ramp rates, which shall be identical and agreed to between affected Balancing Authorities, in the Scheduled Interchange values to calculate ACE.	MEDIUM
BAL-005-0.1b	R12.	Each Balancing Authority shall include all Tie Line flows with Adjacent Balancing Authority Areas in the ACE calculation.	MEDIUM
BAL-005-0.1b	R12.1.	Balancing Authorities that share a tie shall ensure Tie Line MW metering is telemetered to both control centers, and emanates from a common, agreed-upon source using common primary metering equipment. Balancing Authorities shall ensure that megawatt-hour data is telemetered or reported at the end of each hour.	LOWER
BAL-005-0.1b	R12.2.	Balancing Authorities shall ensure the power flow and ACE signals that are utilized for calculating Balancing Authority performance or that are transmitted for Regulation Service are not filtered prior to transmission, except for the Anti-aliasing Filters of Tie Lines.	MEDIUM
BAL-005-0.1b	R12.3.	Balancing Authorities shall install common metering equipment where Dynamic Schedules or Pseudo-Ties are implemented between two or more Balancing Authorities to deliver the output of Jointly Owned Units or to serve remote load.	MEDIUM

BAL-005-0.1b	R13.	Each Balancing Authority shall perform hourly error checks using Tie Line megawatt-hour meters with common time synchronization to determine the accuracy of its control equipment. The Balancing Authority shall adjust the component (e.g., Tie Line meter) of ACE that is in error (if known) or use the interchange meter error (IME) term of the ACE equation to compensate for any equipment error until repairs can be made.	LOWER
BAL-005-0.1b	R14.	The Balancing Authority shall provide its operating personnel with sufficient instrumentation and data recording equipment to facilitate monitoring of control performance, generation response, and after-the-fact analysis of area performance. As a minimum, the Balancing Authority shall provide its operating personnel with real-time values for ACE, Interconnection frequency and Net Actual Interchange with each Adjacent Balancing Authority Area.	LOWER
BAL-005-0.1b	R15.	The Balancing Authority shall provide adequate and reliable backup power supplies and shall periodically test these supplies at the Balancing Authority's control center and other critical locations to ensure continuous operation of AGC and vital data recording equipment during loss of the normal power supply.	LOWER
BAL-005-0.1b	R16.	The Balancing Authority shall sample data at least at the same periodicity with which ACE is calculated. The Balancing Authority shall flag missing or bad data for operator display and archival purposes. The Balancing Authority shall collect coincident data to the greatest practical extent, i.e., ACE, Interconnection frequency, Net Actual Interchange, and other data shall all be sampled at the same time.	MEDIUM
BAL-005-0.1b	R17.	Each Balancing Authority shall at least annually check and calibrate its time error and frequency devices against a common reference. The Balancing Authority shall adhere to the minimum values for measuring devices as listed below: See <i>Standard for Values</i>	MEDIUM
BAL-006-2	R1.	Each Balancing Authority shall calculate and record hourly Inadvertent Interchange.	LOWER

BAL-006-2	R2.	Each Balancing Authority shall include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. The Balancing Authority shall take into account interchange served by jointly owned generators.	LOWER
BAL-006-2	R3.	Each Balancing Authority shall ensure all of its Balancing Authority Area interconnection points are equipped with common megawatt-hour meters, with readings provided hourly to the control centers of Adjacent Balancing Authorities.	LOWER
BAL-006-2	R4.	Adjacent Balancing Authority Areas shall operate to a common Net Interchange Schedule and Actual Net Interchange value and shall record these hourly quantities, with like values but opposite sign. Each Balancing Authority shall compute its Inadvertent Interchange based on the following:	LOWER
BAL-006-2	R4.1	Each Balancing Authority, by the end of the next business day, shall agree with its Adjacent Balancing Authorities to:	LOWER
BAL-006-2	R4.1.1.	The hourly values of Net Interchange Schedule.	LOWER
BAL-006-2	R4.1.2.	The hourly integrated megawatt-hour values of Net Actual Interchange.	LOWER
BAL-006-2	R4.2	Each Balancing Authority shall use the agreed-to daily and monthly accounting data to compile its monthly accumulated Inadvertent Interchange for the On-Peak and Off-Peak hours of the month.	LOWER
BAL-006-2	R4.3	A Balancing Authority shall make after-the-fact corrections to the agreed-to daily and monthly accounting data only as needed to reflect actual operating conditions (e.g. a meter being used for control was sending bad data). Changes or corrections based on non-reliability considerations shall not be reflected in the Balancing Authority's Inadvertent Interchange. After-the-fact corrections to scheduled or actual values will not be accepted without agreement of the Adjacent Balancing Authority(ies).	LOWER
BAL-006-2	R5.	Adjacent Balancing Authorities that cannot mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following month shall, for the purposes of dispute resolution, submit a report to their respective Regional Reliability Organization Survey Contact. The report shall describe the nature and the cause of the dispute as well as a process for correcting the discrepancy.	LOWER
BAL-502-RFC-02	R1.	The Planning Coordinator shall perform and document a Resource Adequacy analysis annually. The Resource Adequacy analysis shall:	MEDIUM

BAL-502-RFC-02	R1.1.	Calculate a planning reserve margin that will result in the sum of the probabilities for loss of Load for the integrated peak hour for all days of each planning year analyzed (per R1.2) being equal to 0.1. (This is comparable to a “one day in 10 year” criterion).	
BAL-502-RFC-02	R1.1.1.	The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.	
BAL-502-RFC-02	R1.1.2.	The planning reserve margin developed from R1.1 shall be expressed as a percentage of the median forecast peak Net Internal Demand (planning reserve margin).	
BAL-502-RFC-02	R1.2.	Be performed or verified separately for each of the following planning years:	
BAL-502-RFC-02	R1.2.1.	Perform an analysis for Year One.	
BAL-502-RFC-02	R1.2.2.	Perform an analysis or verification at a minimum for one year in the 2 through 5 year period and at a minimum one year in the 6 through 10 year period.	
BAL-502-RFC-02	R1.2.2.1.	If the analysis is verified, the verification must be supported by current or past studies for the same planning year.	
BAL-502-RFC-02	R1.3.	Include the following subject matter and documentation of its use:	
BAL-502-RFC-02	R1.3.1.	Load forecast characteristics: <ul style="list-style-type: none"> - Median (50:50) forecast peak Load. - Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts). - Load diversity. - Seasonal Load variations. - Daily demand modeling assumptions (firm, interruptible). - Contractual arrangements concerning curtailable/Interruptible Demand. 	
BAL-502-RFC-02	R1.3.2.	Resource characteristics: <ul style="list-style-type: none"> - Historic resource performance and any projected changes - Seasonal resource ratings - Modeling assumptions of firm capacity purchases from and sales to entities outside the Planning Coordinator area. - Resource planned outage schedules, deratings, and retirements. - Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration - Criteria for including planned resource additions in the analysis 	

BAL-502-RFC-02	R1.3.3.	Transmission limitations that prevent the delivery of generation reserves	
BAL-502-RFC-02	R1.3.3.1.	Criteria for including planned Transmission Facility additions in the analysis	
BAL-502-RFC-02	R1.3.4.	Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.	
BAL-502-RFC-02	R1.4.	Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included: - Availability and deliverability of fuel. - Common mode outages that affect resource availability - Environmental or regulatory restrictions of resource availability. - Any other demand (Load) response programs not included in R1.3.1. - Sensitivity to resource outage rates. - Impacts of extreme weather/drought conditions that affect unit availability. - Modeling assumptions for emergency operation procedures used to make reserves available. - Market resources not committed to serving Load (uncommitted resources) within the Planning Coordinator area.	
BAL-502-RFC-02	R1.5.	Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included	
BAL-502-RFC-02	R1.6.	Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis	
BAL-502-RFC-02	R1.7.	Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis	
BAL-502-RFC-02	R2.	The Planning Coordinator shall annually document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis	LOWER
BAL-502-RFC-02	R2.1.	This documentation shall cover each of the years in Year One through ten.	
BAL-502-RFC-02	R2.2.	This documentation shall include the planning reserve margin calculated per requirement R1.1 for each of the three years in the analysis.	
BAL-502-RFC-02	R2.3.	The documentation as specified per requirement R2.1 and R2.2 shall be publicly posted no later than 30 calendar days prior to the beginning of Year One.	

CIP-001-1a	R1.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load-Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi site sabotage affecting larger portions of the Interconnection.	MEDIUM
CIP-001-1a	R2.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load-Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.	MEDIUM
CIP-001-1a	R3.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load-Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage events.	MEDIUM
CIP-001-1a	R4.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load-Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.	MEDIUM
CIP-002-3	R1.	Critical Asset Identification Method — The Responsible Entity shall identify and document a risk-based assessment methodology to use to identify its Critical Assets.	MEDIUM
CIP-002-3	R1.1.	The Responsible Entity shall maintain documentation describing its risk-based assessment methodology that includes procedures and evaluation criteria.	LOWER
CIP-002-3	R1.2.	The risk-based assessment shall consider the following assets:	MEDIUM
CIP-002-3	R1.2.1.	Control centers and backup control centers performing the functions of the entities listed in the Applicability section of this standard.	LOWER
CIP-002-3	R1.2.2.	Transmission substations that support the reliable operation of the Bulk Electric System.	LOWER
CIP-002-3	R1.2.3.	Generation resources that support the reliable operation of the Bulk Electric System.	LOWER
CIP-002-3	R1.2.4.	Systems and facilities critical to system restoration, including blackstart generators and substations in the electrical path of transmission lines used for initial system restoration.	LOWER

CIP-002-3	R1.2.5.	Systems and facilities critical to automatic load shedding under a common control system capable of shedding 300 MW or more.	LOWER
CIP-002-3	R1.2.6.	Special Protection Systems that support the reliable operation of the Bulk Electric System.	LOWER
CIP-002-3	R1.2.7.	Any additional assets that support the reliable operation of the Bulk Electric System that the Responsible Entity deems appropriate to include in its assessment.	LOWER
CIP-002-3	R2.	Critical Asset Identification — The Responsible Entity shall develop a list of its identified Critical Assets determined through an annual application of the risk-based assessment methodology required in R1. The Responsible Entity shall review this list at least annually, and update it as necessary.	HIGH
CIP-002-3	R3.	Critical Cyber Asset Identification — Using the list of Critical Assets developed pursuant to Requirement R2, the Responsible Entity shall develop a list of associated Critical Cyber Assets essential to the operation of the Critical Asset. Examples at control centers and backup control centers include systems and facilities at master and remote sites that provide monitoring and control, automatic generation control, real-time power system modeling, and real-time inter-utility data exchange. The Responsible Entity shall review this list at least annually, and update it as necessary. For the purpose of Standard CIP-002-3, Critical Cyber Assets are further qualified to be those having at least one of the following characteristics:	HIGH
CIP-002-3	R3.1.	The Cyber Asset uses a routable protocol to communicate outside the Electronic Security Perimeter; or,	LOWER
CIP-002-3	R3.2.	The Cyber Asset uses a routable protocol within a control center; or,	LOWER
CIP-002-3	R3.3.	The Cyber Asset is dial-up accessible.	LOWER
CIP-002-3	R4.	Annual Approval — The senior manager or delegate(s) shall approve annually the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets. Based on Requirements R1, R2, and R3 the Responsible Entity may determine that it has no Critical Assets or Critical Cyber Assets. The Responsible Entity shall keep a signed and dated record of the senior manager or delegate(s)'s approval of the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets (even if such lists are null.)	LOWER

CIP-003-3	R1.	Cyber Security Policy — The Responsible Entity shall document and implement a cyber security policy that represents management's commitment and ability to secure its Critical Cyber Assets. The Responsible Entity shall, at minimum, ensure the following:	MEDIUM
CIP-003-3	R1.1.	The cyber security policy addresses the requirements in Standards CIP-002-3 through CIP-009-3, including provision for emergency situations.	LOWER
CIP-003-3	R1.2.	The cyber security policy is readily available to all personnel who have access to, or are responsible for, Critical Cyber Assets.	LOWER
CIP-003-3	R1.3.	Annual review and approval of the cyber security policy by the senior manager assigned pursuant to R2.	LOWER
CIP-003-3	R2.	Leadership — The Responsible Entity shall assign a single senior manager with overall responsibility and authority for leading and managing the entity's implementation of, and adherence to, Standards CIP-002-3 through CIP-009-3.	MEDIUM
CIP-003-3	R2.1.	The senior manager shall be identified by name, title, and date of designation.	LOWER
CIP-003-3	R2.2.	Changes to the senior manager must be documented within thirty calendar days of the effective date.	LOWER
CIP-003-3	R2.3.	Where allowed by Standards CIP-002-3 through CIP-009-3, the senior manager may delegate authority for specific actions to a named delegate or delegates. These delegations shall be documented in the same manner as R2.1 and R2.2, and approved by the senior manager.	LOWER
CIP-003-3	R2.4.	The senior manager or delegate(s), shall authorize and document any exception from the requirements of the cyber security policy.	LOWER
CIP-003-3	R3.	Exceptions — Instances where the Responsible Entity cannot conform to its cyber security policy must be documented as exceptions and authorized by the senior manager or delegate(s).	LOWER
CIP-003-3	R3.1.	Exceptions to the Responsible Entity's cyber security policy must be documented within thirty days of being approved by the senior manager or delegate(s).	LOWER
CIP-003-3	R3.2.	Documented exceptions to the cyber security policy must include an explanation as to why the exception is necessary and any compensating measures.	LOWER
CIP-003-3	R3.3.	Authorized exceptions to the cyber security policy must be reviewed and approved annually by the senior manager or delegate(s) to ensure the exceptions are still required and valid. Such review and approval shall be documented.	LOWER

CIP-003-3	R4.	Information Protection — The Responsible Entity shall implement and document a program to identify, classify, and protect information associated with Critical Cyber Assets.	MEDIUM
CIP-003-3	R4.1.	The Critical Cyber Asset information to be protected shall include, at a minimum and regardless of media type, operational procedures, lists as required in Standard CIP-002-3, network topology or similar diagrams, floor plans of computing centers that contain Critical Cyber Assets, equipment layouts of Critical Cyber Assets, disaster recovery plans, incident response plans, and security configuration information.	MEDIUM
CIP-003-3	R4.2.	The Responsible Entity shall classify information to be protected under this program based on the sensitivity of the Critical Cyber Asset information.	LOWER
CIP-003-3	R4.3.	The Responsible Entity shall, at least annually, assess adherence to its Critical Cyber Asset information protection program, document the assessment results, and implement an action plan to remediate deficiencies identified during the assessment.	LOWER
CIP-003-3	R5.	Access Control — The Responsible Entity shall document and implement a program for managing access to protected Critical Cyber Asset information.	LOWER
CIP-003-3	R5.1.	The Responsible Entity shall maintain a list of designated personnel who are responsible for authorizing logical or physical access to protected information.	LOWER
CIP-003-3	R5.1.1.	Personnel shall be identified by name, title, and the information for which they are responsible for authorizing access.	LOWER
CIP-003-3	R5.1.2.	The list of personnel responsible for authorizing access to protected information shall be verified at least annually.	LOWER
CIP-003-3	R5.2.	The Responsible Entity shall review at least annually the access privileges to protected information to confirm that access privileges are correct and that they correspond with the Responsible Entity's needs and appropriate personnel roles and responsibilities.	LOWER
CIP-003-3	R5.3.	The Responsible Entity shall assess and document at least annually the processes for controlling access privileges to protected information.	LOWER

CIP-003-3	R6.	Change Control and Configuration Management — The Responsible Entity shall establish and document a process of change control and configuration management for adding, modifying, replacing, or removing Critical Cyber Asset hardware or software, and implement supporting configuration management activities to identify, control and document all entity or vendor-related changes to hardware and software components of Critical Cyber Assets pursuant to the change control process.	LOWER
CIP-004-3	R1.	Awareness — The Responsible Entity shall establish, document, implement, and maintain a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices. The program shall include security awareness reinforcement on at least a quarterly basis using mechanisms such as: <ul style="list-style-type: none"> • Direct communications (e.g., emails, memos, computer based training, etc.); • Indirect communications (e.g., posters, intranet, brochures, etc.); • Management support and reinforcement (e.g., presentations, meetings, etc.). 	LOWER
CIP-004-3	R2.	Training — The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. The cyber security training program shall be reviewed annually, at a minimum, and shall be updated whenever necessary.	LOWER
CIP-004-3	R2.1.	This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained prior to their being granted such access except in specified circumstances such as an emergency.	MEDIUM
CIP-004-3	R2.2.	Training shall cover the policies, access controls, and procedures as developed for the Critical Cyber Assets covered by CIP-004-3, and include, at a minimum, the following required items appropriate to personnel roles and responsibilities:	MEDIUM
CIP-004-3	R2.2.1.	The proper use of Critical Cyber Assets;	LOWER
CIP-004-3	R2.2.2.	Physical and electronic access controls to Critical Cyber Assets;	LOWER
CIP-004-3	R2.2.3.	The proper handling of Critical Cyber Asset information; and,	LOWER
CIP-004-3	R2.2.4.	Action plans and procedures to recover or re-establish Critical Cyber Assets and access thereto following a Cyber Security Incident.	MEDIUM

CIP-004-3	R2.3.	The Responsible Entity shall maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.	LOWER
CIP-004-3	R3.	Personnel Risk Assessment —The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state, provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. A personnel risk assessment shall be conducted pursuant to that program prior to such personnel being granted such access except in specified circumstances such as an emergency. The personnel risk assessment program shall at a minimum include:	MEDIUM
CIP-004-3	R3.1.	The Responsible Entity shall ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check. The Responsible Entity may conduct more detailed reviews, as permitted by law and subject to existing collective bargaining unit agreements, depending upon the criticality of the position.	LOWER
CIP-004-3	R3.2.	The Responsible Entity shall update each personnel risk assessment at least every seven years after the initial personnel risk assessment or for cause.	LOWER
CIP-004-3	R3.3.	The Responsible Entity shall document the results of personnel risk assessments of its personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and that personnel risk assessments of contractor and service vendor personnel with such access are conducted pursuant to Standard CIP-004-3.	LOWER
CIP-004-3	R4.	Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.	LOWER
CIP-004-3	R4.1.	The Responsible Entity shall review the list(s) of its personnel who have such access to Critical Cyber Assets quarterly, and update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, or any change in the access rights of such personnel. The Responsible Entity shall ensure access list(s) for contractors and service vendors are properly maintained.	LOWER

CIP-004-3	R4.2.	The Responsible Entity shall revoke such access to Critical Cyber Assets within 24 hours for personnel terminated for cause and within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.	LOWER
CIP-005-3a	R1.	Electronic Security Perimeter — The Responsible Entity shall ensure that every Critical Cyber Asset resides within an Electronic Security Perimeter. The Responsible Entity shall identify and document the Electronic Security Perimeter(s) and all access points to the perimeter(s).	MEDIUM
CIP-005-3a	R1.1.	Access points to the Electronic Security Perimeter(s) shall include any externally connected communication end point (for example, dial-up modems) terminating at any device within the Electronic Security Perimeter(s).	MEDIUM
CIP-005-3a	R1.2.	For a dial-up accessible Critical Cyber Asset that uses a non-routable protocol, the Responsible Entity shall define an Electronic Security Perimeter for that single access point at the dial-up device.	MEDIUM
CIP-005-3a	R1.3.	Communication links connecting discrete Electronic Security Perimeters shall not be considered part of the Electronic Security Perimeter. However, end points of these communication links within the Electronic Security Perimeter(s) shall be considered access points to the Electronic Security Perimeter(s).	MEDIUM
CIP-005-3a	R1.4.	Any non-critical Cyber Asset within a defined Electronic Security Perimeter shall be identified and protected pursuant to the requirements of Standard CIP-005-3.	MEDIUM
CIP-005-3a	R1.5.	Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall be afforded the protective measures as specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3 Requirement R3; Standard CIP-007-3 Requirements R1 and R3 through R9; Standard CIP-008-3; and Standard CIP-009-3.	MEDIUM
CIP-005-3a	R1.6.	The Responsible Entity shall maintain documentation of Electronic Security Perimeter(s), all interconnected Critical and non-critical Cyber Assets within the Electronic Security Perimeter(s), all electronic access points to the Electronic Security Perimeter(s) and the Cyber Assets deployed for the access control and monitoring of these access points.	LOWER
CIP-005-3a	R2.	Electronic Access Controls — The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for control of electronic access at all electronic access points to the Electronic Security Perimeter(s).	MEDIUM

CIP-005-3a	R2.1.	These processes and mechanisms shall use an access control model that denies access by default, such that explicit access permissions must be specified.	MEDIUM
CIP-005-3a	R2.2.	At all access points to the Electronic Security Perimeter(s), the Responsible Entity shall enable only ports and services required for operations and for monitoring Cyber Assets within the Electronic Security Perimeter, and shall document, individually or by specified grouping, the configuration of those ports and services.	MEDIUM
CIP-005-3a	R2.3.	The Responsible Entity shall implement and maintain a procedure for securing dial-up access to the Electronic Security Perimeter(s).	MEDIUM
CIP-005-3a	R2.4.	Where external interactive access into the Electronic Security Perimeter has been enabled, the Responsible Entity shall implement strong procedural or technical controls at the access points to ensure authenticity of the accessing party, where technically feasible.	MEDIUM
CIP-005-3a	R2.5.	The required documentation shall, at least, identify and describe:	LOWER
CIP-005-3a	R2.5.1.	The processes for access request and authorization.	LOWER
CIP-005-3a	R2.5.2.	The authentication methods.	LOWER
CIP-005-3a	R2.5.3.	The review process for authorization rights, in accordance with Standard CIP-004-3 Requirement R4.	LOWER
CIP-005-3a	R2.5.4.	The controls used to secure dial-up accessible connections.	LOWER
CIP-005-3a	R2.6.	Appropriate Use Banner — Where technically feasible, electronic access control devices shall display an appropriate use banner on the user screen upon all interactive access attempts. The Responsible Entity shall maintain a document identifying the content of the banner.	LOWER
CIP-005-3a	R3.	Monitoring Electronic Access — The Responsible Entity shall implement and document an electronic or manual process(es) for monitoring and logging access at access points to the Electronic Security Perimeter(s) twenty-four hours a day, seven days a week.	MEDIUM
CIP-005-3a	R3.1.	For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall implement and document monitoring process(es) at each access point to the dial-up device, where technically feasible.	MEDIUM

CIP-005-3a	R3.2.	Where technically feasible, the security monitoring process(es) shall detect and alert for attempts at or actual unauthorized accesses. These alerts shall provide for appropriate notification to designated response personnel. Where alerting is not technically feasible, the Responsible Entity shall review or otherwise assess access logs for attempts at or actual unauthorized accesses at least every ninety calendar days.	MEDIUM
CIP-005-3a	R4.	Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of the electronic access points to the Electronic Security Perimeter(s) at least annually. The vulnerability assessment shall include, at a minimum, the following:	MEDIUM
CIP-005-3a	R4.1.	A document identifying the vulnerability assessment process;	LOWER
CIP-005-3a	R4.2.	A review to verify that only ports and services required for operations at these access points are enabled;	MEDIUM
CIP-005-3a	R4.3.	The discovery of all access points to the Electronic Security Perimeter;	MEDIUM
CIP-005-3a	R4.4.	A review of controls for default accounts, passwords, and network management community strings;	MEDIUM
CIP-005-3a	R4.5.	Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.	MEDIUM
CIP-005-3a	R5.	Documentation Review and Maintenance — The Responsible Entity shall review, update, and maintain all documentation to support compliance with the requirements of Standard CIP-005-3.	LOWER
CIP-005-3a	R5.1.	The Responsible Entity shall ensure that all documentation required by Standard CIP-005-3 reflect current configurations and processes and shall review the documents and procedures referenced in Standard CIP-005-3 at least annually.	LOWER
CIP-005-3a	R5.2.	The Responsible Entity shall update the documentation to reflect the modification of the network or controls within ninety calendar days of the change.	LOWER
CIP-005-3a	R5.3.	The Responsible Entity shall retain electronic access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.	LOWER
CIP-006-3c	R1.	Physical Security Plan — The Responsible Entity shall document, implement, and maintain a physical security plan, approved by the senior manager or delegate(s) that shall address, at a minimum, the following:	MEDIUM

CIP-006-3c	R1.1.	All Cyber Assets within an Electronic Security Perimeter shall reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to such Cyber Assets.	MEDIUM
CIP-006-3c	R1.2.	Identification of all physical access points through each Physical Security Perimeter and measures to control entry at those access points.	MEDIUM
CIP-006-3c	R1.3.	Processes, tools, and procedures to monitor physical access to the perimeter(s).	MEDIUM
CIP-006-3c	R1.4.	Appropriate use of physical access controls as described in Requirement R4 including visitor pass management, response to loss, and prohibition of inappropriate use of physical access controls.	MEDIUM
CIP-006-3c	R1.5.	Review of access authorization requests and revocation of access authorization, in accordance with CIP-004-3 Requirement R4.	MEDIUM
CIP-006-3c	R1.6.	A visitor control program for visitors (personnel without authorized unescorted access to a Physical Security Perimeter), containing at a minimum the following:	MEDIUM
CIP-006-3c	R1.6.1.	Logs (manual or automated) to document the entry and exit of visitors, including the date and time, to and from Physical Security Perimeters.	MEDIUM
CIP-006-3c	R1.6.2.	Continuous escorted access of visitors within the Physical Security Perimeter.	MEDIUM
CIP-006-3c	R1.7.	Update of the physical security plan within thirty calendar days of the completion of any physical security system redesign or reconfiguration, including, but not limited to, addition or removal of access points through the Physical Security Perimeter, physical access controls, monitoring controls, or logging controls.	LOWER
CIP-006-3c	R1.8.	Annual review of the physical security plan.	LOWER
CIP-006-3c	R2.	Protection of Physical Access Control Systems — Cyber Assets that authorize and/or log access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access point such as electronic lock control mechanisms and badge readers, shall:	MEDIUM
CIP-006-3c	R2.1.	Be protected from unauthorized physical access.	MEDIUM
CIP-006-3c	R2.2.	Be afforded the protective measures specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3 Requirements R4 and R5; Standard CIP-007-3; Standard CIP-008-3; and Standard CIP-009-3.	MEDIUM

CIP-006-3c	R3.	Protection of Electronic Access Control Systems — Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall reside within an identified Physical Security Perimeter.	MEDIUM
CIP-006-3c	R4.	Physical Access Controls — The Responsible Entity shall document and implement the operational and procedural controls to manage physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. The Responsible Entity shall implement one or more of the following physical access methods: <ul style="list-style-type: none"> • Card Key: A means of electronic access where the access rights of the card holder are predefined in a computer database. Access rights may differ from one perimeter to another. • Special Locks: These include, but are not limited to, locks with “restricted key” systems, magnetic locks that can be operated remotely, and “man-trap” systems. • Security Personnel: Personnel responsible for controlling physical access who may reside on-site or at a monitoring station. • Other Authentication Devices: Biometric, keypad, token, or other equivalent devices that control physical access to the Critical Cyber Assets. 	MEDIUM
CIP-006-3c	R5.	Monitoring Physical Access — The Responsible Entity shall document and implement the technical and procedural controls for monitoring physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. Unauthorized access attempts shall be reviewed immediately and handled in accordance with the procedures specified in Requirement CIP-008-3. One or more of the following monitoring methods shall be used: <ul style="list-style-type: none"> • Alarm Systems: Systems that alarm to indicate a door, gate or window has been opened without authorization. These alarms must provide for immediate notification to personnel responsible for response. • Human Observation of Access Points: Monitoring of physical access points by authorized personnel as specified in Requirement R4. 	MEDIUM

CIP-006-3c	R6.	<p>Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:</p> <ul style="list-style-type: none"> • Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method. • Video Recording: Electronic capture of video images of sufficient quality to determine identity. • Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R4. 	LOWER
CIP-006-3c	R7.	<p>Access Log Retention — The Responsible Entity shall retain physical access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.</p>	LOWER
CIP-006-3c	R8.	<p>Maintenance and Testing — The Responsible Entity shall implement a maintenance and testing program to ensure that all physical security systems under Requirements R4, R5, and R6 function properly. The program must include, at a minimum, the following:</p>	MEDIUM
CIP-006-3c	R8.1.	<p>Testing and maintenance of all physical security mechanisms on a cycle no longer than three years.</p>	MEDIUM
CIP-006-3c	R8.2.	<p>Retention of testing and maintenance records for the cycle determined by the Responsible Entity in Requirement R8.1.</p>	LOWER
CIP-006-3c	R8.3.	<p>Retention of outage records regarding access controls, logging, and monitoring for a minimum of one calendar year.</p>	LOWER
CIP-007-3	R1.	<p>Test Procedures — The Responsible Entity shall ensure that new Cyber Assets and significant changes to existing Cyber Assets within the Electronic Security Perimeter do not adversely affect existing cyber security controls. For purposes of Standard CIP-007-3, a significant change shall, at a minimum, include implementation of security patches, cumulative service packs, vendor releases, and version upgrades of operating systems, applications, database platforms, or other third-party software or firmware.</p>	MEDIUM

CIP-007-3	R1.1.	The Responsible Entity shall create, implement, and maintain cyber security test procedures in a manner that minimizes adverse effects on the production system or its operation.	LOWER
CIP-007-3	R1.2.	The Responsible Entity shall document that testing is performed in a manner that reflects the production environment.	LOWER
CIP-007-3	R1.3.	The Responsible Entity shall document test results.	LOWER
CIP-007-3	R2.	Ports and Services — The Responsible Entity shall establish, document and implement a process to ensure that only those ports and services required for normal and emergency operations are enabled.	MEDIUM
CIP-007-3	R2.1.	The Responsible Entity shall enable only those ports and services required for normal and emergency operations.	MEDIUM
CIP-007-3	R2.2.	The Responsible Entity shall disable other ports and services, including those used for testing purposes, prior to production use of all Cyber Assets inside the Electronic Security Perimeter(s).	MEDIUM
CIP-007-3	R2.3.	In the case where unused ports and services cannot be disabled due to technical limitations, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.	MEDIUM
CIP-007-3	R3.	Security Patch Management — The Responsible Entity, either separately or as a component of the documented configuration management process specified in CIP-003-3 Requirement R6, shall establish, document and implement a security patch management program for tracking, evaluating, testing, and installing applicable cyber security software patches for all Cyber Assets within the Electronic Security Perimeter(s).	LOWER
CIP-007-3	R3.1.	The Responsible Entity shall document the assessment of security patches and security upgrades for applicability within thirty calendar days of availability of the patches or upgrades.	LOWER
CIP-007-3	R3.2.	The Responsible Entity shall document the implementation of security patches. In any case where the patch is not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.	LOWER
CIP-007-3	R4.	Malicious Software Prevention — The Responsible Entity shall use anti-virus software and other malicious software (“malware”) prevention tools, where technically feasible, to detect, prevent, deter, and mitigate the introduction, exposure, and propagation of malware on all Cyber Assets within the Electronic Security Perimeter(s).	MEDIUM

CIP-007-3	R4.1.	The Responsible Entity shall document and implement anti-virus and malware prevention tools. In the case where anti-virus software and malware prevention tools are not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.	MEDIUM
CIP-007-3	R4.2.	The Responsible Entity shall document and implement a process for the update of anti-virus and malware prevention “signatures.” The process must address testing and installing the signatures.	MEDIUM
CIP-007-3	R5.	Account Management — The Responsible Entity shall establish, implement, and document technical and procedural controls that enforce access authentication of, and accountability for, all user activity, and that minimize the risk of unauthorized system access.	LOWER
CIP-007-3	R5.1.	The Responsible Entity shall ensure that individual and shared system accounts and authorized access permissions are consistent with the concept of “need to know” with respect to work functions performed.	MEDIUM
CIP-007-3	R5.1.1.	The Responsible Entity shall ensure that user accounts are implemented as approved by designated personnel. Refer to Standard CIP-003-3 Requirement R5.	LOWER
CIP-007-3	R5.1.2.	The Responsible Entity shall establish methods, processes, and procedures that generate logs of sufficient detail to create historical audit trails of individual user account access activity for a minimum of ninety days.	LOWER
CIP-007-3	R5.1.3.	The Responsible Entity shall review, at least annually, user accounts to verify access privileges are in accordance with Standard CIP-003-3 Requirement R5 and Standard CIP-004-3 Requirement R4.	MEDIUM
CIP-007-3	R5.2.	The Responsible Entity shall implement a policy to minimize and manage the scope and acceptable use of administrator, shared, and other generic account privileges including factory default accounts.	LOWER
CIP-007-3	R5.2.1.	The policy shall include the removal, disabling, or renaming of such accounts where possible. For such accounts that must remain enabled, passwords shall be changed prior to putting any system into service.	MEDIUM
CIP-007-3	R5.2.2.	The Responsible Entity shall identify those individuals with access to shared accounts.	LOWER

CIP-007-3	R5.2.3.	Where such accounts must be shared, the Responsible Entity shall have a policy for managing the use of such accounts that limits access to only those with authorization, an audit trail of the account use (automated or manual), and steps for securing the account in the event of personnel changes (for example, change in assignment or termination).	MEDIUM
CIP-007-3	R5.3.	At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:	LOWER
CIP-007-3	R5.3.1.	Each password shall be a minimum of six characters.	LOWER
CIP-007-3	R5.3.2.	Each password shall consist of a combination of alpha, numeric, and "special" characters.	LOWER
CIP-007-3	R5.3.3.	Each password shall be changed at least annually, or more frequently based on risk.	MEDIUM
CIP-007-3	R6.	Security Status Monitoring — The Responsible Entity shall ensure that all Cyber Assets within the Electronic Security Perimeter, as technically feasible, implement automated tools or organizational process controls to monitor system events that are related to cyber security.	LOWER
CIP-007-3	R6.1.	The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for monitoring for security events on all Cyber Assets within the Electronic Security Perimeter.	MEDIUM
CIP-007-3	R6.2.	The security monitoring controls shall issue automated or manual alerts for detected Cyber Security Incidents.	MEDIUM
CIP-007-3	R6.3.	The Responsible Entity shall maintain logs of system events related to cyber security, where technically feasible, to support incident response as required in Standard CIP-008-3.	MEDIUM
CIP-007-3	R6.4.	The Responsible Entity shall retain all logs specified in Requirement R6 for ninety calendar days.	LOWER
CIP-007-3	R6.5.	The Responsible Entity shall review logs of system events related to cyber security and maintain records documenting review of logs.	LOWER
CIP-007-3	R7.	Disposal or Redeployment — The Responsible Entity shall establish and implement formal methods, processes, and procedures for disposal or redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in Standard CIP-005-3.	LOWER
CIP-007-3	R7.1.	Prior to the disposal of such assets, the Responsible Entity shall destroy or erase the data storage media to prevent unauthorized retrieval of sensitive cyber	LOWER

		security or reliability data.	
CIP-007-3	R7.2.	Prior to redeployment of such assets, the Responsible Entity shall, at a minimum, erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.	LOWER
CIP-007-3	R7.3.	The Responsible Entity shall maintain records that such assets were disposed of or redeployed in accordance with documented procedures.	LOWER
CIP-007-3	R8.	Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of all Cyber Assets within the Electronic Security Perimeter at least annually. The vulnerability assessment shall include, at a minimum, the following:	LOWER
CIP-007-3	R8.1.	A document identifying the vulnerability assessment process;	LOWER
CIP-007-3	R8.2.	A review to verify that only ports and services required for operation of the Cyber Assets within the Electronic Security Perimeter are enabled;	MEDIUM
CIP-007-3	R8.3.	A review of controls for default accounts; and,	MEDIUM
CIP-007-3	R8.4.	Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.	MEDIUM
CIP-007-3	R9.	Documentation Review and Maintenance — The Responsible Entity shall review and update the documentation specified in Standard CIP-007-3 at least annually. Changes resulting from modifications to the systems or controls shall be documented within thirty calendar days of the change being completed.	LOWER
CIP-008-3	R1.	Cyber Security Incident Response Plan — The Responsible Entity shall develop and maintain a Cyber Security Incident response plan and implement the plan in response to Cyber Security Incidents. The Cyber Security Incident response plan shall address, at a minimum, the following:	LOWER
CIP-008-3	R1.1.	Procedures to characterize and classify events as reportable Cyber Security Incidents.	LOWER
CIP-008-3	R1.2.	Response actions, including roles and responsibilities of Cyber Security Incident response teams, Cyber Security Incident handling procedures, and communication plans.	LOWER

CIP-008-3	R1.3.	Process for reporting Cyber Security Incidents to the Electricity Sector Information Sharing and Analysis Center (ES-ISAC). The Responsible Entity must ensure that all reportable Cyber Security Incidents are reported to the ES-ISAC either directly or through an intermediary.	LOWER
CIP-008-3	R1.4.	Process for updating the Cyber Security Incident response plan within thirty calendar days of any changes.	LOWER
CIP-008-3	R1.5.	Process for ensuring that the Cyber Security Incident response plan is reviewed at least annually.	LOWER
CIP-008-3	R1.6.	Process for ensuring the Cyber Security Incident response plan is tested at least annually. A test of the Cyber Security Incident response plan can range from a paper drill, to a full operational exercise, to the response to an actual incident.	LOWER
CIP-008-3	R2.	Cyber Security Incident Documentation — The Responsible Entity shall keep relevant documentation related to Cyber Security Incidents reportable per Requirement R1.1 for three calendar years.	LOWER
CIP-009-3	R1.	Recovery Plans — The Responsible Entity shall create and annually review recovery plan(s) for Critical Cyber Assets. The recovery plan(s) shall address at a minimum the following:	MEDIUM
CIP-009-3	R1.1.	Specify the required actions in response to events or conditions of varying duration and severity that would activate the recovery plan(s).	MEDIUM
CIP-009-3	R1.2.	Define the roles and responsibilities of responders.	MEDIUM
CIP-009-3	R2.	Exercises — The recovery plan(s) shall be exercised at least annually. An exercise of the recovery plan(s) can range from a paper drill, to a full operational exercise, to recovery from an actual incident.	LOWER
CIP-009-3	R3.	Change Control — Recovery plan(s) shall be updated to reflect any changes or lessons learned as a result of an exercise or the recovery from an actual incident. Updates shall be communicated to personnel responsible for the activation and implementation of the recovery plan(s) within thirty calendar days of the change being completed.	LOWER
CIP-009-3	R4.	Backup and Restore — The recovery plan(s) shall include processes and procedures for the backup and storage of information required to successfully restore Critical Cyber Assets. For example, backups may include spare electronic components or equipment, written documentation of configuration settings, tape backup, etc.	LOWER

CIP-009-3	R5.	Testing Backup Media — Information essential to recovery that is stored on backup media shall be tested at least annually to ensure that the information is available. Testing can be completed off site.	LOWER
COM-001-1.1	R1.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information:	HIGH
COM-001-1.1	R1.1.	Internally.	HIGH
COM-001-1.1	R1.2.	Between the Reliability Coordinator and its Transmission Operators and Balancing Authorities.	HIGH
COM-001-1.1	R1.3.	With other Reliability Coordinators, Transmission Operators, and Balancing Authorities as necessary to maintain reliability.	HIGH
COM-001-1.1	R1.4.	Where applicable, these facilities shall be redundant and diversely routed.	HIGH
COM-001-1.1	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall manage, alarm, test and/or actively monitor vital telecommunications facilities. Special attention shall be given to emergency telecommunications facilities and equipment not used for routine communications.	MEDIUM
COM-001-1.1	R3.	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall provide a means to coordinate telecommunications among their respective areas. This coordination shall include the ability to investigate and recommend solutions to telecommunications problems within the area and with other areas.	LOWER
COM-001-1.1	R4.	Unless agreed to otherwise, each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use English as the language for all communications between and among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System. Transmission Operators and Balancing Authorities may use an alternate language for internal operations.	MEDIUM

COM-001-1.1	R5.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.	LOWER
COM-001-1.1	R6.	Each NERCNet User Organization shall adhere to the requirements in Attachment 1-COM-001-0, "NERCNet Security Policy."	LOWER
COM-002-2	R1.	Each Transmission Operator, Balancing Authority, and Generator Operator shall have communications (voice and data links) with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators. Such communications shall be staffed and available for addressing a real-time emergency condition.	HIGH
COM-002-2	R1.1.	Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator, and all other potentially affected Balancing Authorities and Transmission Operators through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding is anticipated.	HIGH
COM-002-2	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings.	MEDIUM
EOP-001-0	R1.	Balancing Authorities shall have operating agreements with adjacent Balancing Authorities that shall, at a minimum, contain provisions for emergency assistance, including provisions to obtain emergency assistance from remote Balancing Authorities.	High
EOP-001-0	R2.	The Transmission Operator shall have an emergency load reduction plan for all identified IROLs. The plan shall include the details on how the Transmission Operator will implement load reduction in sufficient amount and time to mitigate the IROL violation before system separation or collapse would occur. The load reduction plan must be capable of being implemented within 30 minutes.	Medium
EOP-001-0	R3.	Each Transmission Operator and Balancing Authority shall:	Medium

EOP-001-0	R3.1.	Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.	Medium
EOP-001-0	R3.2.	Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.	Medium
EOP-001-0	R3.3.	Develop, maintain, and implement a set of plans for load shedding.	Medium
EOP-001-0	R3.4.	Develop, maintain, and implement a set of plans for system restoration.	Medium
EOP-001-0	R4.	Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:	Medium
EOP-001-0	R4.1.	Communications protocols to be used during emergencies.	Medium
EOP-001-0	R4.2.	A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.	Medium
EOP-001-0	R4.3.	The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.	Medium
EOP-001-0	R4.4.	Staffing levels for the emergency.	Medium
EOP-001-0	R5.	Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-0 when developing an emergency plan.	Medium
EOP-001-0	R6.	The Transmission Operator and Balancing Authority shall annually review and update each emergency plan. The Transmission Operator and Balancing Authority shall provide a copy of its updated emergency plans to its Reliability Coordinator and to neighboring Transmission Operators and Balancing Authorities.	Medium
EOP-001-0	R7.	The Transmission Operator and Balancing Authority shall coordinate its emergency plans with other Transmission Operators and Balancing Authorities as appropriate. This coordination includes the following steps, as applicable:	Medium
EOP-001-0	R7.1.	The Transmission Operator and Balancing Authority shall establish and maintain reliable communications between interconnected systems.	Medium
EOP-001-0	R7.2.	The Transmission Operator and Balancing Authority shall arrange new interchange agreements to provide for emergency capacity or energy transfers if existing agreements cannot be used.	Medium

EOP-001-0	R7.3.	The Transmission Operator and Balancing Authority shall coordinate transmission and generator maintenance schedules to maximize capacity or conserve the fuel in short supply. (This includes water for hydro generators.)	Medium
EOP-001-0	R7.4.	The Transmission Operator and Balancing Authority shall arrange deliveries of electrical energy or fuel from remote systems through normal operating channels.	Medium
EOP-002-2.1	R1.	Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.	HIGH
EOP-002-2.1	R2.	Each Balancing Authority shall implement its capacity and energy emergency plan, when required and as appropriate, to reduce risks to the interconnected system.	HIGH
EOP-002-2.1	R3.	A Balancing Authority that is experiencing an operating capacity or energy emergency shall communicate its current and future system conditions to its Reliability Coordinator and neighboring Balancing Authorities.	HIGH
EOP-002-2.1	R4.	A Balancing Authority anticipating an operating capacity or energy emergency shall perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, and being prepared to reduce firm load.	HIGH
EOP-002-2.1	R5.	A deficient Balancing Authority shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. The Balancing Authority shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities.	HIGH
EOP-002-2.1	R6.	If the Balancing Authority cannot comply with the Control Performance and Disturbance Control Standards, then it shall immediately implement remedies to do so. These remedies include, but are not limited to:	HIGH

EOP-002-2.1	R6.1.	Loading all available generating capacity.	HIGH
EOP-002-2.1	R6.2.	Deploying all available operating reserve.	HIGH
EOP-002-2.1	R6.3.	Interrupting interruptible load and exports.	HIGH
EOP-002-2.1	R6.4.	Requesting emergency assistance from other Balancing Authorities.	HIGH
EOP-002-2.1	R6.5.	Declaring an Energy Emergency through its Reliability Coordinator; and	HIGH
EOP-002-2.1	R6.6.	Reducing load, through procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads.	HIGH
EOP-002-2.1	R7.	Once the Balancing Authority has exhausted the steps listed in Requirement 6, or if these steps cannot be completed in sufficient time to resolve the emergency condition, the Balancing Authority shall:	HIGH
EOP-002-2.1	R7.1.	Manually shed firm load without delay to return its ACE to zero; and	HIGH
EOP-002-2.1	R7.2.	Request the Reliability Coordinator to declare an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0 "Energy Emergency Alert Levels."	HIGH
EOP-002-2.1	R8.	A Reliability Coordinator that has any Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency shall initiate an Energy Emergency Alert as detailed in Attachment 1-EOP-002-0 "Energy Emergency Alert Levels." The Reliability Coordinator shall act to mitigate the emergency condition, including a request for emergency assistance if required.	HIGH

EOP-002-2.1	R9.	When a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources) as permitted in its transmission tariff (See Attachment 1-IRO-006-0 "Transmission Loading Relief Procedure" for explanation of Transmission Service Priorities):	HIGH
EOP-002-2.1	R9.1.	The deficient Load-Serving Entity shall request its Reliability Coordinator to initiate an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.	HIGH
EOP-002-2.1	R9.2.	The Reliability Coordinator shall submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.	HIGH
EOP-002-2.1	R9.3.	The Reliability Coordinator shall use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	LOWER
EOP-002-2.1	R9.4.	The Reliability Coordinator shall use EEA 2 to announce the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	LOWER
EOP-002-3	R1.	Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.	HIGH
EOP-002-3	R2.	Each Balancing Authority shall, when required and as appropriate, take one or more actions as described in its capacity and energy emergency plan, , to reduce risks to the interconnected system.	HIGH
EOP-002-3	R3.	A Balancing Authority that is experiencing an operating capacity or energy emergency shall communicate its current and future system conditions to its Reliability Coordinator and neighboring Balancing Authorities.	HIGH

EOP-002-3	R4.	A Balancing Authority anticipating an operating capacity or energy emergency shall perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, and being prepared to reduce firm load.	HIGH
EOP-002-3	R5.	A deficient Balancing Authority shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. The Balancing Authority shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities.	HIGH
EOP-002-3	R6.	If the Balancing Authority cannot comply with the Control Performance and Disturbance Control Standards, then it shall immediately implement remedies to do so. These remedies include, but are not limited to:	HIGH
EOP-002-3	R6.1.	Loading all available generating capacity.	HIGH
EOP-002-3	R6.2.	Deploying all available operating reserve.	HIGH
EOP-002-3	R6.3.	Interrupting interruptible load and exports.	HIGH
EOP-002-3	R6.4.	Requesting emergency assistance from other Balancing Authorities.	HIGH
EOP-002-3	R6.5.	Declaring an Energy Emergency through its Reliability Coordinator; and	HIGH
EOP-002-3	R6.6.	Reducing load, through procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads.	HIGH
EOP-002-3	R7.	Once the Balancing Authority has exhausted the steps listed in Requirement 6, or if these steps cannot be completed in sufficient time to resolve the emergency condition, the Balancing Authority shall:	HIGH

EOP-002-3	R7.1.	Manually shed firm load without delay to return its ACE to zero; and	HIGH
EOP-002-3	R7.2.	Request the Reliability Coordinator to declare an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0 "Energy Emergency Alert Levels."	HIGH
EOP-002-3	R8.	A Reliability Coordinator that has any Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency shall initiate an Energy Emergency Alert as detailed in Attachment 1-EOP-002-0 "Energy Emergency Alert Levels." The Reliability Coordinator shall act to mitigate the emergency condition, including a request for emergency assistance if required.	HIGH
EOP-002-3	R9.	When a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources) as permitted in its transmission tariff (See Attachment 1-IRO-006-0 "Transmission Loading Relief Procedure" for explanation of Transmission Service Priorities):	HIGH
EOP-002-3	R9.1.	The deficient Load-Serving Entity shall request its Reliability Coordinator to initiate an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.	HIGH
EOP-002-3	R9.2.	The Reliability Coordinator shall submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.	HIGH
EOP-002-3	R9.3.	The Reliability Coordinator shall use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	LOWER
EOP-002-3	R9.4.	The Reliability Coordinator shall use EEA 2 to announce the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	LOWER

EOP-003-1	R1.	After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	HIGH
EOP-003-1	R2.	Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions.	HIGH
EOP-003-1	R3.	Each Transmission Operator and Balancing Authority shall coordinate load shedding plans among other interconnected Transmission Operators and Balancing Authorities.	HIGH
EOP-003-1	R4.	A Transmission Operator or Balancing Authority shall consider one or more of these factors in designing an automatic load shedding scheme: frequency, rate of frequency decay, voltage level, rate of voltage decay, or power flow levels.	HIGH
EOP-003-1	R5.	A Transmission Operator or Balancing Authority shall implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.	HIGH
EOP-003-1	R6.	After a Transmission Operator or Balancing Authority Area separates from the Interconnection, if there is insufficient generating capacity to restore system frequency following automatic underfrequency load shedding, the Transmission Operator or Balancing Authority shall shed additional load.	HIGH
EOP-003-1	R7.	The Transmission Operator and Balancing Authority shall coordinate automatic load shedding throughout their areas with underfrequency isolation of generating units, tripping of shunt capacitors, and other automatic actions that will occur under abnormal frequency, voltage, or power flow conditions.	HIGH

EOP-003-1	R8.	Each Transmission Operator or Balancing Authority shall have plans for operator-controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	HIGH
EOP-004-1	R1.	Each Regional Reliability Organization shall establish and maintain a Regional reporting procedure to facilitate preparation of preliminary and final disturbance reports.	LOWER
EOP-004-1	R2.	A Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity shall promptly analyze Bulk Electric System disturbances on its system or facilities.	MEDIUM
EOP-004-1	R3.	A Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity experiencing a reportable incident shall provide a preliminary written report to its Regional Reliability Organization and NERC.	LOWER
EOP-004-1	R3.1.	The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity shall submit within 24 hours of the disturbance or unusual occurrence either a copy of the report submitted to DOE, or, if no DOE report is required, a copy of the NERC Interconnection Reliability Operating Limit and Preliminary Disturbance Report form. Events that are not identified until some time after they occur shall be reported within 24 hours of being recognized.	LOWER
EOP-004-1	R3.2.	Applicable reporting forms are provided in Attachments 022-1 and 022-2.	No VRF Assigned

EOP-004-1	R3.3.	Under certain adverse conditions, e.g., severe weather, it may not be possible to assess the damage caused by a disturbance and issue a written Interconnection Reliability Operating Limit and Preliminary Disturbance Report within 24 hours. In such cases, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall promptly notify its Regional Reliability Organization(s) and NERC, and verbally provide as much information as is available at that time. The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall then provide timely, periodic verbal updates until adequate information is available to issue a written Preliminary Disturbance Report.	LOWER
EOP-004-1	R3.4.	If, in the judgment of the Regional Reliability Organization, after consultation with the Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity in which a disturbance occurred, a final report is required, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall prepare this report within 60 days. As a minimum, the final report shall have a discussion of the events and its cause, the conclusions reached, and recommendations to prevent recurrence of this type of event. The report shall be subject to Regional Reliability Organization approval.	LOWER
EOP-004-1	R4.	When a Bulk Electric System disturbance occurs, the Regional Reliability Organization shall make its representatives on the NERC Operating Committee and Disturbance Analysis Working Group available to the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity immediately affected by the disturbance for the purpose of providing any needed assistance in the investigation and to assist in the preparation of a final report.	LOWER

EOP-004-1	R5.	The Regional Reliability Organization shall track and review the status of all final report recommendations at least twice each year to ensure they are being acted upon in a timely manner. If any recommendation has not been acted on within two years, or if Regional Reliability Organization tracking and review indicates at any time that any recommendation is not being acted on with sufficient diligence, the Regional Reliability Organization shall notify the NERC Planning Committee and Operating Committee of the status of the recommendation(s) and the steps the Regional Reliability Organization has taken to accelerate implementation.	LOWER
EOP-005-1	R1.	Each Transmission Operator shall have a restoration plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in Attachment 1-EOP-005 in developing a restoration plan.	MEDIUM
EOP-005-1	R2.	Each Transmission Operator shall review and update its restoration plan at least annually and whenever it makes changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises.	MEDIUM
EOP-005-1	R3.	Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection.	MEDIUM
EOP-005-1	R4.	Each Transmission Operator shall coordinate its restoration plans with the Generator Owners and Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.	MEDIUM
EOP-005-1	R5.	Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan.	MEDIUM
EOP-005-1	R6.	Each Transmission Operator and Balancing Authority shall train its operating personnel in the implementation of the restoration plan. Such training shall include simulated exercises, if practicable.	HIGH

EOP-005-1	R7.	Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by simulation.	HIGH
EOP-005-1	R8.	Each Transmission Operator shall verify that the number, size, availability, and location of system blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements for the Transmission Operator's area.	HIGH
EOP-005-1	R9.	The Transmission Operator shall document the Cranking Paths, including initial switching requirements, between each blackstart generating unit and the unit(s) to be started and shall provide this documentation for review by the Regional Reliability Organization upon request. Such documentation may include Cranking Path diagrams.	MEDIUM
EOP-005-1	R10.	The Transmission Operator shall demonstrate, through simulation or testing, that the blackstart generating units in its restoration plan can perform their intended functions as required in the regional restoration plan.	MEDIUM
EOP-005-1	R10.1.	The Transmission Operator shall perform this simulation or testing at least once every five years.	MEDIUM
EOP-005-1	R11.	Following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out, the affected Transmission Operators and Balancing Authorities shall begin immediately to return the Bulk Electric System to normal.	HIGH
EOP-005-1	R11.1.	The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s).	MEDIUM
EOP-005-1	R11.2.	The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or load shedding.	HIGH

EOP-005-1	R11.3.	The affected Balancing Authorities, working with their Reliability Coordinator(s), shall immediately review the Interchange Schedules between those Balancing Authority Areas or fragments of those Balancing Authority Areas within the separated area and make adjustments as needed to facilitate the restoration. The affected Balancing Authorities shall make all attempts to maintain the adjusted Interchange Schedules, whether generation control is manual or automatic.	HIGH
EOP-005-1	R11.4.	The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations.	HIGH
EOP-005-1	R11.5.	The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met:	MEDIUM
EOP-005-1	R11.5.1.	Voltage, frequency, and phase angle permit.	HIGH
EOP-005-1	R11.5.2.	The size of the area being reconnected and the capacity of the transmission lines effecting the reconnection and the number of synchronizing points across the system are considered.	HIGH
EOP-005-1	R11.5.3.	Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given.	MEDIUM
EOP-005-1	R11.5.4.	Load is shed in neighboring areas, if required, to permit successful interconnected system restoration.	HIGH
EOP-005-2	R1.	Each Transmission Operator shall have a restoration plan approved by its Reliability Coordinator. The restoration plan shall allow for restoring the Transmission Operator's System following a Disturbance in which one or more areas of the Bulk Electric System (BES) shuts down and the use of Blackstart Resources is required to restore the shut down area to service, to a state whereby the choice of the next Load to be restored is not driven by the need to control frequency or voltage regardless of whether the Blackstart Resource is located within the Transmission Operator's System. The restoration plan shall include: [Violation Risk Factor = High] [Time Horizon = Operations Planning]	HIGH - Pending

EOP-005-2	R1.1.	Strategies for system restoration that are coordinated with the Reliability Coordinator's high level strategy for restoring the Interconnection.	N/A
EOP-005-2	R1.2.	A description of how all Agreements or mutually agreed upon procedures or protocols for off-site power requirements of nuclear power plants, including priority of restoration, will be fulfilled during System restoration.	N/A
EOP-005-2	R1.3.	Procedures for restoring interconnections with other Transmission Operators under the direction of the Reliability Coordinator.	N/A
EOP-005-2	R1.4.	Identification of each Blackstart Resource and its characteristics including but not limited to the following: the name of the Blackstart Resource, location, megawatt and megavar capacity, and type of unit.	N/A
EOP-005-2	R1.5.	Identification of Cranking Paths and initial switching requirements between each Blackstart Resource and the unit(s) to be started.	N/A
EOP-005-2	R1.6.	Identification of acceptable operating voltage and frequency limits during restoration.	N/A
EOP-005-2	R1.7.	Operating Processes to reestablish connections within the Transmission Operator's System for areas that have been restored and are prepared for reconnection.	N/A
EOP-005-2	R1.8.	Operating Processes to restore Loads required to restore the System, such as station service for substations, units to be restarted or stabilized, the Load needed to stabilize generation and frequency, and provide voltage control.	N/A
EOP-005-2	R1.9.	Operating Processes for transferring authority back to the Balancing Authority in accordance with the Reliability Coordinator's criteria.	N/A
EOP-005-2	R2.	Each Transmission Operator shall provide the entities identified in its approved restoration plan with a description of any changes to their roles and specific tasks prior to the implementation date of the plan. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]	LOWER - Pending
EOP-005-2	R3.	Each Transmission Operator shall review its restoration plan and submit it to its Reliability Coordinator annually on a mutually agreed predetermined schedule. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R3.1.	If there are no changes to the previously submitted restoration plan, the Transmission Operator shall confirm annually on a predetermined schedule to its Reliability Coordinator that it has reviewed its restoration plan and no changes were necessary.	N/A

EOP-005-2	R4.	Each Transmission Operator shall update its restoration plan within 90 calendar days after identifying any unplanned permanent System modifications, or prior to implementing a planned BES modification, that would change the implementation of its restoration plan. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R4.1.	Each Transmission Operator shall submit its revised restoration plan to its Reliability Coordinator for approval within the same 90 calendar day period.	N/A
EOP-005-2	R5.	Each Transmission Operator shall have a copy of its latest Reliability Coordinator approved restoration plan within its primary and backup control rooms so that it is available to all of its System Operators prior to its implementation date. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]	LOWER - Pending
EOP-005-2	R6.	Each Transmission Operator shall verify through analysis of actual events, steady state and dynamic simulations, or testing that its restoration plan accomplishes its intended function. This shall be completed every five years at a minimum. Such analysis, simulations or testing shall verify: [Violation Risk Factor = Medium] [Time Horizon = Long-term Planning]	MEDIUM - Pending
EOP-005-2	R6.1.	The capability of Blackstart Resources to meet the Real and Reactive Power requirements of the Cranking Paths and the dynamic capability to supply initial Loads.	N/A
EOP-005-2	R6.2.	The location and magnitude of Loads required to control voltages and frequency within acceptable operating limits.	N/A
EOP-005-2	R6.3.	The capability of generating resources required to control voltages and frequency within acceptable operating limits.	N/A
EOP-005-2	R7.	Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, each affected Transmission Operator shall implement its restoration plan. If the restoration plan cannot be executed as expected the Transmission Operator shall utilize its restoration strategies to facilitate restoration. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]	HIGH - Pending

EOP-005-2	R8.	Following a Disturbance in which one or more areas of the BES shuts down and the use of Blackstart Resources is required to restore the shut down area to service, the Transmission Operator shall resynchronize area(s) with neighboring Transmission Operator area(s) only with the authorization of the Reliability Coordinator or in accordance with the established procedures of the Reliability Coordinator. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]	HIGH - Pending
EOP-005-2	R9.	Each Transmission Operator shall have Blackstart Resource testing requirements to verify that each Blackstart Resource is capable of meeting the requirements of its restoration plan. These Blackstart Resource testing requirements shall include: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R9.1.	The frequency of testing such that each Blackstart Resource is tested at least once every three calendar years.	N/A
EOP-005-2	R9.2.	A list of required tests including:	N/A
EOP-005-2	R9.2.1.	The ability to start the unit when isolated with no support from the BES or when designed to remain energized without connection to the remainder of the System.	N/A
EOP-005-2	R9.2.2.	The ability to energize a bus. If it is not possible to energize a bus during the test, the testing entity must affirm that the unit has the capability to energize a bus such as verifying that the breaker close coil relay can be energized with the voltage and frequency monitor controls disconnected from the synchronizing circuits.	N/A
EOP-005-2	R9.3.	The minimum duration of each of the required tests.	N/A
EOP-005-2	R10.	Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R10.1.	System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.	N/A
EOP-005-2	R10.2.	Restoration priorities.	N/A
EOP-005-2	R10.3.	Building of cranking paths.	N/A
EOP-005-2	R10.4.	Synchronizing (re-energized sections of the System).	N/A

EOP-005-2	R11.	Each Transmission Operator, each applicable Transmission Owner, and each applicable Distribution Provider shall provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator's restoration plan that are outside of their normal tasks. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R12.	Each Transmission Operator shall participate in its Reliability Coordinator's restoration drills, exercises, or simulations as requested by its Reliability Coordinator. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R13.	Each Transmission Operator and each Generator Operator with a Blackstart Resource shall have written Blackstart Resource Agreements or mutually agreed upon procedures or protocols, specifying the terms and conditions of their arrangement. Such Agreements shall include references to the Blackstart Resource testing requirements. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R14.	Each Generator Operator with a Blackstart Resource shall have documented procedures for starting each Blackstart Resource and energizing a bus. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R15.	Each Generator Operator with a Blackstart Resource shall notify its Transmission Operator of any known changes to the capabilities of that Blackstart Resource affecting the ability to meet the Transmission Operator's restoration plan within 24 hours following such change. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R16.	Each Generator Operator with a Blackstart Resource shall perform Blackstart Resource tests, and maintain records of such testing, in accordance with the testing requirements set by the Transmission Operator to verify that the Blackstart Resource can perform as specified in the restoration plan. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R16.1.	Testing records shall include at a minimum: name of the Blackstart Resource, unit tested, date of the test, duration of the test, time required to start the unit, an indication of any testing requirements not met under Requirement R9.	N/A
EOP-005-2	R16.2.	Each Generator Operator shall provide the blackstart test results within 30 calendar days following a request from its Reliability Coordinator or Transmission Operator.	N/A

EOP-005-2	R17.	Each Generator Operator with a Blackstart Resource shall provide a minimum of two hours of training every two calendar years to each of its operating personnel responsible for the startup of its Blackstart Resource generation units and energizing a bus. The training program shall include training on the following: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-005-2	R17.1.	System restoration plan including coordination with the Transmission Operator.	N/A
EOP-005-2	R17.2.	The procedures documented in Requirement R14.	N/A
EOP-005-2	R18.	Each Generator Operator shall participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-1	R1.	Each Reliability Coordinator shall be aware of the restoration plan of each Transmission Operator in its Reliability Coordinator Area in accordance with NERC and regional requirements.	MEDIUM
EOP-006-1	R2.	The Reliability Coordinator shall monitor restoration progress and coordinate any needed assistance.	HIGH
EOP-006-1	R3.	The Reliability Coordinator shall have a Reliability Coordinator Area restoration plan that provides coordination between individual Transmission Operator restoration plans and that ensures reliability is maintained during system restoration events.	MEDIUM
EOP-006-1	R4.	The Reliability Coordinator shall serve as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators and Transmission Operators or Balancing Authorities not immediately involved in restoration.	MEDIUM
EOP-006-1	R5.	Reliability Coordinators shall approve, communicate, and coordinate the re-synchronizing of major system islands or synchronizing points so as not to cause a Burden on adjacent Transmission Operator, Balancing Authority, or Reliability Coordinator Areas.	HIGH

EOP-006-1	R6.	The Reliability Coordinator shall take actions to restore normal operations once an operating emergency has been mitigated in accordance with its restoration plan.	MEDIUM
EOP-006-2	R1.	Each Reliability Coordinator shall have a Reliability Coordinator Area restoration plan. The scope of the Reliability Coordinator's restoration plan starts when Blackstart Resources are utilized to re-energize a shut down area of the Bulk Electric System (BES), or separation has occurred between neighboring Reliability Coordinators, or an energized island has been formed on the BES within the Reliability Coordinator Area. The scope of the Reliability Coordinator's restoration plan ends when all of its Transmission Operators are interconnected and it its Reliability Coordinator Area is connected to all of its neighboring Reliability Coordinator Areas. The restoration plan shall include: [Violation Risk Factor = High] [Time Horizon = Operations Planning]	HIGH - Pending
EOP-006-2	R1.1.	A description of the high level strategy to be employed during restoration events for restoring the Interconnection including minimum criteria for meeting the objectives of the Reliability Coordinator's restoration plan.	N/A
EOP-006-2	R1.2.	Operating Processes for restoring the Interconnection.	N/A
EOP-006-2	R1.3.	Descriptions of the elements of coordination between individual Transmission Operator restoration plans.	N/A
EOP-006-2	R1.4.	Descriptions of the elements of coordination of restoration plans with neighboring Reliability Coordinators.	N/A
EOP-006-2	R1.5.	Criteria and conditions for reestablishing interconnections with other Transmission Operators within its Reliability Coordinator Area, with Transmission Operators in other Reliability Coordinator Areas, and with other Reliability Coordinators.	N/A
EOP-006-2	R1.6.	Reporting requirements for the entities within the Reliability Coordinator Area during a restoration event.	N/A
EOP-006-2	R1.7.	Criteria for sharing information regarding restoration with neighboring Reliability Coordinators and with Transmission Operators and Balancing Authorities within its Reliability Coordinator Area.	N/A
EOP-006-2	R1.8.	Identification of the Reliability Coordinator as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators, and to Transmission Operators, and Balancing Authorities within its Reliability Coordinator Area.	N/A

EOP-006-2	R1.9.	Criteria for transferring operations and authority back to the Balancing Authority.	N/A
EOP-006-2	R2.	The Reliability Coordinator shall distribute its most recent Reliability Coordinator Area restoration plan to each of its Transmission Operators and neighboring Reliability Coordinators within 30 calendar days of creation or revision. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]	LOWER - Pending
EOP-006-2	R3.	Each Reliability Coordinator shall review its restoration plan within 13 calendar months of the last review. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-2	R4.	Each Reliability Coordinator shall review their neighboring Reliability Coordinator's restoration plans. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-2	R4.1.	If the Reliability Coordinator finds conflicts between its restoration plans and any of its neighbors, the conflicts shall be resolved in 30 calendar days.	N/A
EOP-006-2	R5.	Each Reliability Coordinator shall review the restoration plans required by EOP-005 of the Transmission Operators within its Reliability Coordinator Area. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-2	R5.1.	The Reliability Coordinator shall determine whether the Transmission Operator's restoration plan is coordinated and compatible with the Reliability Coordinator's restoration plan and other Transmission Operators' restoration plans within its Reliability Coordinator Area. The Reliability Coordinator shall approve or disapprove, with stated reasons, the Transmission Operator's submitted restoration plan within 30 calendar days following the receipt of the restoration plan from the Transmission Operator.	N/A
EOP-006-2	R6.	Each Reliability Coordinator shall have a copy of its latest restoration plan and copies of the latest approved restoration plan of each Transmission Operator in its Reliability Coordinator Area within its primary and backup control rooms so that it is available to all of its System Operators prior to the implementation date. [Violation Risk Factor = Lower] [Time Horizon = Operations Planning]	LOWER - Pending

EOP-006-2	R7.	Each Reliability Coordinator shall work with its affected Generator Operators, and Transmission Operators as well as neighboring Reliability Coordinators to monitor restoration progress, coordinate restoration, and take actions to restore the BES frequency within acceptable operating limits. If the restoration plan cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate System restoration. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]	HIGH - Pending
EOP-006-2	R8.	The Reliability Coordinator shall coordinate or authorize resynchronizing islanded areas that bridge boundaries between Transmission Operators or Reliability Coordinators. If the resynchronization cannot be completed as expected the Reliability Coordinator shall utilize its restoration plan strategies to facilitate resynchronization. [Violation Risk Factor = High] [Time Horizon = Real-time Operations]	HIGH - Pending
EOP-006-2	R9.	Each Reliability Coordinator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall address the following: [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-2	R9.1.	The coordination role of the Reliability Coordinator.	N/A
EOP-006-2	R9.2.	Reestablishing the Interconnection.	N/A
EOP-006-2	R10.	Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. [Violation Risk Factor = Medium] [Time Horizon = Operations Planning]	MEDIUM - Pending
EOP-006-2	R10.1.	Each Reliability Coordinator shall request each Transmission Operator identified in its restoration plan and each Generator Operator identified in the Transmission Operators' restoration plans to participate in a drill, exercise, or simulation at least every two calendar years.	N/A
EOP-008-0	R1.	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have a plan to continue reliability operations in the event its control center becomes inoperable. The contingency plan must meet the following requirements:	HIGH

EOP-008-0	R1.1.	The contingency plan shall not rely on data or voice communication from the primary control facility to be viable.	MEDIUM
EOP-008-0	R1.2.	The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules.	MEDIUM
EOP-008-0	R1.3.	The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities.	MEDIUM
EOP-008-0	R1.4.	The plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with other areas.	HIGH
EOP-008-0	R1.5.	The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.	MEDIUM
EOP-008-0	R1.6.	The plan shall include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans.	MEDIUM
EOP-008-0	R1.7.	The plan shall be reviewed and updated annually.	MEDIUM
EOP-008-0	R1.8.	Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.	MEDIUM
EOP-008-1	R1.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a current Operating Plan describing the manner in which it continues to meet its functional obligations with regard to the reliable operations of the BES in the event that its primary control center functionality is lost. This Operating Plan for backup functionality shall include the following, at a minimum: [See <i>standard for what the Operating Plan shall include</i>]	MEDIUM - Pending

EOP-008-1	R2.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have a copy of its current Operating Plan for backup functionality available at its primary control center and at the location providing backup functionality.	LOWER - Pending
EOP-008-1	R3.	Each Reliability Coordinator shall have a backup control center facility (provided through its own dedicated backup facility or at another entity's control center staffed with certified Reliability Coordinator operators when control has been transferred to the backup facility) that provides the functionality required for maintaining compliance with all Reliability Standards that depend on primary control center functionality. To avoid requiring a tertiary facility, a backup facility is not required during: [<i>See standard for situations where a backup facility is not required</i>]	MEDIUM - Pending
EOP-008-1	R4.	Each Balancing Authority and Transmission Operator shall have backup functionality (provided either through a facility or contracted services staffed by applicable certified operators when control has been transferred to the backup functionality location) that includes monitoring, control, logging, and alarming sufficient for maintaining compliance with all Reliability Standards that depend on a Balancing Authority and Transmission Operator's primary control center functionality respectively. To avoid requiring tertiary functionality, backup functionality is not required during: [<i>See standard for situations where a backup facility is not required</i>]	MEDIUM - Pending
EOP-008-1	R5.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator, shall annually review and approve its Operating Plan for backup functionality. [<i>See standard for update and approval requirements</i>]	LOWER - Pending
EOP-008-1	R6.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall have primary and backup functionality that do not depend on each other for the control center functionality required to maintain compliance with Reliability Standards.	MEDIUM - Pending
EOP-008-1	R7.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator shall conduct and document results of an annual test of its Operating Plan that demonstrates: [<i>See standard for what the annual test shall demonstrate</i>]	MEDIUM - Pending

EOP-008-1	R8.	Each Reliability Coordinator, Balancing Authority, and Transmission Operator that has experienced a loss of its primary or backup functionality and that anticipates that the loss of primary or backup functionality will last for more than six calendar months shall provide a plan to its Regional Entity within six calendar months of the date when the functionality is lost, showing how it will re-establish primary or backup functionality.	MEDIUM - Pending
EOP-009-0	R1.	The Generator Operator of each blackstart generating unit shall test the startup and operation of each system blackstart generating unit identified in the BCP as required in the Regional BCP (Reliability Standard EOP-007-0_R1). Testing records shall include the dates of the tests, the duration of the tests, and an indication of whether the tests met Regional BCP requirements.	MEDIUM
EOP-009-0	R2.	The Generator Owner or Generator Operator shall provide documentation of the test results of the startup and operation of each blackstart generating unit to the Regional Reliability Organizations and upon request to NERC.	LOWER
FAC-001-0	R1.	The Transmission Owner shall document, maintain, and publish facility connection requirements to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization, subregional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements. The Transmission Owner's facility connection requirements shall address connection requirements for:	MEDIUM
FAC-001-0	R1.1.	Generation facilities,	MEDIUM
FAC-001-0	R1.2.	Transmission facilities, and	MEDIUM
FAC-001-0	R1.3.	End-user facilities	MEDIUM
FAC-001-0	R2.	The Transmission Owner's facility connection requirements shall address, but are not limited to, the following items:	MEDIUM

FAC-001-0	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	MEDIUM
FAC-001-0	R2.1.1.	Procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems.	MEDIUM
FAC-001-0	R2.1.2.	Procedures for notification of new or modified facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible.	MEDIUM
FAC-001-0	R2.1.3.	Voltage level and MW and MVAR capacity or demand at point of connection.	MEDIUM
FAC-001-0	R2.1.4.	Breaker duty and surge protection.	MEDIUM
FAC-001-0	R2.1.5.	System protection and coordination.	MEDIUM
FAC-001-0	R2.1.6.	Metering and telecommunications.	MEDIUM
FAC-001-0	R2.1.7.	Grounding and safety issues.	MEDIUM
FAC-001-0	R2.1.8.	Insulation and insulation coordination.	MEDIUM
FAC-001-0	R2.1.9.	Voltage, Reactive Power, and power factor control.	MEDIUM
FAC-001-0	R2.1.10.	Power quality impacts.	MEDIUM
FAC-001-0	R2.1.11.	Equipment Ratings.	MEDIUM
FAC-001-0	R2.1.12.	Synchronizing of facilities.	MEDIUM
FAC-001-0	R2.1.13.	Maintenance coordination.	MEDIUM

FAC-001-0	R2.1.14.	Operational issues (abnormal frequency and voltages).	MEDIUM
FAC-001-0	R2.1.15.	Inspection requirements for existing or new facilities.	MEDIUM
FAC-001-0	R2.1.16.	Communications and procedures during normal and emergency operating conditions.	MEDIUM
FAC-001-0	R3.	The Transmission Owner shall maintain and update its facility connection requirements as required. The Transmission Owner shall make documentation of these requirements available to the users of the transmission system, the Regional Reliability Organization, and NERC on request (five business days).	MEDIUM
FAC-002-0	R1.	The Generator Owner, Transmission Owner, Distribution Provider, and Load-Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall each coordinate and cooperate on its assessments with its Transmission Planner and Planning Authority. The assessment shall include:	MEDIUM
FAC-002-0	R1.1.	Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.	MEDIUM
FAC-002-0	R1.2.	Ensurance of compliance with NERC Reliability Standards and applicable Regional, subregional, Power Pool, and individual system planning criteria and facility connection requirements.	MEDIUM
FAC-002-0	R1.3.	Evidence that the parties involved in the assessment have coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.	MEDIUM
FAC-002-0	R1.4.	Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance in accordance with Reliability Standard TPL-001-0.	MEDIUM

FAC-002-0	R1.5.	Documentation that the assessment included study assumptions, system performance, alternatives considered, and jointly coordinated recommendations.	MEDIUM
FAC-002-0	R2.	The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems) for three years and shall provide the documentation to the Regional Reliability Organization(s) Regional Reliability Organization(s) and NERC on request (within 30 calendar days).	LOWER
FAC-002-1	R1.	The Generator Owner, Transmission Owner, Distribution Provider, and Load-Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall each coordinate and cooperate on its assessments with its Transmission Planner and Planning Authority. The assessment shall include:	MEDIUM
FAC-002-1	R1.1.	Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.	MEDIUM
FAC-002-1	R1.2.	Ensurance of compliance with NERC Reliability Standards and applicable Regional, subregional, Power Pool, and individual system planning criteria and facility connection requirements.	MEDIUM
FAC-002-1	R1.3.	Evidence that the parties involved in the assessment have coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.	MEDIUM
FAC-002-1	R1.4.	Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance under both normal and contingency conditions in accordance with Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.	MEDIUM

FAC-002-1	R1.5.	Documentation that the assessment included study assumptions, system performance, alternatives considered, and jointly coordinated recommendations.	MEDIUM
FAC-002-1	R2.	The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems) for three years and shall provide the documentation to the Regional Reliability Organization(s) and NERC on request (within 30 calendar days).	LOWER
FAC-003-1	R1.	The Transmission owner shall prepare, and keep current, a formal transmission vegetation management (TVM). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work Specifications. 1. ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.	HIGH
FAC-003-1	R1.1.	The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.	HIGH
FAC-003-1	R1.2.	The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.	HIGH

FAC-003-1	R1.2.1.	Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the Transmission Owner plans to return for future vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.	HIGH
FAC-003-1	R1.2.2.	Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (<i>Guide for Maintenance Methods on Energized Power Lines</i>) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.	HIGH
FAC-003-1	R1.2.2.1.	Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.	HIGH
FAC-003-1	R1.2.2.2.	Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.	HIGH
FAC-003-1	R1.3.	All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.	HIGH

FAC-003-1	R1.4.	Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.	HIGH
FAC-003-1	R1.5.	Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.	HIGH
FAC-003-1	R2.	The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.	HIGH
FAC-003-1	R3.	The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.	LOWER
FAC-003-1	R3.1.	Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.	LOWER

FAC-003-1	R3.2.	The Transmission Owner is not required to report to the RRO, or the RRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).	LOWER
FAC-003-1	R3.3.	The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.	LOWER
FAC-003-1	R3.4.	An outage shall be categorized as one of the following:	LOWER
FAC-003-1	R3.4.1.	Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;	LOWER
FAC-003-1	R3.4.2.	Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;	LOWER
FAC-003-1	R3.4.3.	Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.	LOWER
FAC-003-1	R4.	The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.	LOWER

FAC-008-1	R1.	The Transmission Owner and Generator Owner shall each document its current methodology used for developing Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned Facilities. The methodology shall include all of the following:	LOWER
FAC-008-1	R1.1.	A statement that a Facility Rating shall equal the most limiting applicable Equipment Rating of the individual equipment that comprises that Facility.	MEDIUM
FAC-008-1	R1.2.	The method by which the Rating (of major BES equipment that comprises a Facility) is determined.	MEDIUM
FAC-008-1	R1.2.1.	The scope of equipment addressed shall include, but not be limited to, generators, transmission conductors, transformers, relay protective devices, terminal equipment, and series and shunt compensation devices.	MEDIUM
FAC-008-1	R1.2.2.	The scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings.	MEDIUM
FAC-008-1	R1.3.	Consideration of the following:	LOWER
FAC-008-1	R1.3.1.	Ratings provided by equipment manufacturers.	MEDIUM
FAC-008-1	R1.3.2.	Design criteria (e.g., including applicable references to industry Rating practices such as manufacturer's warranty, IEEE, ANSI or other standards).	MEDIUM
FAC-008-1	R1.3.3.	Ambient conditions.	MEDIUM
FAC-008-1	R1.3.4.	Operating limitations.	MEDIUM
FAC-008-1	R1.3.5.	Other assumptions.	LOWER

FAC-008-1	R2.	The Transmission Owner and Generator Owner shall each make its Facility Ratings Methodology available for inspection and technical review by those Reliability Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities that have responsibility for the area in which the associated Facilities are located, within 15 business days of receipt of a request.	LOWER
FAC-008-1	R3.	If a Reliability Coordinator, Transmission Operator, Transmission Planner, or Planning Authority provides written comments on its technical review of a Transmission Owner's or Generator Owner's Facility Ratings Methodology, the Transmission Owner or Generator Owner shall provide a written response to that commenting entity within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the Facility Ratings Methodology and, if no change will be made to that Facility Ratings Methodology, the reason why.	LOWER
FAC-009-1	R1.	The Transmission Owner and Generator Owner shall each establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the associated Facility Ratings Methodology.	MEDIUM
FAC-009-1	R2.	The Transmission Owner and Generator Owner shall each provide Facility Ratings for its solely and jointly owned Facilities that are existing Facilities, new Facilities, modifications to existing Facilities and re-ratings of existing Facilities to its associated Reliability Coordinator(s), Planning Authority(ies), Transmission Planner(s), and Transmission Operator(s) as scheduled by such requesting entities.	MEDIUM
FAC-010-2.1	R1.	The Planning Authority shall have a documented SOL Methodology for use in developing SOLs within its Planning Authority Area. This SOL Methodology shall:	LOWER
FAC-010-2.1	R1.1.	Be applicable for developing SOLs used in the planning horizon.	LOWER
FAC-010-2.1	R1.2.	State that SOLs shall not exceed associated Facility Ratings.	LOWER
FAC-010-2.1	R1.3.	Include a description of how to identify the subset of SOLs that qualify as IROLs.	LOWER
FAC-010-2.1	R2.	The Planning Authority's SOL Methodology shall include a requirement that SOLs provide BES performance consistent with the following:	No VRF Assigned

FAC-010-2.1	R2.1.	In the pre-contingency state and with all Facilities in service, the BES shall demonstrate transient, dynamic and voltage stability; all Facilities shall be within their Facility Ratings and within their thermal, voltage and stability limits. In the determination of SOLs, the BES condition used shall reflect expected system conditions and shall reflect changes to system topology such as Facility outages.	HIGH
FAC-010-2.1	R2.2.	Following the single Contingencies identified in Requirement 2.2.1 through Requirement 2.2.3, the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	HIGH
FAC-010-2.1	R2.2.1.	Single line to ground or three-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device.	MEDIUM
FAC-010-2.1	R2.2.2.	Loss of any generator, line, transformer, or shunt device without a Fault.	MEDIUM
FAC-010-2.1	R2.2.3.	Single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.	MEDIUM
FAC-010-2.1	R2.3.	Starting with all Facilities in service, the system's response to a single Contingency, may include any of the following:	MEDIUM
FAC-010-2.1	R2.3.1.	Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area.	MEDIUM
FAC-010-2.1	R2.3.2.	System reconfiguration through manual or automatic control or protection actions.	MEDIUM
FAC-010-2.1	R2.4.	To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.	MEDIUM
FAC-010-2.1	R2.5.	Starting with all Facilities in service and following any of the multiple Contingencies identified in Reliability Standard TPL-003 the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	MEDIUM
FAC-010-2.1	R2.6.	In determining the system's response to any of the multiple Contingencies, identified in Reliability Standard TPL-003, in addition to the actions identified in R2.3.1 and R2.3.2, the following shall be acceptable:	MEDIUM

FAC-010-2.1	R2.6.1.	Planned or controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted Firm (non-recallable reserved) electric power Transfers.	MEDIUM
FAC-010-2.1	R3.	The Planning Authority's methodology for determining SOLs, shall include, as a minimum, a description of the following, along with any reliability margins applied for each:	LOWER
FAC-010-2.1	R3.1.	Study model (must include at least the entire Planning Authority Area as well as the critical modeling details from other Planning Authority Areas that would impact the Facility or Facilities under study).	LOWER
FAC-010-2.1	R3.2.	Selection of applicable Contingencies.	LOWER
FAC-010-2.1	R3.3.	Level of detail of system models used to determine SOLs.	LOWER
FAC-010-2.1	R3.4.	Allowed uses of Special Protection Systems or Remedial Action Plans.	MEDIUM
FAC-010-2.1	R3.5.	Anticipated transmission system configuration, generation dispatch and Load level.	LOWER
FAC-010-2.1	R3.6.	Criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit (IROL) and criteria for developing any associated IROL Tv.	MEDIUM
FAC-010-2.1	R4.	The Planning Authority shall issue its SOL Methodology, and any change to that methodology, to all of the following prior to the effectiveness of the change:	LOWER
FAC-010-2.1	R4.1.	Each adjacent Planning Authority and each Planning Authority that indicated it has a reliability-related need for the methodology.	LOWER
FAC-010-2.1	R4.2.	Each Reliability Coordinator and Transmission Operator that operates any portion of the Planning Authority's Planning Authority Area.	LOWER
FAC-010-2.1	R4.3.	Each Transmission Planner that works in the Planning Authority's Planning Authority Area.	LOWER
FAC-010-2.1	R5.	If a recipient of the SOL Methodology provides documented technical comments on the methodology, the Planning Authority shall provide a documented response to that recipient within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the SOL Methodology and, if no change will be made to that SOL Methodology, the reason why.	LOWER
FAC-011-2	R1.	The Reliability Coordinator shall have a documented methodology for use in developing SOLs (SOL Methodology) within its Reliability Coordinator Area. This SOL Methodology shall:	LOWER

FAC-011-2	R1.1.	Be applicable for developing SOLs used in the operations horizon.	LOWER
FAC-011-2	R1.2.	State that SOLs shall not exceed associated Facility Ratings.	LOWER
FAC-011-2	R1.3.	Include a description of how to identify the subset of SOLs that qualify as IROLs.	LOWER
FAC-011-2	R2.	The Reliability Coordinator's SOL Methodology shall include a requirement that SOLs provide BES performance consistent with the following:	No VRF Assigned
FAC-011-2	R2.1.	In the pre-contingency state, the BES shall demonstrate transient, dynamic and voltage stability; all Facilities shall be within their Facility Ratings and within their thermal, voltage and stability limits. In the determination of SOLs, the BES condition used shall reflect current or expected system conditions and shall reflect changes to system topology such as Facility outages.	HIGH
FAC-011-2	R2.2.	Following the single Contingencies identified in Requirement 2.2.1 through Requirement 2.2.3, the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	HIGH
FAC-011-2	R2.2.1.	Single line to ground or 3-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device.	MEDIUM
FAC-011-2	R2.2.2.	Loss of any generator, line, transformer, or shunt device without a Fault.	MEDIUM
FAC-011-2	R2.2.3.	Single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.	MEDIUM
FAC-011-2	R2.3.	In determining the system's response to a single Contingency, the following shall be acceptable:	MEDIUM
FAC-011-2	R2.3.1.	Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area.	MEDIUM
FAC-011-2	R2.3.2.	Interruption of other network customers, (a) only if the system has already been adjusted, or is being adjusted, following at least one prior outage, or (b) if the real-time operating conditions are more adverse than anticipated in the corresponding studies	MEDIUM
FAC-011-2	R2.3.3.	System reconfiguration through manual or automatic control or protection actions.	MEDIUM
FAC-011-2	R2.4.	To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.	MEDIUM

FAC-011-2	R3.	The Reliability Coordinator's methodology for determining SOLs, shall include, as a minimum, a description of the following, along with any reliability margins applied for each:	MEDIUM
FAC-011-2	R3.1.	Study model (must include at least the entire Reliability Coordinator Area as well as the critical modeling details from other Reliability Coordinator Areas that would impact the Facility or Facilities under study.)	MEDIUM
FAC-011-2	R3.2.	Selection of applicable Contingencies	MEDIUM
FAC-011-2	R3.3.	A process for determining which of the stability limits associated with the list of multiple contingencies (provided by the Planning Authority in accordance with FAC-014 Requirement 6) are applicable for use in the operating horizon given the actual or expected system conditions.	MEDIUM
FAC-011-2	R3.3.1.	This process shall address the need to modify these limits, to modify the list of limits, and to modify the list of associated multiple contingencies.	No VRF Assigned
FAC-011-2	R3.4.	Level of detail of system models used to determine SOLs.	LOWER
FAC-011-2	R3.5.	Allowed uses of Special Protection Systems or Remedial Action Plans.	MEDIUM
FAC-011-2	R3.6.	Anticipated transmission system configuration, generation dispatch and Load level	MEDIUM
FAC-011-2	R3.7.	Criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit (IROL) and criteria for developing any associated IROL Tv.	MEDIUM
FAC-011-2	R4.	The Reliability Coordinator shall issue its SOL Methodology and any changes to that methodology, prior to the effectiveness of the Methodology or of a change to the Methodology, to all of the following:	LOWER
FAC-011-2	R4.1.	Each adjacent Reliability Coordinator and each Reliability Coordinator that indicated it has a reliability-related need for the methodology.	LOWER
FAC-011-2	R4.2.	Each Planning Authority and Transmission Planner that models any portion of the Reliability Coordinator's Reliability Coordinator Area.	LOWER
FAC-011-2	R4.3.	Each Transmission Operator that operates in the Reliability Coordinator Area.	LOWER
FAC-011-2	R5.	If a recipient of the SOL Methodology provides documented technical comments on the methodology, the Reliability Coordinator shall provide a documented response to that recipient within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the SOL Methodology and, if no change will be made to that SOL Methodology, the reason why.	LOWER

FAC-013-1	R1.	The Reliability Coordinator and Planning Authority shall each establish a set of inter-regional and intra-regional Transfer Capabilities that is consistent with its current Transfer Capability Methodology.	MEDIUM
FAC-013-1	R2.	The Reliability Coordinator and Planning Authority shall each provide its inter-regional and intra-regional Transfer Capabilities to those entities that have a reliability-related need for such Transfer Capabilities and make a written request that includes a schedule for delivery of such Transfer Capabilities as follows:	MEDIUM
FAC-013-1	R2.1.	The Reliability Coordinator shall provide its Transfer Capabilities to its associated Regional Reliability Organization(s), to its adjacent Reliability Coordinators, and to the Transmission Operators, Transmission Service Providers and Planning Authorities that work in its Reliability Coordinator Area.	MEDIUM
FAC-013-1	R2.2.	The Planning Authority shall provide its Transfer Capabilities to its associated Reliability Coordinator(s) and Regional Reliability Organization(s), and to the Transmission Planners and Transmission Service Provider(s) that work in its Planning Authority Area.	MEDIUM
FAC-014-2	R1.	The Reliability Coordinator shall ensure that SOLs, including Interconnection Reliability Operating Limits (IROLs), for its Reliability Coordinator Area are established and that the SOLs (including Interconnection Reliability Operating Limits) are consistent with its SOL Methodology.	MEDIUM
FAC-014-2	R2.	The Transmission Operator shall establish SOLs (as directed by its Reliability Coordinator) for its portion of the Reliability Coordinator Area that are consistent with its Reliability Coordinator's SOL Methodology.	MEDIUM
FAC-014-2	R3.	The Planning Authority shall establish SOLs, including IROLs, for its Planning Authority Area that are consistent with its SOL Methodology.	MEDIUM

FAC-014-2	R4.	The Transmission Planner shall establish SOLs, including IROLs, for its Transmission Planning Area that are consistent with its Planning Authority's SOL Methodology.	MEDIUM
FAC-014-2	R5.	The Reliability Coordinator, Planning Authority and Transmission Planner shall each provide its SOLs and IROLs to those entities that have a reliability-related need for those limits and provide a written request that includes a schedule for delivery of those limits as follows:	HIGH
FAC-014-2	R5.1.	The Reliability Coordinator shall provide its SOLs (including the subset of SOLs that are IROLs) to adjacent Reliability Coordinators and Reliability Coordinators who indicate a reliability-related need for those limits, and to the Transmission Operators, Transmission Planners, Transmission Service Providers and Planning Authorities within its Reliability Coordinator Area. For each IROL, the Reliability Coordinator shall provide the following supporting information:	HIGH
FAC-014-2	R5.1.1.	Identification and status of the associated Facility (or group of Facilities) that is (are) critical to the derivation of the IROL.	MEDIUM
FAC-014-2	R5.1.2.	The value of the IROL and its associated Tv.	MEDIUM
FAC-014-2	R5.1.3.	The associated Contingency(ies).	MEDIUM
FAC-014-2	R5.1.4.	The type of limitation represented by the IROL (e.g., voltage collapse, angular stability).	MEDIUM
FAC-014-2	R5.2.	The Transmission Operator shall provide any SOLs it developed to its Reliability Coordinator and to the Transmission Service Providers that share its portion of the Reliability Coordinator Area.	MEDIUM
FAC-014-2	R5.3.	The Planning Authority shall provide its SOLs (including the subset of SOLs that are IROLs) to adjacent Planning Authorities, and to Transmission Planners, Transmission Service Providers, Transmission Operators and Reliability Coordinators that work within its Planning Authority Area.	MEDIUM

FAC-014-2	R5.4.	The Transmission Planner shall provide its SOLs (including the subset of SOLs that are IROLs) to its Planning Authority, Reliability Coordinators, Transmission Operators, and Transmission Service Providers that work within its Transmission Planning Area and to adjacent Transmission Planners.	MEDIUM
FAC-014-2	R6.	The Planning Authority shall identify the subset of multiple contingencies (if any), from Reliability Standard TPL-003 which result in stability limits.	MEDIUM
FAC-014-2	R6.1.	The Planning Authority shall provide this list of multiple contingencies and the associated stability limits to the Reliability Coordinators that monitor the facilities associated with these contingencies and limits.	MEDIUM
FAC-014-2	R6.2.	If the Planning Authority does not identify any stability-related multiple contingencies, the Planning Authority shall so notify the Reliability Coordinator.	MEDIUM
FAC-501-WECC-1	R.1.	Transmission Owners shall have a TMIP detailing their inspection and maintenance requirements that apply to all transmission facilities necessary for System Operating Limits associated with each of the transmission paths identified in table titled "Major WECC Transfer Paths in the Bulk Electric System." [Time Horizon: Long-term Planning]	MEDIUM
FAC-501-WECC-1	R1.1.	Transmission Owners shall annually review their TMIP and update as required. [Time Horizon: Long-term Planning]	MEDIUM
FAC-501-WECC-1	R.2.	Transmission Owners shall include the maintenance categories in Attachment 1-FAC-501-WECC-1 when developing their TMIP. [Time Horizon: Operations Assessment]	MEDIUM
FAC-501-WECC-1	R.3.	Transmission Owners shall implement and follow their TMIP. [Time Horizon: Operations Assessment]	MEDIUM
INT-001-3	R1.	The Load-Serving, Purchasing-Selling Entity shall ensure that Arranged Interchange is submitted to the Interchange Authority for:	LOWER
INT-001-3	R1.1.	All Dynamic Schedules at the expected average MW profile for each hour.	LOWER
INT-001-3	R2.	The Sink Balancing Authority shall ensure that Arranged Interchange is submitted to the Interchange Authority:	LOWER

INT-001-3	R2.1.	If a Purchasing-Selling Entity is not involved in the Interchange, such as delivery from a jointly owned generator.	LOWER
INT-001-3	R2.2.	For each bilateral Inadvertent Interchange payback.	LOWER
INT-003-3	R1.	Each Receiving Balancing Authority shall confirm Interchange Schedules with the Sending Balancing Authority prior to implementation in the Balancing Authority's ACE equation.	MEDIUM
INT-003-3	R1.1.	The Sending Balancing Authority and Receiving Balancing Authority shall agree on Interchange as received from the Interchange Authority, including:	LOWER
INT-003-3	R1.1.1.	Interchange Schedule start and end time.	LOWER
INT-003-3	R1.1.2.	Energy profile.	LOWER
INT-003-3	R1.2.	If a high voltage direct current (HVDC) tie is on the Scheduling Path, then the Sending Balancing Authorities and Receiving Balancing Authorities shall coordinate the Interchange Schedule with the Transmission Operator of the HVDC tie.	MEDIUM
INT-004-2	R1.	At such time as the reliability event allows for the reloading of the transaction, the entity that initiated the curtailment shall release the limit on the Interchange Transaction tag to allow reloading the transaction and shall communicate the release of the limit to the Sink Balancing Authority.	LOWER
INT-004-2	R2.	The Purchasing-Selling Entity responsible for tagging a Dynamic Interchange Schedule shall ensure the tag is updated for the next available scheduling hour and future hours when any one of the following occurs:	LOWER
INT-004-2	R2.1.	The average energy profile in an hour is greater than 250 MW and in that hour the actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +10%.	LOWER
INT-004-2	R2.2.	The average energy profile in an hour is less than or equal to 250 MW and in that hour the actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +25 megawatt-hours.	LOWER
INT-004-2	R2.3.	A Reliability Coordinator or Transmission Operator determines the deviation, regardless of magnitude, to be a reliability concern and notifies the Purchasing-Selling Entity of that determination and the reasons.	LOWER
INT-005-3	R1.	Prior to the expiration of the time period defined in the timing requirements tables in this standard, Column A, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment to all reliability entities	MEDIUM

		involved in the Interchange.	
INT-005-3	R1.1.	When a Balancing Authority or Reliability Coordinator initiates a Curtailment to Confirmed or Implemented Interchange for reliability, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment only to the Source Balancing Authority and the Sink Balancing Authority.	MEDIUM
INT-006-3	R1.	Prior to the expiration of the reliability assessment period defined in the timing requirements tables in this standard, Column B, the Balancing Authority and Transmission Service Provider shall respond to each On-time Request for Interchange (RFI), and to each Emergency RFI and Reliability Adjustment RFI from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.	LOWER
INT-006-3	R1.1.	Each involved Balancing Authority shall evaluate the Arranged Interchange with respect to:	LOWER
INT-006-3	R1.1.1.	Energy profile (ability to support the magnitude of the Interchange).	LOWER
INT-006-3	R1.1.2.	Ramp (ability of generation maneuverability to accommodate).	LOWER
INT-006-3	R1.1.3.	Scheduling path (proper connectivity of Adjacent Balancing Authorities).	LOWER
INT-006-3	R1.2.	Each involved Transmission Service Provider shall confirm that the transmission service arrangements associated with the Arranged Interchange have adjacent Transmission Service Provider connectivity, are valid and prevailing transmission system limits will not be violated.	LOWER
INT-007-1	R1.	The Interchange Authority shall verify that Arranged Interchange is balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange by verifying the following:	LOWER
INT-007-1	R1.1.	Source Balancing Authority megawatts equal sink Balancing Authority megawatts (adjusted for losses, if appropriate).	LOWER
INT-007-1	R1.2.	All reliability entities involved in the Arranged Interchange are currently in the NERC registry.	LOWER
INT-007-1	R1.3.	The following are defined:	LOWER

INT-007-1	R1.3.1.	Generation source and load sink.	LOWER
INT-007-1	R1.3.2.	Megawatt profile.	LOWER
INT-007-1	R1.3.3.	Ramp start and stop times.	LOWER
INT-007-1	R1.3.4.	Interchange duration.	LOWER
INT-007-1	R1.4.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment has provided approval.	LOWER
INT-008-3	R1.	Prior to the expiration of the time period defined in the Timing Table, Column C, the Interchange Authority shall distribute to all Balancing Authorities (including Balancing Authorities on both sides of a direct current tie), Transmission Service Providers and Purchasing-Selling Entities involved in the Arranged Interchange whether or not the Arranged Interchange has transitioned to a Confirmed Interchange.	LOWER
INT-008-3	R1.1.	For Confirmed Interchange, the Interchange Authority shall also communicate:	LOWER
INT-008-3	R1.1.1.	Start and stop times, ramps, and megawatt profile to Balancing Authorities.	LOWER
INT-008-3	R1.1.2.	Necessary Interchange information to NERC-identified reliability analysis services.	LOWER
INT-009-1	R1.	The Balancing Authority shall implement Confirmed Interchange as received from the Interchange Authority.	MEDIUM

INT-010-1	R1.	The Balancing Authority that experiences a loss of resources covered by an energy sharing agreement shall ensure that a request for an Arranged Interchange is submitted with a start time no more than 60 minutes beyond the resource loss. If the use of the energy sharing agreement does not exceed 60 minutes from the time of the resource loss, no request for Arranged Interchange is required.	LOWER
INT-010-1	R2.	For a modification to an existing Interchange schedule that is directed by a Reliability Coordinator for current or imminent reliability-related reasons, the Reliability Coordinator shall direct a Balancing Authority to submit the modified Arranged Interchange reflecting that modification within 60 minutes of the initiation of the event.	LOWER
INT-010-1	R3.	For a new Interchange schedule that is directed by a Reliability Coordinator for current or imminent reliability-related reasons, the Reliability Coordinator shall direct a Balancing Authority to submit an Arranged Interchange reflecting that Interchange schedule within 60 minutes of the initiation of the event.	LOWER
IRO-001-1.1	R1.	Each Regional Reliability Organization, subregion, or interregional coordinating group shall establish one or more Reliability Coordinators to continuously assess transmission reliability and coordinate emergency operations among the operating entities within the region and across the regional boundaries.	HIGH
IRO-001-1.1	R2.	The Reliability Coordinator shall comply with a regional reliability plan approved by the NERC Operating Committee.	HIGH
IRO-001-1.1	R3.	The Reliability Coordinator shall have clear decision-making authority to act and to direct actions to be taken by Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities within its Reliability Coordinator Area to preserve the integrity and reliability of the Bulk Electric System. These actions shall be taken without delay, but no longer than 30 minutes.	HIGH

IRO-001-1.1	R4.	Reliability Coordinators that delegate tasks to other entities shall have formal operating agreements with each entity to which tasks are delegated. The Reliability Coordinator shall verify that all delegated tasks are understood, communicated, and addressed within its Reliability Coordinator Area. All responsibilities for complying with NERC and regional standards applicable to Reliability Coordinators shall remain with the Reliability Coordinator.	MEDIUM
IRO-001-1.1	R5.	The Reliability Coordinator shall list within its reliability plan all entities to which the Reliability Coordinator has delegated required tasks.	LOWER
IRO-001-1.1	R6.	The Reliability Coordinator shall verify that all delegated tasks are carried out by NERC-certified Reliability Coordinator operating personnel.	MEDIUM
IRO-001-1.1	R7.	The Reliability Coordinator shall have clear, comprehensive coordination agreements with adjacent Reliability Coordinators to ensure that System Operating Limit or Interconnection Reliability Operating Limit violation mitigation requiring actions in adjacent Reliability Coordinator Areas are coordinated.	HIGH
IRO-001-1.1	R8.	Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall comply with Reliability Coordinator directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. Under these circumstances, the Transmission Operator, Balancing Authority, Generator Operator, Transmission Service Provider, Load-Serving Entity, or Purchasing-Selling Entity shall immediately inform the Reliability Coordinator of the inability to perform the directive so that the Reliability Coordinator may implement alternate remedial actions.	HIGH
IRO-001-1.1	R9.	The Reliability Coordinator shall act in the interests of reliability for the overall Reliability Coordinator Area and the Interconnection before the interests of any other entity.	HIGH

IRO-002-1	R1.	Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time emergency condition.	HIGH
IRO-002-1	R2.	Each Reliability Coordinator shall determine the data requirements to support its reliability coordination tasks and shall request such data from its Transmission Operators, Balancing Authorities, Transmission Owners, Generation Owners, Generation Operators, and Load-Serving Entities, or adjacent Reliability Coordinators.	MEDIUM
IRO-002-1	R3.	Each Reliability Coordinator – or its Transmission Operators and Balancing Authorities – shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network.	MEDIUM
IRO-002-1	R4.	Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection.	HIGH
IRO-002-1	R5.	Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure.	HIGH

IRO-002-1	R6.	Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.	HIGH
IRO-002-1	R7.	Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays.	HIGH
IRO-002-1	R8.	Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and IROL monitoring and derivations continue if the main monitoring system is unavailable.	HIGH
IRO-002-1	R9.	Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.	MEDIUM
IRO 002-2	R1.	Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time emergency condition.	HIGH - Pending
IRO 002-2	R2.	Each Reliability Coordinator — or its Transmission Operators and Balancing Authorities — shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network.	MEDIUM - Pending
IRO 002-2	R3.	Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection.	MEDIUM - Pending

IRO 002-2	R4.	Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure.	HIGH - Pending
IRO 002-2	R5.	Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.	HIGH - Pending
IRO 002-2	R6.	Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays.	HIGH - Pending
IRO 002-2	R7.	Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and IROL monitoring and derivations continue if the main monitoring system is unavailable.	HIGH - Pending
IRO 002-2	R8.	Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.	HIGH - Pending
IRO-003-2	R1.	Each Reliability Coordinator shall monitor all Bulk Electric System facilities, which may include sub-transmission information, within its Reliability Coordinator Area and adjacent Reliability Coordinator Areas, as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.	HIGH

IRO-003-2	R2.	Each Reliability Coordinator shall know the current status of all critical facilities whose failure, degradation or disconnection could result in an SOL or IROL violation. Reliability Coordinators shall also know the status of any facilities that may be required to assist area restoration objectives.	HIGH
IRO-004-1	R1.	Each Reliability Coordinator shall conduct next-day reliability analyses for its Reliability Coordinator Area to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. The Reliability Coordinator shall conduct Contingency analysis studies to identify potential interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc.	HIGH
IRO-004-1	R2.	Each Reliability Coordinator shall pay particular attention to parallel flows to ensure one Reliability Coordinator Area does not place an unacceptable or undue Burden on an adjacent Reliability Coordinator Area.	HIGH
IRO-004-1	R3.	Each Reliability Coordinator shall, in conjunction with its Transmission Operators and Balancing Authorities, develop action plans that may be required, including reconfiguration of the transmission system, re-dispatching of generation, reduction or curtailment of Interchange Transactions, or reducing load to return transmission loading to within acceptable SOLs or IROLs.	HIGH
IRO-004-1	R4.	Each Transmission Operator, Balancing Authority, Transmission Owner, Generator Owner, Generator Operator, and Load-Serving Entity in the Reliability Coordinator Area shall provide information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions. This information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	HIGH

IRO-004-1	R5.	Each Reliability Coordinator shall share the results of its system studies, when conditions warrant or upon request, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area. The Reliability Coordinator shall make study results available no later than 1500 Central Standard Time for the Eastern Interconnection and 1500 Pacific Standard Time for the Western Interconnection, unless circumstances warrant otherwise.	HIGH
IRO-004-1	R6.	If the results of these studies indicate potential SOL or IROL violations, the Reliability Coordinator shall direct its Transmission Operators, Balancing Authorities and Transmission Service Providers to take any necessary action the Reliability Coordinator deems appropriate to address the potential SOL or IROL violation.	HIGH
IRO-004-1	R7.	Each Transmission Operator, Balancing Authority, and Transmission Service Provider shall comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events.	HIGH
IRO-005-2a	R1.	Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:	HIGH
IRO-005-2a	R1.1.	Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.	HIGH
IRO-005-2a	R1.2.	Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	HIGH
IRO-005-2a	R1.3.	Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	HIGH
IRO-005-2a	R1.4.	System real and reactive reserves (actual versus required).	HIGH
IRO-005-2a	R1.5.	Capacity and energy adequacy conditions.	HIGH
IRO-005-2a	R1.6.	Current ACE for all its Balancing Authorities.	HIGH
IRO-005-2a	R1.7.	Current local or Transmission Loading Relief procedures in effect.	HIGH
IRO-005-2a	R1.8.	Planned generation dispatches.	HIGH

IRO-005-2a	R1.9.	Planned transmission or generation outages.	HIGH
IRO-005-2a	R1.10.	Contingency events.	HIGH
IRO-005-2a	R2.	Each Reliability Coordinator shall be aware of all Interchange Transactions that wheel through, source, or sink in its Reliability Coordinator Area, and make that Interchange Transaction information available to all Reliability Coordinators in the Interconnection.	HIGH
IRO-005-2a	R3.	As portions of the transmission system approach or exceed SOLs or IROLs, the Reliability Coordinator shall work with its Transmission Operators and Balancing Authorities to evaluate and assess any additional Interchange Schedules that would violate those limits. If a potential or actual IROL violation cannot be avoided through proactive intervention, the Reliability Coordinator shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall ensure all resources, including load shedding, are available to address a potential or actual IROL violation.	HIGH
IRO-005-2a	R4.	Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.	HIGH
IRO-005-2a	R5.	Each Reliability Coordinator shall identify the cause of any potential or actual SOL or IROL violations. The Reliability Coordinator shall initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall be able to utilize all resources, including load shedding, to address an IROL violation.	HIGH
IRO-005-2a	R6.	Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.	HIGH
IRO-005-2a	R7.	The Reliability Coordinator shall disseminate information within its Reliability Coordinator Area, as required.	HIGH

IRO-005-2a	R8.	Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.	HIGH
IRO-005-2a	R9.	The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.	HIGH
IRO-005-2a	R10.	As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.	HIGH
IRO-005-2a	R11.	The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.	HIGH
IRO-005-2a	R12.	Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.	HIGH

IRO-005-2a	R13.	Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or nonaction in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the Interconnection. In instances where there is a difference in derived limits, the Reliability Coordinator and its Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.	HIGH
IRO-005-2a	R14.	Each Reliability Coordinator shall make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view. The Transmission Service Providers shall respect these SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.	MEDIUM
IRO-005-2a	R15.	Each Reliability Coordinator who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.	HIGH
IRO-005-2a	R16.	Each Reliability Coordinator shall confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. The Reliability Coordinator shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.	HIGH
IRO-005-2a	R17.	When an IROL or SOL is exceeded, the Reliability Coordinator shall evaluate the local and wide-area impacts, both real-time and post-contingency, and determine if the actions being taken are appropriate and sufficient to return the system to within IROL in thirty minutes. If the actions being taken are not appropriate or sufficient, the Reliability Coordinator shall direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.	HIGH

IRO-005-3a	R1.	Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:	Pending
IRO-005-3a	R1.1.	Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.	Pending
IRO-005-3a	R1.2.	Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	Pending
IRO-005-3a	R1.3.	Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	Pending
IRO-005-3a	R1.4.	System real and reactive reserves (actual versus required).	Pending
IRO-005-3a	R1.5.	Capacity and energy adequacy conditions.	Pending
IRO-005-3a	R1.6.	Current ACE for all its Balancing Authorities.	Pending
IRO-005-3a	R1.7.	Current local or Transmission Loading Relief procedures in effect.	Pending
IRO-005-3a	R1.8.	Planned generation dispatches.	Pending
IRO-005-3a	R1.9.	Planned transmission or generation outages.	Pending
IRO-005-3a	R1.10.	Contingency events.	Pending
IRO-005-3a	R2.	Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.	Pending
IRO-005-3a	R3.	Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.	Pending
IRO-005-3a	R4.	The Reliability Coordinator shall disseminate information within its Reliability Coordinator Area, as required.	Pending

IRO-005-3a	R5.	Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.	Pending
IRO-005-3a	R6.	The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.	Pending
IRO-005-3a	R7.	As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.	Pending
IRO-005-3a	R8.	The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.	Pending
IRO-005-3a	R9.	Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.	Pending
IRO-005-3a	R10.	In instances where there is a difference in derived limits, the Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.	Pending
IRO-005-3a	R11.	The Transmission Service Provider shall respect SOLs and IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.	Pending

IRO-005-3a	R12.	Each Reliability Coordinator who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.	Pending
IRO-006-5	R1.	Each Reliability Coordinator and Balancing Authority that receives a request pursuant to an Interconnection-wide transmission loading relief procedure (such as Eastern Interconnection TLR, WECC Unscheduled Flow Mitigation, or congestion management procedures from the ERCOT Protocols) from any Reliability Coordinator, Balancing Authority, or Transmission Operator in another Interconnection to curtail an Interchange Transaction that crosses an Interconnection boundary shall comply with the request, unless it provides a reliability reason to the requestor why it cannot comply with the request.	HIGH
IRO-006-EAST-1	R1.	When acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's TV, each Reliability Coordinator shall initiate, prior to or concurrently with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated), one or more of the following actions: <ul style="list-style-type: none"> - Inter-area redispatch of generation - Intra-area redispatch of generation - Reconfiguration of the transmission system - Voluntary load reductions (e.g., Demand-side Management) - Controlled load reductions (e.g., load shedding) 	HIGH
IRO-006-EAST-1	R2.	To ensure operating entities are provided with information needed to maintain an awareness of changes to the Transmission System, when initiating the Eastern Interconnection TLR procedure to prevent or mitigate an SOL or IROL exceedance, and at least every clock hour (with the exception of TLR-1, where an hourly update is not required) after initiation up to and including the hour when the TLR level has been identified as TLR Level 0, the Reliability Coordinator shall identify:	MEDIUM

IRO-006-EAST-1	R2.1.	A list of congestion management actions to be implemented, and	Part of Main Requirement
IRO-006-EAST-1	R2.2.	One of the following TLR levels: TLR-1, TLR-2, TLR-3A, TLR-3B, TLR-4, TLR-5A, TLR-5B, TLR-6, TLR-0	Part of Main Requirement
IRO-006-EAST-1	R3.	Upon the identification of the TLR level and a list of congestion management actions to be implemented, the Reliability Coordinator initiating this TLR procedure shall:	MEDIUM
IRO-006-EAST-1	R3.1.	Notify all Reliability Coordinators in the Eastern Interconnection of the identified TLR level	Part of Main Requirement
IRO-006-EAST-1	R3.2.	Communicate the list of congestion management actions to be implemented to 1.) all Reliability Coordinators in the Eastern Interconnection, and 2.) those Reliability Coordinators in other Interconnections responsible for curtailing Interchange Transactions crossing Interconnection boundaries identified in the list of congestion management actions.	Part of Main Requirement
IRO-006-EAST-1	R3.3.	Request that the congestion management actions identified in Requirement R2, Part 2.1 be implemented by: 1.) Each Reliability Coordinator associated with a Sink Balancing Authority for which Interchange Transactions are to be curtailed, 2.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which Network Integration Transmission Service or Native Load is to be curtailed, and 3.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which its Market Flow is to be curtailed.	Part of Main Requirement

IRO-006-EAST-1	R4.	<p>Each Reliability Coordinator that receives a request as described in Requirement R3, Part 3.3. shall, within 15 minutes of receiving the request, implement the congestion management actions requested by the issuing Reliability Coordinator as follows:</p> <ul style="list-style-type: none"> - Instruct its Balancing Authorities to implement the Interchange Transaction schedule change requests. - Instruct its Balancing Authorities to implement the Network Integration Transmission Service and Native Load schedule changes for which the Balancing Authorities are responsible. - Instruct its Balancing Authorities to implement the Market Flow schedule changes for which the Balancing Authorities are responsible. - If an assessment determines shows that one or more of the congestion management actions communicated in Requirement R3, part 3.3 will result in a reliability concern or will be ineffective, the Reliability Coordinator may replace those specific actions with alternate congestion management actions, provided that: <ul style="list-style-type: none"> - The alternate congestion management actions have been agreed to by the initiating Reliability Coordinator, and - The assessment shows that the alternate congestion management actions will not adversely affect reliability. 	HIGH
IRO-006-WECC-1	R.1.	Upon receiving a request of Step 4 or greater (see Attachment 1-IRO-006-WECC-1) from the Transmission Operator of a Qualified Transfer Path, the Reliability Coordinator shall approve (actively or passively) or deny that request within five minutes. [Time Horizon: Real-time Operations]	MEDIUM
IRO-006-WECC-1	R.2.	The Balancing Authorities shall approve curtailment requests to the schedules as submitted, implement alternative actions, or a combination thereof that collectively meets the Relief Requirement. [Time Horizon: Real-time Operations]	MEDIUM
IRO-008-1	R1.	Each Reliability Coordinator shall perform an Operational Planning Analysis to assess whether the planned operations for the next day within its Wide Area, will exceed any of its Interconnection Reliability Operating Limits (IROLs) during anticipated normal and Contingency event conditions. (Time Horizon: Operations Planning)	MEDIUM - Pending
IRO-008-1	R2.	Each Reliability Coordinator shall perform a Real-Time Assessment at least once every 30 minutes to determine if its Wide Area is exceeding any IROLs or is expected to exceed any IROLs. (Time Horizon: Real-time Operations)	HIGH - Pending

IRO-008-1	R3.	When a Reliability Coordinator determines that the results of an Operational Planning Analysis or Real-Time Assessment indicates the need for specific operational actions to prevent or mitigate an instance of exceeding an IROL, the Reliability Coordinator shall share its results with those entities that are expected to take those actions. (Time Horizon: Real-time Operations or Same Day Operations)	MEDIUM - Pending
IRO-009-1	R1.	For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs. (Time Horizon: Operations Planning or Same Day Operations)	MEDIUM - Pending
IRO-009-1	R2.	For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's Tv. (Time Horizon: Operations Planning or Same Day Operations)	MEDIUM - Pending
IRO-009-1	R3.	When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL. (Time Horizon: Real-time Operations)	HIGH - Pending
IRO-009-1	R4.	When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's Tv. (Time Horizon: Real-time Operations)	HIGH - Pending
IRO-009-1	R5.	If unanimity cannot be reached on the value for an IROL or its Tv, each Reliability Coordinator that monitors that Facility (or group of Facilities) shall, without delay, use the most conservative of the values (the value with the least impact on reliability) under consideration. (Time Horizon: Real-time Operations)	HIGH - Pending

IRO-010-1a	R1.	The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following: (Time Horizon: Operations Planning)	LOWER - Pending
IRO-010-1a	R1.1.	List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.	
IRO-010-1a	R1.2.	Mutually agreeable format.	
IRO-010-1a	R1.3.	Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).	
IRO-010-1a	R1.4.	Process for data provision when automated Real-Time system operating data is unavailable.	
IRO-010-1a	R2.	The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. (Violation Risk Factor: Low) (Time Horizon: Operations Planning)	
IRO-010-1a	R3.	Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. (Violation Risk Factor: Medium) (Time Horizon: Operations Planning; Same-day Operations; Real-time Operations)	
IRO-014-1	R1.	The Reliability Coordinator shall have Operating Procedures, Processes, or Plans in place for activities that require notification, exchange of information or coordination of actions with one or more other Reliability Coordinators to support Interconnection reliability. These Operating Procedures, Processes, or Plans shall address Scenarios that affect other Reliability Coordinator Areas as well as those developed in coordination with other Reliability Coordinators.	MEDIUM
IRO-014-1	R1.1.	These Operating Procedures, Processes, or Plans shall collectively address, as a minimum, the following:	LOWER

IRO-014-1	R1.1.1.	Communications and notifications, including the conditions under which one Reliability Coordinator notifies other Reliability Coordinators; the process to follow in making those notifications; and the data and information to be exchanged with other Reliability Coordinators.	MEDIUM
IRO-014-1	R1.1.2.	Energy and capacity shortages.	MEDIUM
IRO-014-1	R1.1.3.	Planned or unplanned outage information.	MEDIUM
IRO-014-1	R1.1.4.	Voltage control, including the coordination of reactive resources for voltage control.	MEDIUM
IRO-014-1	R1.1.5.	Coordination of information exchange to support reliability assessments.	LOWER
IRO-014-1	R1.1.6.	Authority to act to prevent and mitigate instances of causing Adverse Reliability Impacts to other Reliability Coordinator Areas.	LOWER
IRO-014-1	R2.	Each Reliability Coordinator's Operating Procedure, Process, or Plan that requires one or more other Reliability Coordinators to take action (e.g., make notifications, exchange information, or coordinate actions) shall be:	LOWER
IRO-014-1	R2.1.	Agreed to by all the Reliability Coordinators required to take the indicated action(s).	LOWER
IRO-014-1	R2.2.	Distributed to all Reliability Coordinators that are required to take the indicated action(s).	LOWER
IRO-014-1	R3.	A Reliability Coordinator's Operating Procedures, Processes, or Plans developed to support a Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan shall include:	MEDIUM
IRO-014-1	R3.1.	A reference to the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.	MEDIUM

IRO-014-1	R3.2.	The agreed-upon actions from the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.	LOWER
IRO-014-1	R4.	Each of the Operating Procedures, Processes, and Plans addressed in Reliability Standard IRO-014 Requirement 1 and Requirement 3 shall:	LOWER
IRO-014-1	R4.1.	Include version control number or date	LOWER
IRO-014-1	R4.2.	Include a distribution list.	LOWER
IRO-014-1	R4.3.	Be reviewed, at least once every three years, and updated if needed.	LOWER
IRO-015-1	R1.	The Reliability Coordinator shall follow its Operating Procedures, Processes, or Plans for making notifications and exchanging reliability-related information with other Reliability Coordinators.	MEDIUM
IRO-015-1	R1.1.	The Reliability Coordinator shall make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas.	MEDIUM
IRO-015-1	R2.	The Reliability Coordinator shall participate in agreed upon conference calls and other communication forums with adjacent Reliability Coordinators.	LOWER
IRO-015-1	R2.1.	The frequency of these conference calls shall be agreed upon by all involved Reliability Coordinators and shall be at least weekly.	LOWER
IRO-015-1	R3.	The Reliability Coordinator shall provide reliability-related information as requested by other Reliability Coordinators.	MEDIUM

IRO-016-1	R1.	The Reliability Coordinator that identifies a potential, expected, or actual problem that requires the actions of one or more other Reliability Coordinators shall contact the other Reliability Coordinator(s) to confirm that there is a problem and then discuss options and decide upon a solution to prevent or resolve the identified problem.	MEDIUM
IRO-016-1	R1.1.	If the involved Reliability Coordinators agree on the problem and the actions to take to prevent or mitigate the system condition, each involved Reliability Coordinator shall implement the agreed-upon solution, and notify the involved Reliability Coordinators of the action(s) taken.	MEDIUM
IRO-016-1	R1.2.	If the involved Reliability Coordinators cannot agree on the problem(s) each Reliability Coordinator shall re-evaluate the causes of the disagreement (bad data, status, study results, tools, etc.).	MEDIUM
IRO-016-1	R1.2.1.	If time permits, this re-evaluation shall be done before taking corrective actions.	MEDIUM
IRO-016-1	R1.2.2.	If time does not permit, then each Reliability Coordinator shall operate as though the problem(s) exist(s) until the conflicting system status is resolved.	MEDIUM
IRO-016-1	R1.3.	If the involved Reliability Coordinators cannot agree on the solution, the more conservative solution shall be implemented.	MEDIUM
IRO-016-1	R2.	The Reliability Coordinator shall document (via operator logs or other data sources) its actions taken for either the event or for the disagreement on the problem(s) or for both.	LOWER
MOD-001-1a	R1.	Each Transmission Operator shall select one of the methodologies listed below for calculating Available Transfer Capability (ATC) or Available Flowgate Capability (AFC) for each ATC Path per time period identified in R2 for those Facilities within its Transmission operating area: [Time Horizon: Operations Planning] § The Area Interchange Methodology, as described in MOD-028 § The Rated System Path Methodology, as described in MOD-029 § The Flowgate Methodology, as described in MOD-030	Pending

MOD-001-1a	R2.	Each Transmission Service Provider shall calculate ATC or AFC values as listed below using the methodology or methodologies selected by its Transmission Operator(s): [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R2.1.	Hourly values for at least the next 48 hours.	Pending
MOD-001-1a	R2.2.	Daily values for at least the next 31 calendar days.	Pending
MOD-001-1a	R2.3.	Monthly values for at least the next 12 months (months 2-13).	Pending
MOD-001-1a	R3.	Each Transmission Service Provider shall prepare and keep current an Available Transfer Capability Implementation Document (ATCID) that includes, at a minimum, the following information: [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R3.1.	Information describing how the selected methodology (or methodologies) has been implemented, in such detail that, given the same information used by the Transmission Service Provider, the results of the ATC or AFC calculations can be validated.	Pending
MOD-001-1a	R3.2.	A description of the manner in which the Transmission Service Provider will account for counterflows including:	Pending
MOD-001-1a	R3.2.1.	How confirmed Transmission reservations, expected Interchange and internal counterflow are addressed in firm and non-firm ATC or AFC calculations.	Pending
MOD-001-1a	R3.2.2.	A rationale for that accounting specified in R3.2.	Pending
MOD-001-1a	R3.3.	The identity of the Transmission Operators and Transmission Service Providers from which the Transmission Service Provider receives data for use in calculating ATC or AFC.	Pending
MOD-001-1a	R3.4.	The identity of the Transmission Service Providers and Transmission Operators to which it provides data for use in calculating transfer or Flowgate capability.	Pending
MOD-001-1a	R3.5.	A description of the allocation processes listed below that are applicable to the Transmission Service Provider: <ul style="list-style-type: none"> • Processes used to allocate transfer or Flowgate capability among multiple lines or sub-paths within a larger ATC Path or Flowgate. • Processes used to allocate transfer or Flowgate capabilities among multiple owners or users of an ATC Path or Flowgate. • Processes used to allocate transfer or Flowgate capabilities between Transmission Service Providers to address issues such as forward looking congestion management and seams coordination. 	Pending

MOD-001-1a	R3.6.	A description of how generation and transmission outages are considered in transfer or Flowgate capability calculations, including:	Pending
MOD-001-1a	R3.6.1.	The criteria used to determine when an outage that is in effect part of a day impacts a daily calculation.	Pending
MOD-001-1a	R3.6.2.	The criteria used to determine when an outage that is in effect part of a month impacts a monthly calculation.	Pending
MOD-001-1a	R3.6.3.	How outages from other Transmission Service Providers that can not be mapped to the Transmission model used to calculate transfer or Flowgate capability are addressed.	Pending
MOD-001-1a	R4.	The Transmission Service Provider shall notify the following entities before implementing a new or revised ATCID: [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R4.1.	Each Planning Coordinator associated with the Transmission Service Provider's area.	Pending
MOD-001-1a	R4.2.	Each Reliability Coordinator associated with the Transmission Service Provider's area.	Pending
MOD-001-1a	R4.3.	Each Transmission Operator associated with the Transmission Service Provider's area.	Pending
MOD-001-1a	R4.4.	Each Planning Coordinator adjacent to the Transmission Service Provider's area.	Pending
MOD-001-1a	R4.5.	Each Reliability Coordinator adjacent to the Transmission Service Provider's area.	Pending
MOD-001-1a	R4.6.	Each Transmission Service Provider whose area is adjacent to the Transmission Service Provider's area.	Pending
MOD-001-1a	R5.	The Transmission Service Provider shall make available the current ATCID to all of the entities specified in R4. [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R6.	When calculating Total Transfer Capability (TTC) or Total Flowgate Capability (TFC) the Transmission Operator shall use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period. [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R7.	When calculating ATC or AFC the Transmission Service Provider shall use assumptions no more limiting than those used in the planning of operations for the corresponding time period studied, providing such planning of operations has been performed for that time period. [Time Horizon: Operations Planning]	Pending

MOD-001-1a	R8.	Each Transmission Service Provider that calculates ATC shall recalculate ATC at a minimum on the following frequency, unless none of the calculated values identified in the ATC equation have changed: [Time Horizon: Operations Planning]	Pending
MOD-001-1a	R8.1.	Hourly values, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the ATC equation.	Pending
MOD-001-1a	R8.2.	Daily values, once per day.	Pending
MOD-001-1a	R8.3.	Monthly values, once per week.	Pending
MOD-001-1a	R9.	<p>Within thirty calendar days of receiving a request by any Transmission Service Provider, Planning Coordinator, Reliability Coordinator, or Transmission Operator for data from the list below solely for use in the requestor's ATC or AFC calculations, each Transmission Service Provider receiving said request shall begin to make the requested data available to the requestor, subject to the conditions specified in R9.1 and R9.2: [Time Horizon: Operations Planning]</p> <ul style="list-style-type: none"> • Expected generation and Transmission outages, additions, and retirements. • Load forecasts. • Unit commitments and order of dispatch, to include all designated network resources and other resources that are committed or have the legal obligation to run, as they are expected to run, in one of the following formats chosen by the data provider: - Dispatch Order - Participation Factors - Block Dispatch • Aggregated firm capacity set-aside for Network Integration Transmission Service and aggregated non-firm capacity set aside for Network Integration Transmission Service (i.e. Secondary Service). • Firm and non-firm Transmission reservations. • Aggregated capacity set-aside for Grandfathered obligations • Firm roll-over rights. • Any firm and non-firm adjustments applied by the Transmission Service Provider to reflect parallel path impacts. • Power flow models and underlying assumptions. • Contingencies, provided in one or more of the following formats:- A list of Elements - A list of Flowgates - A set of selection criteria that can be applied to the Transmission model used by the Transmission Operator and/or Transmission Service Provider • Facility Ratings. • Any other services that impact Existing Transmission Commitments (ETCs). • Values of Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) for all ATC Paths or Flowgates. • Values of Total Flowgate Capability (TFC) and AFC for any Flowgates considered by the Transmission Service Provider receiving the request when selling Transmission service. • Values of TTC and ATC for all ATC Paths for those Transmission Service Providers 	Pending

		receiving the request that do not consider Flowgates when selling Transmission Service. • Source and sink identification and mapping to the model.	
MOD-001-1a	R9.1.	The Transmission Service Provider shall make its own current data available, in the format maintained by the Transmission Service Provider, for up to 13 months into the future (subject to confidentiality and security requirements).	Pending
MOD-001-1a	R9.1.1.	If the Transmission Service Provider uses the data requested in its transfer or Flowgate capability calculations, it shall make the data used available	Pending
MOD-001-1a	R9.1.2.	If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, but maintains that data, it shall make that data available	Pending
MOD-001-1a	R9.1.3.	If the Transmission Service Provider does not use the data requested in its transfer or Flowgate capability calculations, and does not maintain that data, it shall not be required to make that data available	Pending
MOD-001-1a	R9.2.	This data shall be made available by the Transmission Provider on the schedule specified by the requestor (but no more frequently than once per hour, unless mutually agreed to by the requestor and the provider).	Pending
MOD-004-1	R1.	The Transmission Service Provider that maintains CBM shall prepare and keep current a “Capacity Benefit Margin Implementation Document” (CBMID) that includes, at a minimum, the following information: [Time Horizon: Operations Planning, Long-term Planning]	Pending

MOD-004-1	R1.1.	The process through which a Load-Serving Entity within a Balancing Authority Area associated with the Transmission Service Provider, or the Resource Planner associated with that Balancing Authority Area, may ensure that its need for Transmission capacity to be set aside as CBM will be reviewed and accommodated by the Transmission Service Provider to the extent Transmission capacity is available.	Pending
MOD-004-1	R1.2.	The procedure and assumptions for establishing CBM for each Available Transfer Capability (ATC) Path or Flowgate.	Pending
MOD-004-1	R1.3.	The procedure for a Load-Serving Entity or Balancing Authority to use Transmission capacity set aside as CBM, including the manner in which the Transmission Service Provider will manage situations where the requested use of CBM exceeds the amount of CBM available.	Pending
MOD-004-1	R2.	The Transmission Service Provider that maintains CBM shall make available its current CBMID to the Transmission Operators, Transmission Service Providers, Reliability Coordinators, Transmission Planners, Resource Planners, and Planning Coordinators that are within or adjacent to the Transmission Service Provider's area, and to the Load Serving Entities and Balancing Authorities within the Transmission Service Provider's area, and notify those entities of any changes to the CBMID prior to the effective date of the change. [Time Horizon: Operations Planning]	Pending
MOD-004-1	R3.	Each Load-Serving Entity determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [Time Horizon: Operations Planning]	Pending
MOD-004-1	R3.1.	Using one or more of the following to determine the GCIR: Loss of Load Expectation (LOLE) studies Loss of Load Probability (LOLP) studies Deterministic risk-analysis studies Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities	Pending
MOD-004-1	R3.2.	Identifying expected import path(s) or source region(s).	Pending

MOD-004-1	R4.	Each Resource Planner determining the need for Transmission capacity to be set aside as CBM for imports into a Balancing Authority Area shall determine that need by: [Time Horizon: Operations Planning]	Pending
MOD-004-1	R4.1.	Using one or more of the following to determine the GCIR: Loss of Load Expectation (LOLE) studies Loss of Load Probability (LOLP) studies Deterministic risk-analysis studies Reserve margin or resource adequacy requirements established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities	Pending
MOD-004-1	R4.2.	Identifying expected import path(s) or source region(s).	Pending
MOD-004-1	R5.	At least every 13 months, the Transmission Service Provider that maintains CBM shall establish a CBM value for each ATC Path or Flowgate to be used for ATC or Available Flowgate Capability (AFC) calculations during the 13 full calendar months (months 2-14) following the current month (the month in which the Transmission Service Provider is establishing the CBM values). This value shall: [Time Horizon: Operations Planning]	Pending
MOD-004-1	R5.1.	Reflect consideration of each of the following if available: Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Service Provider's area Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Service Provider's area Any reserve margin or resource adequacy requirements for loads within the Transmission Service Provider's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities	Pending

MOD-004-1	R5.2.	Be allocated as follows: For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Service Provider	Pending
MOD-004-1	R6.	At least every 13 months, the Transmission Planner shall establish a CBM value for each ATC Path or Flowgate to be used in planning during each of the full calendar years two through ten following the current year (the year in which the Transmission Planner is establishing the CBM values). This value shall: [Time Horizon: Long-term Planning]	Pending
MOD-004-1	R6.1.	Reflect consideration of each of the following if available: Any studies (as described in R3.1) performed by Load-Serving Entities for loads within the Transmission Planner's area Any studies (as described in R4.1) performed by Resource Planners for loads within the Transmission Planner's area Any reserve margin or resource adequacy requirements for loads within the Transmission Planner's area established by other entities, such as municipalities, state commissions, regional transmission organizations, independent system operators, Regional Reliability Organizations, or regional entities	Pending
MOD-004-1	R6.2.	Be allocated as follows: For ATC Paths, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners For Flowgates, based on the expected import paths or source regions provided by Load-Serving Entities or Resource Planners and the distribution factors associated with those paths or regions, as determined by the Transmission Planner.	Pending
MOD-004-1	R7.	Less than 31 calendar days after the establishment of CBM, the Transmission Service Provider that maintains CBM shall notify all the Load-Serving Entities and Resource Planners that determined they had a need for CBM on the Transmission Service Provider's system of the amount of CBM set aside. [Time	Pending

		Horizon: Operations Planning]	
MOD-004-1	R8.	Less than 31 calendar days after the establishment of CBM, the Transmission Planner shall notify all the Load-Serving Entities and Resource Planners that determined they had a need for CBM on the system being planned by the Transmission Planner of the amount of CBM set aside. [Time Horizon: Operations Planning]	Pending
MOD-004-1	R9.	The Transmission Service Provider that maintains CBM and the Transmission Planner shall each provide (subject to confidentiality and security requirements) copies of the applicable supporting data, including any models, used for determining CBM or allocating CBM over each ATC Path or Flowgate to the following: [Time Horizon: Operations Planning, Long-term Planning]	Pending
MOD-004-1	R9.1.	Each of its associated Transmission Operators within 30 calendar days of their making a request for the data.	Pending
MOD-004-1	R9.2.	To any Transmission Service Provider, Reliability Coordinator, Transmission Planner, Resource Planner, or Planning Coordinator within 30 calendar days of their making a request for the data.	Pending
MOD-004-1	R10.	The Load-Serving Entity or Balancing Authority shall request to import energy over firm Transfer Capability set aside as CBM only when experiencing a declared NERC Energy Emergency Alert (EEA) 2 or higher. [Time Horizon: Same-day Operations]	Pending
MOD-004-1	R11.	When reviewing an Arranged Interchange using CBM, all Balancing Authorities and Transmission Service Providers shall waive, within the bounds of reliable operation, any Real-time timing and ramping requirements. [Time Horizon: Same-day Operations]	Pending
MOD-004-1	R12.	The Transmission Service Provider that maintains CBM shall approve, within the bounds of reliable operation, any Arranged Interchange using CBM that is submitted by an “energy deficient entity ” under an EEA 2 if: [Time Horizon: Same-day Operations]	Pending
MOD-004-1	R12.1.	The CBM is available	Pending
MOD-004-1	R12.2.	The EEA 2 is declared within the Balancing Authority Area of the “energy deficient entity,” and	Pending

MOD-004-1	R12.3.	The Load of the “energy deficient entity” is located within the Transmission Service Provider’s area.	Pending
MOD-008-1	R1.	Each Transmission Operator shall prepare and keep current a TRM Implementation Document (TRMID) that includes, as a minimum, the following information: [Time Horizon: Operations Planning]	Pending
MOD-008-1	R1.1.	<p>Identification of (on each of its respective ATC Paths or Flowgates) each of the following components of uncertainty if used in establishing TRM, and a description of how that component is used to establish a TRM value:</p> <ul style="list-style-type: none"> - Aggregate Load forecast. - Load distribution uncertainty. - Forecast uncertainty in Transmission system topology (including, but not limited to, forced or unplanned outages and maintenance outages). - Allowances for parallel path (loop flow) impacts. - Allowances for simultaneous path interactions. - Variations in generation dispatch (including, but not limited to, forced or unplanned outages, maintenance outages and location of future generation). - Short-term System Operator response (Operating Reserve actions). - Reserve sharing requirements. - Inertial response and frequency bias. 	Pending
MOD-008-1	R1.2.	The description of the method used to allocate TRM across ATC Paths or Flowgates.	Pending
MOD-008-1	R1.3.	The identification of the TRM calculation used for the following time periods:	Pending
MOD-008-1	R1.3.1.	Same day and real-time.	Pending
MOD-008-1	R1.3.2.	Day-ahead and pre-schedule.	Pending
MOD-008-1	R1.3.3.	Beyond day-ahead and pre-schedule, up to thirteen months ahead.	Pending
MOD-008-1	R2.	Each Transmission Operator shall only use the components of uncertainty from R1.1 to establish TRM, and shall not include any of the components of Capacity Benefit Margin (CBM). Transmission capacity set aside for reserve sharing agreements can be included in TRM. [Time Horizon: Operations Planning]	Pending

MOD-008-1	R3.	Each Transmission Operator shall make available its TRMID, and if requested, underlying documentation (if any) used to determine TRM, in the format used by the Transmission Operator, to any of the following who make a written request no more than 30 calendar days after receiving the request. [Time Horizon: Operations Planning] <ul style="list-style-type: none"> • Transmission Service Providers • Reliability Coordinators • Planning Coordinators • Transmission Planner • Transmission Operators 	Pending
MOD-008-1	R4.	Each Transmission Operator that maintains TRM shall establish TRM values in accordance with the TRMID at least once every 13 months. [Time Horizon: Operations Planning]	Pending
MOD-008-1	R5.	The Transmission Operator that maintains TRM shall provide the TRM values to its Transmission Service Provider(s) and Transmission Planner(s) no more than seven calendar days after a TRM value is initially established or subsequently changed. [Time Horizon: Operations Planning]	Pending
MOD-010-0	R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R 1.	MEDIUM
MOD-010-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide this steady-state modeling and simulation data to the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. If no schedule exists, then these entities shall provide the data on request (30 calendar days).	MEDIUM

MOD-012-0	R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R1) shall provide appropriate equipment characteristics and system data in compliance with the respective Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1.	MEDIUM
MOD-012-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R4) shall provide dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. If no schedule exists, then these entities shall provide data on request (30 calendar days).	MEDIUM
MOD-016-1.1	R1.	The Planning Authority and Regional Reliability Organization shall have documentation identifying the scope and details of the actual and forecast (a) Demand data, (b) Net Energy for Load data, and (c) controllable DSM data to be reported for system modeling and reliability analyses.	LOWER
MOD-016-1.1	R1.1.	The aggregated and dispersed data submittal requirements shall ensure that consistent data is supplied for Reliability Standards TPL-005, TPL-006, MOD-010, MOD-011, MOD-012, MOD-013, MOD-014, MOD-015, MOD-016, MOD-017, MOD-018, MOD-019, MOD-020, and MOD-021. The data submittal requirements shall stipulate that each Load-Serving Entity count its customer Demand once and only once, on an aggregated and dispersed basis, in developing its actual and forecast customer Demand values.	LOWER
MOD-016-1.1	R2.	The Regional Reliability Organization shall distribute its documentation required in Requirement 1 and any changes to that documentation, to all Planning Authorities that work within its Region.	LOWER

MOD-016-1.1	R2.1.	The Regional Reliability Organization shall make this distribution within 30 calendar days of approval.	LOWER
MOD-016-1.1	R3.	The Planning Authority shall distribute its documentation required in R1 for reporting customer data and any changes to that documentation, to its Transmission Planners and Load-Serving Entities that work within its Planning Authority Area.	LOWER
MOD-016-1.1	R3.1.	The Planning Authority shall make this distribution within 30 calendar days of approval.	LOWER
MOD-017-0.1	R1.	The Load-Serving Entity, Planning Authority and Resource Planner shall each provide the following information annually on an aggregated Regional, subregional, Power Pool, individual system, or Load-Serving Entity basis to NERC, the Regional Reliability Organizations, and any other entities specified by the documentation in Standard MOD-016-1_R1.	MEDIUM
MOD-017-0.1	R1.1.	Integrated hourly demands in megawatts (MW) for the prior year.	MEDIUM
MOD-017-0.1	R1.2.	Monthly and annual peak hour actual demands in MW and Net Energy for Load in gigawatthours (GWh) for the prior year.	MEDIUM
MOD-017-0.1	R1.3.	Monthly peak hour forecast demands in MW and Net Energy for Load in GWh for the next two years.	MEDIUM
MOD-017-0.1	R1.4.	Annual Peak hour forecast demands (summer and winter) in MW and annual Net Energy for load in GWh for at least five years and up to ten years into the future, as requested.	MEDIUM
MOD-018-0	R1.	The Load-Serving Entity, Planning Authority, Transmission Planner and Resource Planner's report of actual and forecast demand data (reported on either an aggregated or dispersed basis) shall:	MEDIUM
MOD-018-0	R1.1.	Indicate whether the demand data of nonmember entities within an area or Regional Reliability Organization are included, and	MEDIUM

MOD-018-0	R1.2.	Address assumptions, methods, and the manner in which uncertainties are treated in the forecasts of aggregated peak demands and Net Energy for Load.	LOWER
MOD-018-0	R1.3.	Items (MOD-018-0_R 1.1) and (MOD-018-0_R 1.2) shall be addressed as described in the reporting procedures developed for Standard MOD-016-1_R 1.	LOWER
MOD-018-0	R2.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner shall each report data associated with Reliability Standard MOD-018-0_R1 to NERC, the Regional Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner on request (within 30 calendar days).	LOWER
MOD-019-0.1	R1.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner shall each provide annually its forecasts of interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard MOD-016-1_R 1.	MEDIUM
MOD-020-0	R1.	The Load-Serving Entity, Transmission Planner, and Resource Planner shall each make known its amount of interruptible demands and Direct Control Load Management (DCLM) to Transmission Operators, Balancing Authorities, and Reliability Coordinators on request within 30 calendar days.	LOWER
MOD-021-1	R1.	The Load-Serving Entity, Transmission Planner and Resource Planner's forecasts shall each clearly document how the Demand and energy effects of DSM programs (such as conservation, time-of-use rates, interruptible Demands, and Direct Control Load Management) are addressed.	LOWER

MOD-021-1	R2.	The Load-Serving Entity, Transmission Planner and Resource Planner shall each include information detailing how Demand-Side Management measures are addressed in the forecasts of its Peak Demand and annual Net Energy for Load in the data reporting procedures of Standard MOD-016-0_R1.	LOWER
MOD-021-1	R3.	The Load-Serving Entity, Transmission Planner and Resource Planner shall each make documentation on the treatment of its DSM programs available to NERC on request (within 30 calendar days).	LOWER
MOD-028-1	R1.	Each Transmission Service Provider shall include in its Available Transfer Capability Implementation Document (ATCID), at a minimum, the following information relative to its methodology for determining Total Transfer Capability (TTC): [Time Horizon: Operations Planning]	Pending
MOD-028-1	R1.1.	Information describing how the selected methodology has been implemented, in such detail that, given the same information used by the Transmission Operator, the results of the TTC calculations can be validated.	Pending
MOD-028-1	R1.2.	A description of the manner in which the Transmission Operator will account for Interchange Schedules in the calculation of TTC.	Pending
MOD-028-1	R1.3.	Any contractual obligations for allocation of TTC.	Pending
MOD-028-1	R1.4.	A description of the manner in which Contingencies are identified for use in the TTC process.	Pending
MOD-028-1	R1.5.	The following information on how source and sink for transmission service is accounted for in ATC calculations including:	Pending
MOD-028-1	R1.5.1.	Define if the source used for Available Transfer Capability (ATC) calculations is obtained from the source field or the Point of Receipt (POR) field of the transmission reservation	Pending
MOD-028-1	R1.5.2.	Define if the sink used for ATC calculations is obtained from the sink field or the Point of Delivery (POD) field of the transmission reservation	Pending
MOD-028-1	R1.5.3.	The source/sink or POR/POD identification and mapping to the model.	Pending
MOD-028-1	R1.5.4.	If the Transmission Service Provider's ATC calculation process involves a grouping of generation, the ATCID must identify how these generators participate in the group.	Pending

MOD-028-1	R2.	When calculating TTC for ATC Paths, the Transmission Operator shall use a Transmission model that contains all of the following: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R2.1.	Modeling data and topology of its Reliability Coordinator's area of responsibility. Equivalent representation of radial lines and facilities 161 kV or below is allowed.	Pending
MOD-028-1	R2.2.	Modeling data and topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination areas.	Pending
MOD-028-1	R2.3.	Facility Ratings specified by the Generator Owners and Transmission Owners.	Pending
MOD-028-1	R3.	When calculating TTCs for ATC Paths, the Transmission Operator shall include the following data for the Transmission Service Provider's area. The Transmission Operator shall also include the following data associated with Facilities that are explicitly represented in the Transmission model, as provided by adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R3.1.	For on-peak and off-peak intra-day and next-day TTCs, use the following (as well as any other values and additional parameters as specified in the ATCID):	Pending
MOD-028-1	R3.1.1.	Expected generation and Transmission outages, additions, and retirements, included as specified in the ATCID.	Pending
MOD-028-1	R3.1.2.	Load forecast for the applicable period being calculated.	Pending
MOD-028-1	R3.1.3.	Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.	Pending
MOD-028-1	R3.2.	For days two through 31 TTCs and for months two through 13 TTCs, use the following (as well as any other values and internal parameters as specified in the ATCID):	Pending
MOD-028-1	R3.2.1.	Expected generation and Transmission outages, additions, and Retirements, included as specified in the ATCID.	Pending
MOD-028-1	R3.2.2.	Daily load forecast for the days two through 31 TTCs being calculated and monthly forecast for months two through 13 months TTCs being calculated.	Pending
MOD-028-1	R3.2.3.	Unit commitment and dispatch order, to include all designated network resources and other resources that are committed or have the legal obligation to run, (within or out of economic dispatch) as they are expected to run.	Pending

MOD-028-1	R4.	When calculating TTCs for ATC Paths, the Transmission Operator shall meet all of the following conditions: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R4.1.	Use all Contingencies meeting the criteria described in the ATCID.	Pending
MOD-028-1	R4.2.	Respect any contractual allocations of TTC.	Pending
MOD-028-1	R4.3.	<p>Include, for each time period, the Firm Transmission Service expected to be scheduled as specified in the ATCID (filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers) for the Transmission Service Provider, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed modeling the source and sink as follows:</p> <ul style="list-style-type: none"> - If the source, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the source. - If the source, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate representation" in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the source. - If the source, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point, an "equivalence," or an "aggregate representation" in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source. - If the source, as specified in the ATCID, has not been identified in the reservation, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source. - If the sink, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point shall as the sink. - If the sink, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate representation" in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the sink. - If the sink, as specified in the ATCID, has been identified in the reservation and the point can not be mapped to a discretely modeled point, an "equivalence," or an "aggregate representation" in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider to which the power is to be 	Pending

		delivered as the sink. - If the sink, as specified in the ATCID, has not been identified in the reservation, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider to which the power is being delivered as the sink.	
MOD-028-1	R5.	Each Transmission Operator shall establish TTC for each ATC Path as defined below: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R5.1.	At least once within the seven calendar days prior to the specified period for TTCs used in hourly and daily ATC calculations.	Pending
MOD-028-1	R5.2.	At least once per calendar month for TTCs used in monthly ATC calculations.	Pending
MOD-028-1	R5.3.	Within 24 hours of the unexpected outage of a 500 kV or higher transmission Facility or a transformer with a low-side voltage of 200 kV or higher for TTCs in effect during the anticipated duration of the outage, provided such outage is expected to last 24 hours or longer.	Pending
MOD-028-1	R6.	Each Transmission Operator shall establish TTC for each ATC Path using the following process: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R6.1.	Determine the incremental Transfer Capability for each ATC Path by increasing generation and/or decreasing load within the source Balancing Authority area and decreasing generation and/or increasing load within the sink Balancing Authority area until either: - A System Operating Limit is reached on the Transmission Service Provider's system, or - A SOL is reached on any other adjacent system in the Transmission model that is not on the study path and the distribution factor is 5% or greater .	Pending

MOD-028-1	R6.2.	If the limit in step R6.1 can not be reached by adjusting any combination of load or generation, then set the incremental Transfer Capability by the results of the case where the maximum adjustments were applied.	Pending
MOD-028-1	R6.3.	Use (as the TTC) the lesser of: - The sum of the incremental Transfer Capability and the impacts of Firm Transmission Services, as specified in the Transmission Service Provider's ATCID, that were included in the study model, or - The sum of Facility Ratings of all ties comprising the ATC Path.	Pending
MOD-028-1	R6.4.	For ATC Paths whose capacity uses jointly-owned or allocated Facilities, limit TTC for each Transmission Service Provider so the TTC does not exceed each Transmission Service Provider's contractual rights.	Pending
MOD-028-1	R7.	The Transmission Operator shall provide the Transmission Service Provider of that ATC Path with the most current value for TTC for that ATC Path no more than: [Time Horizon: Operations Planning]	Pending
MOD-028-1	R7.1.	One calendar day after its determination for TTCs used in hourly and daily ATC calculations.	Pending
MOD-028-1	R7.2.	Seven calendar days after its determination for TTCs used in monthly ATC calculations.	Pending
MOD-028-1	R8.	When calculating Existing Transmission Commitments (ETCs) for firm commitments (ETCF) for all time periods for an ATC Path the Transmission Service Provider shall use the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-028-1	R9.	When calculating ETC for non-firm commitments (ETCNF) for all time periods for an ATC Path the Transmission Service Provider shall use the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-028-1	R10.	When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall utilize the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-028-1	R11.	When calculating non-firm ATC for a ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending

MOD-029-1a	R1.	When calculating TTCs for ATC Paths, the Transmission Operator shall use a Transmission model which satisfies the following requirements: [Time Horizon: Operations Planning]	Pending
MOD-029-1a	R1.1.	The model utilizes data and assumptions consistent with the time period being studied and that meets the following criteria:	Pending
MOD-029-1a	R1.1.1.	Includes at least:	Pending
MOD-029-1a	R1.1.1.1.	The Transmission Operator area. Equivalent representation of radial lines and facilities 161kV or below is allowed.	Pending
MOD-029-1a	R1.1.1.2.	All Transmission Operator areas contiguous with its own Transmission Operator area. (Equivalent representation is allowed.)	Pending
MOD-029-1a	R1.1.1.3.	Any other Transmission Operator area linked to the Transmission Operator's area by joint operating agreement. (Equivalent representation is allowed.)	Pending
MOD-029-1a	R1.1.2.	Models all system Elements as in-service for the assumed initial conditions.	Pending
MOD-029-1a	R1.1.3.	Models all generation (may be either a single generator or multiple generators) that is greater than 20 MVA at the point of interconnection in the studied area.	Pending
MOD-029-1a	R1.1.4.	Models phase shifters in non-regulating mode, unless otherwise specified in the Available Transfer Capability Implementation Document (ATCID).	Pending
MOD-029-1a	R1.1.5.	Uses Load forecast by Balancing Authority.	Pending
MOD-029-1a	R1.1.6.	Uses Transmission Facility additions and retirements.	Pending
MOD-029-1a	R1.1.7.	Uses Generation Facility additions and retirements.	Pending
MOD-029-1a	R1.1.8.	Uses Special Protection System (SPS) models where currently existing or projected for implementation within the studied time horizon.	Pending
MOD-029-1a	R1.1.9.	Models series compensation for each line at the expected operating level unless specified otherwise in the ATCID.	Pending
MOD-029-1a	R1.1.10.	Includes any other modeling requirements or criteria specified in the ATCID.	Pending
MOD-029-1a	R1.2.	Uses Facility Ratings as provided by the Transmission Owner and Generator Owner	Pending
MOD-029-1a	R2.	The Transmission Operator shall use the following process to determine TTC: [Time Horizon: Operations Planning]	Pending

MOD-029-1a	R2.1.	Except where otherwise specified within MOD-029-1, adjust base case generation and Load levels within the updated power flow model to determine the TTC (maximum flow or reliability limit) that can be simulated on the ATC Path while at the same time satisfying all planning criteria contingencies as follows:	Pending
MOD-029-1a	R2.1.1.	When modeling normal conditions, all Transmission Elements will be modeled at or below 100% of their continuous rating.	Pending
MOD-029-1a	R2.1.2.	When modeling contingencies the system shall demonstrate transient, dynamic and voltage stability, with no Transmission Element modeled above its Emergency Rating.	Pending
MOD-029-1a	R2.1.3.	Uncontrolled separation shall not occur.	Pending
MOD-029-1a	R2.2.	Where it is impossible to actually simulate a reliability-limited flow in a direction counter to prevailing flows (on an alternating current Transmission line), set the TTC for the non-prevailing direction equal to the TTC in the prevailing direction. If the TTC in the prevailing flow direction is dependant on a Special Protection System (SPS), set the TTC for the non-prevailing flow direction equal to the greater of the maximum flow that can be simulated in the non-prevailing flow direction or the maximum TTC that can be achieved in the prevailing flow direction without use of a SPS.	Pending
MOD-029-1a	R2.3.	For an ATC Path whose capacity is limited by contract, set TTC on the ATC Path at the lesser of the maximum allowable contract capacity or the reliability limit as determined by R2.1.	Pending
MOD-029-1a	R2.4.	For an ATC Path whose TTC varies due to simultaneous interaction with one or more other paths, develop a nomogram describing the interaction of the paths and the resulting TTC under specified conditions.	Pending
MOD-029-1a	R2.5.	The Transmission Operator shall identify when the TTC for the ATC Path being studied has an adverse impact on the TTC value of any existing path. Do this by modeling the flow on the path being studied at its proposed new TTC level simultaneous with the flow on the existing path at its TTC level while at the same time honoring the reliability criteria outlined in R2.1. The Transmission Operator shall include the resolution of this adverse impact in its study report for the ATC Path.	Pending
MOD-029-1a	R2.6.	Where multiple ownership of Transmission rights exists on an ATC Path, allocate TTC of that ATC Path in accordance with the contractual agreement made by the multiple owners of that ATC Path.	Pending

MOD-029-1a	R2.7.	For ATC Paths whose path rating, adjusted for seasonal variance, was established, known and used in operation since January 1, 1994, and no action has been taken to have the path rated using a different method, set the TTC at that previously established amount.	Pending
MOD-029-1a	R2.8.	Create a study report that describes the steps above that were undertaken (R2.1 – R2.7), including the contingencies and assumptions used, when determining the TTC and the results of the study. Where three phase fault damping is used to determine stability limits, that report shall also identify the percent used and include justification for use unless specified otherwise in the ATCID.	Pending
MOD-029-1a	R3.	Each Transmission Operator shall establish the TTC at the lesser of the value calculated in R2 or any System Operating Limit (SOL) for that ATC Path. [Time Horizon: Operations Planning]	Pending
MOD-029-1a	R4.	Within seven calendar days of the finalization of the study report, the Transmission Operator shall make available to the Transmission Service Provider of the ATC Path, the most current value for TTC and the TTC study report documenting the assumptions used and steps taken in determining the current value for TTC for that ATC Path. [Time Horizon: Operations Planning]	Pending
MOD-029-1a	R5.	When calculating ETC for firm Existing Transmission Commitments (ETCF) for a specified period for an ATC Path, the Transmission Service Provider shall use the algorithm below: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-029-1a	R6.	When calculating ETC for non-firm Existing Transmission Commitments (ETCNF) for all time horizons for an ATC Path the Transmission Service Provider shall use the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-029-1a	R7.	When calculating firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-029-1a	R8.	When calculating non-firm ATC for an ATC Path for a specified period, the Transmission Service Provider shall use the following algorithm:[Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-030-2	R1.	The Transmission Service Provider shall include in its “Available Transfer Capability Implementation Document” (ATCID): [Time Horizon: Operations Planning]	Pending

MOD-030-2	R1.1.	The criteria used by the Transmission Operator to identify sets of Transmission Facilities as Flowgates that are to be considered in Available Flowgate Capability (AFC) calculations.	Pending
MOD-030-2	R1.2.	The following information on how source and sink for transmission service is accounted for in AFC calculations including:	Pending
MOD-030-2	R1.2.1.	Define if the source used for AFC calculations is obtained from the source field or the Point of Receipt (POR) field of the transmission reservation.	Pending
MOD-030-2	R1.2.2.	Define if the sink used for AFC calculations is obtained from the sink field or the Point of Delivery (POD) field of the transmission reservation.	Pending
MOD-030-2	R1.2.3.	The source/sink or POR/POD identification and mapping to the model.	Pending
MOD-030-2	R1.2.4.	If the Transmission Service Provider's AFC calculation process involves a grouping of generators, the ATCID must identify how these generators participate in the group.	Pending
MOD-030-2	R2.	The Transmission Operator shall perform the following: [Time Horizon: Operations Planning]	Pending
MOD-030-2	R2.1.	Include Flowgates used in the AFC process based, at a minimum, on the following criteria:	Pending
MOD-030-2	R2.1.1.	Results of a first Contingency transfer analysis for ATC Paths internal to a Transmission Operator's system up to the path capability such that at a minimum the first three limiting Elements and their worst associated Contingency combinations with an OTDF of at least 5% and within the Transmission Operator's system are included as Flowgates.	Pending
MOD-030-2	R2.1.1.1.	Use first Contingency criteria consistent with those first Contingency criteria used in planning of operations for the applicable time periods, including use of Special Protection Systems.	Pending
MOD-030-2	R2.1.1.2.	Only the most limiting element in a series configuration needs to be included as a Flowgate.	Pending
MOD-030-2	R2.1.1.3.	If any limiting element is kept within its limit for its associated worst Contingency by operating within the limits of another Flowgate, then no new Flowgate needs to be established for such limiting elements or Contingencies.	Pending

MOD-030-2	R2.1.2.	Results of a first Contingency transfer analysis from all adjacent Balancing Authority source and sink (as defined in the ATCID) combinations up to the path capability such that at a minimum the first three limiting Elements and their worst associated Contingency combinations with an Outage Transfer Distribution Factor (OTDF) of at least 5% and within the Transmission Operator's system are included as Flowgates unless the interface between such adjacent Balancing Authorities is accounted for using another ATC methodology.	Pending
MOD-030-2	R2.1.2.1.	Use first Contingency criteria consistent with those first Contingency criteria used in planning of operations for the applicable time periods, including use of Special Protection Systems.	Pending
MOD-030-2	R2.1.2.2.	Only the most limiting element in a series configuration needs to be included as a Flowgate.	Pending
MOD-030-2	R2.1.2.3.	If any limiting element is kept within its limit for its associated worst Contingency by operating within the limits of another Flowgate, then no new Flowgate needs to be established for such limiting elements or Contingencies.	Pending
MOD-030-2	R2.1.3.	Any limiting Element/Contingency combination at least within its Reliability Coordinator's Area that has been subjected to an Interconnection-wide congestion management procedure within the last 12 months, unless the limiting Element/Contingency combination is accounted for using another ATC methodology or was created to address temporary operating conditions.	Pending
MOD-030-2	R2.1.4.	Any limiting Element/Contingency combination within the Transmission model that has been requested to be included by any other Transmission Service Provider using the Flowgate Methodology or Area Interchange Methodology, where:	Pending
MOD-030-2	R2.1.4.1.	The coordination of the limiting Element/Contingency combination is not already addressed through a different methodology, and - Any generator within the Transmission Service Provider's area has at least a 5% Power Transfer Distribution Factor (PTDF) or Outage Transfer Distribution Factor (OTDF) impact on the Flowgate when delivered to the aggregate load of its own area, or - A transfer from any Balancing Area within the Transmission Service Provider's area to a Balancing Area adjacent has at least a 5% PTDF or OTDF impact on the Flowgate. - The Transmission Operator may utilize distribution factors less than 5% if desired.	Pending

MOD-030-2	R2.1.4.2.	The limiting Element/Contingency combination is included in the requesting Transmission Service Provider's methodology.	Pending
MOD-030-2	R2.2.	At a minimum, establish a list of Flowgates by creating, modifying, or deleting Flowgate definitions at least once per calendar year.	Pending
MOD-030-2	R2.3.	At a minimum, establish a list of Flowgates by creating, modifying, or deleting Flowgates that have been requested as part of R2.1.4 within thirty calendar days from the request.	Pending
MOD-030-2	R2.4.	Establish the TFC of each of the defined Flowgates as equal to: - For thermal limits, the System Operating Limit (SOL) of the Flowgate. - For voltage or stability limits, the flow that will respect the SOL of the Flowgate.	Pending
MOD-030-2	R2.5.	At a minimum, establish the TFC once per calendar year.	Pending
MOD-030-2	R2.5.1.	If notified of a change in the Rating by the Transmission Owner that would affect the TFC of a flowgate used in the AFC process, the TFC should be updated within seven calendar days of the notification.	Pending
MOD-030-2	R2.6.	Provide the Transmission Service Provider with the TFCs within seven calendar days of their establishment.	Pending
MOD-030-2	R3.	The Transmission Operator shall make available to the Transmission Service Provider a Transmission model to determine Available Flowgate Capability (AFC) that meets the following criteria: [Time Horizon: Operations Planning]	Pending
MOD-030-2	R3.1.	Contains generation Facility Ratings, such as generation maximum and minimum output levels, specified by the Generator Owners of the Facilities within the model.	Pending
MOD-030-2	R3.2.	Updated at least once per day for AFC calculations for intra-day, next day, and days two through 30.	Pending
MOD-030-2	R3.3.	Updated at least once per month for AFC calculations for months two through 13.	Pending
MOD-030-2	R3.4.	Contains modeling data and system topology for the Facilities within its Reliability Coordinator's Area. Equivalent representation of radial lines and Facilities 161kV or below is allowed.	Pending
MOD-030-2	R3.5.	Contains modeling data and system topology (or equivalent representation) for immediately adjacent and beyond Reliability Coordination Areas.	Pending

MOD-030-2	R4.	<p>When calculating AFCs, the Transmission Service Provider shall represent the impact of Transmission Service as follows: [Time Horizon: Operations Planning]</p> <ul style="list-style-type: none"> - If the source, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the source. - If the source, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the source. - If the source, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source. - If the source, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider from which the power is to be received as the source. - If the sink, as specified in the ATCID, has been identified in the reservation and it is discretely modeled in the Transmission Service Provider's Transmission model, use the discretely modeled point as the sink. - If the sink, as specified in the ATCID, has been identified in the reservation and the point can be mapped to an "equivalence" or "aggregate" representation in the Transmission Service Provider's Transmission model, use the modeled equivalence or aggregate as the sink. - If the sink, as specified in the ATCID, has been identified in the reservation and the point cannot be mapped to a discretely modeled point or an "equivalence" representation in the Transmission Service Provider's Transmission model, use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink. - If the sink, as specified in the ATCID, has not been identified in the reservation use the immediately adjacent Balancing Authority associated with the Transmission Service Provider receiving the power as the sink. 	Pending
MOD-030-2	R5.	When calculating AFCs, the Transmission Service Provider shall: [Time Horizon: Operations Planning]	Pending

MOD-030-2	R5.1.	Use the models provided by the Transmission Operator.	Pending
MOD-030-2	R5.2.	Include in the transmission model expected generation and Transmission outages, additions, and retirements within the scope of the model as specified in the ATCID and in effect during the applicable period of the AFC calculation for the Transmission Service Provider's area, all adjacent Transmission Service Providers, and any Transmission Service Providers with which coordination agreements have been executed.	Pending
MOD-030-2	R5.3.	For external Flowgates, identified in R2.1.4, use the AFC provided by the Transmission Service Provider that calculates AFC for that Flowgate.	Pending
MOD-030-2	R6.	When calculating the impact of ETC for firm commitments (ETCFi) for all time periods for a Flowgate, the Transmission Service Provider shall sum the following: [Time Horizon: Operations Planning]	Pending
MOD-030-2	R6.1.	The impact of firm Network Integration Transmission Service, including the impacts of generation to load, in the model referenced in R5.2 for the Transmission Service Provider's area, based on:	Pending
MOD-030-2	R6.1.1.	Load forecast for the time period being calculated, including Native Load and Network Service load	Pending
MOD-030-2	R6.1.2.	Unit commitment and Dispatch Order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.	Pending
MOD-030-2	R6.2.	The impact of any firm Network Integration Transmission Service, including the impacts of generation to load in the model referenced in R5.2 and has a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed based on:	Pending
MOD-030-2	R6.2.1.	Load forecast for the time period being calculated, including Native Load and Network Service load	Pending
MOD-030-2	R6.2.2.	Unit commitment and Dispatch Order, to include all designated network resources and other resources that are committed or have the legal obligation to run as specified in the Transmission Service Provider's ATCID.	Pending

MOD-030-2	R6.3.	The impact of all confirmed firm Point-to-Point Transmission Service expected to be scheduled, including roll-over rights for Firm Transmission Service contracts, for the Transmission Service Provider's area.	Pending
MOD-030-2	R6.4.	The impact of any confirmed firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, including roll-over rights for Firm Transmission Service contracts having a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.	Pending
MOD-030-2	R6.5.	The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.	Pending
MOD-030-2	R6.6.	The impact of any Grandfathered firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.	Pending
MOD-030-2	R6.7.	The impact of other firm services determined by the Transmission Service Provider.	Pending
MOD-030-2	R7.	When calculating the impact of ETC for non-firm commitments (ETCNFi) for all time periods for a Flowgate the Transmission Service Provider shall sum: [Time Horizon: Operations Planning]	Pending
MOD-030-2	R7.1.	The impact of all confirmed non-firm Point-to-Point Transmission Service expected to be scheduled for the Transmission Service Provider's area.	Pending
MOD-030-2	R7.2.	The impact of any confirmed non-firm Point-to-Point Transmission Service expected to be scheduled, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, that have a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.	Pending

MOD-030-2	R7.3.	The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow for the Transmission Service Provider's area.	Pending
MOD-030-2	R7.4.	The impact of any Grandfathered non-firm obligations expected to be scheduled or expected to flow that have a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.	Pending
MOD-030-2	R7.5.	The impact of non-firm Network Integration Transmission Service serving Load within the Transmission Service Provider's area (i.e., secondary service), to include load growth, and losses not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.	Pending
MOD-030-2	R7.6.	The impact of any non-firm Network Integration Transmission Service (secondary service) with a distribution factor equal to or greater than the percentage used to curtail in the Interconnection-wide congestion management procedure used by the Transmission Service Provider, filtered to reduce or eliminate duplicate impacts from transactions using Transmission service from multiple Transmission Service Providers, for all adjacent Transmission Service Providers and any other Transmission Service Providers with which coordination agreements have been executed.	Pending
MOD-030-2	R7.7.	The impact of other non-firm services determined by the Transmission Service Provider.	Pending
MOD-030-2	R8.	When calculating firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm (subject to allocation processes described in the ATCID): [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-030-2	R9.	When calculating non-firm AFC for a Flowgate for a specified period, the Transmission Service Provider shall use the following algorithm (subject to allocation processes described in the ATCID): [Time Horizon: Operations Planning] See Standard for Formula	Pending
MOD-030-2	R10.	Each Transmission Service Provider shall recalculate AFC, utilizing the updated models described in R3.2, R3.3, and R5, at a minimum on the following frequency, unless none of the calculated values identified in the AFC equation have changed: [Time Horizon: Operations Planning]	Pending

MOD-030-2	R10.1.	For hourly AFC, once per hour. Transmission Service Providers are allowed up to 175 hours per calendar year during which calculations are not required to be performed, despite a change in a calculated value identified in the AFC equation.	Pending
MOD-030-2	R10.2.	For daily AFC, once per day.	Pending
MOD-030-2	R10.3.	For monthly AFC, once per week.	Pending
MOD-030-2	R11.	When converting Flowgate AFCs to ATCs for ATC Paths, the Transmission Service Provider shall convert those values based on the following algorithm: [Time Horizon: Operations Planning] See Standard for Formula	Pending
NUC-001-2	R1.	The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt	LOWER
NUC-001-2	R2.	The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs.	MEDIUM
NUC-001-2	R3.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.	MEDIUM
NUC-001-2	R4.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall:	HIGH
NUC-001-2	R4.1.	Incorporate the NPIRs into their operating analyses of the electric system.	Part of Main Requirement
NUC-001-2	R4.2.	Operate the electric system to meet the NPIRs.	Part of Main Requirement
NUC-001-2	R4.3.	Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.	Part of Main Requirement
NUC-001-2	R5.	The Nuclear Plant Generator Operator shall operate per the Agreements developed in accordance with this standard.	HIGH
NUC-001-2	R6.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs.	MEDIUM

NUC-001-2	R7.	Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	HIGH
NUC-001-2	R8.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	HIGH
NUC-001-2	R9.	The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include, as a minimum, the following elements within the agreement(s) identified in R2:	MEDIUM
NUC-001-2	R9.1.	Administrative elements:	Part of Main Requirement
NUC-001-2	R9.1.1.	Definitions of key terms used in the agreement.	Part of Main Requirement
NUC-001-2	R9.1.2.	Names of the responsible entities, organizational relationships, and responsibilities related to the NPIRs.	Part of Main Requirement
NUC-001-2	R9.1.3.	A requirement to review the agreement(s) at least every three years.	Part of Main Requirement
NUC-001-2	R9.1.4.	A dispute resolution mechanism.	Part of Main Requirement
NUC-001-2	R9.2.	Technical requirements and analysis:	Part of Main Requirement
NUC-001-2	R9.2.1.	Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the agreement.	Part of Main Requirement
NUC-001-2	R9.2.2.	Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.	Part of Main Requirement
NUC-001-2	R9.2.3.	Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.	Part of Main Requirement

NUC-001-2	R9.3.	Operations and maintenance coordination:	Part of Main Requirement
NUC-001-2	R9.3.1.	Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control coordination and maintenance of these facilities.	Part of Main Requirement
NUC-001-2	R9.3.2.	Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.	Part of Main Requirement
NUC-001-2	R9.3.3.	Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.	Part of Main Requirement
NUC-001-2	R9.3.4.	Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.	Part of Main Requirement
NUC-001-2	R9.3.5.	Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.	Part of Main Requirement
NUC-001-2	R9.3.6.	Coordination of physical and cyber security protection of the Bulk Electric System at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.	Part of Main Requirement
NUC-001-2	R9.3.7.	Coordination of the NPIRs with transmission system Special Protection Systems and underfrequency and undervoltage load shedding programs.	Part of Main Requirement
NUC-001-2	R9.4.	Communications and training:	Part of Main Requirement
NUC-001-2	R9.4.1.	Provisions for communications between the Nuclear Plant Generator Operator and Transmission Entities, including communications protocols, notification time requirements, and definitions of terms.	Part of Main Requirement
NUC-001-2	R9.4.2.	Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.	Part of Main Requirement
NUC-001-2	R9.4.3.	Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.	Part of Main Requirement

NUC-001-2	R9.4.4.	Provisions for supplying information necessary to report to government agencies, as related to NPIRs.	Part of Main Requirement
NUC-001-2	R9.4.5.	Provisions for personnel training, as related to NPIRs.	Part of Main Requirement
PER-001-0.1	R1.	Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.	HIGH
PER-002-0	R1.	Each Transmission Operator and Balancing Authority shall be staffed with adequately trained operating personnel.	HIGH
PER-002-0	R2.	Each Transmission Operator and Balancing Authority shall have a training program for all operating personnel that are in:	HIGH
PER-002-0	R2.1.	Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.	HIGH
PER-002-0	R2.2.	Positions directly responsible for complying with NERC standards.	HIGH
PER-002-0	R3.	For personnel identified in Requirement R2, the Transmission Operator and Balancing Authority shall provide a training program meeting the following criteria:	HIGH
PER-002-0	R3.1.	A set of training program objectives must be defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions.	MEDIUM
PER-002-0	R3.2.	The training program must include a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. That plan shall address knowledge and competencies required for reliable system operations.	MEDIUM

PER-002-0	R3.3.	The training program must include training time for all Transmission Operator and Balancing Authority operating personnel to ensure their operating proficiency.	LOWER
PER-002-0	R3.4.	Training staff must be identified, and the staff must be competent in both knowledge of system operations and instructional capabilities.	LOWER
PER-002-0	R4.	For personnel identified in Requirement R2, each Transmission Operator and Balancing Authority shall provide its operating personnel at least five days per year of training and drills using realistic simulations of system emergencies, in addition to other training required to maintain qualified operating personnel.	HIGH
PER-003-0	R1.	Each Transmission Operator, Balancing Authority, and Reliability Coordinator shall staff all operating positions that meet both of the following criteria with personnel that are NERC-certified for the applicable functions:	HIGH
PER-003-0	R1.1.	Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.	HIGH
PER-003-0	R1.2.	Positions directly responsible for complying with NERC standards.	HIGH
PER-004-1	R3.	Reliability Coordinator operating personnel shall have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.	HIGH
PER-004-1	R4.	Reliability Coordinator operating personnel shall have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the operating staff, operating practices and procedures, restoration priorities and objectives, outage plans, equipment capabilities, and operational restrictions.	HIGH
PER-004-2	R1.	Each Reliability Coordinator shall be staffed with adequately trained and NERC-certified Reliability Coordinator operators, 24 hours per day, seven days per week.	HIGH - Pending

PER-004-2	R2.	Reliability Coordinator operating personnel shall place particular attention on SOLs and IROLs and inter-tie facility limits. The Reliability Coordinator shall ensure protocols are in place to allow Reliability Coordinator operating personnel to have the best available information at all times.	HIGH - Pending
PER-005-1	R1.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall use a systematic approach to training to establish a training program for the BES company-specific reliability-related tasks performed by its System Operators and shall implement the program. [Time Horizon: Long-term Planning]	MEDIUM - Pending
PER-005-1	R1.1.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall create a list of BES company-specific reliability-related tasks performed by its System Operators.	
PER-005-1	R1.1.1.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall update its list of BES company-specific reliability-related tasks performed by its System Operators each calendar year to identify new or modified tasks for inclusion in training.	
PER-005-1	R1.2.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall design and develop learning objectives and training materials based on the task list created in R1.1.	
PER-005-1	R1.3.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall deliver the training established in R1.2.	
PER-005-1	R1.4.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall conduct an annual evaluation of the training program established in R1, to identify any needed changes to the training program and shall implement the changes identified.	
PER-005-1	R2.	Each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator's capabilities to perform each assigned task identified in R1.1 at least one time. [Time Horizon: Long-term Planning]	HIGH - Pending
PER-005-1	R2.1.	Within six months of a modification of the BES company-specific reliability-related tasks, each Reliability Coordinator, Balancing Authority and Transmission Operator shall verify each of its System Operator's capabilities to perform the new or modified tasks.	

PER-005-1	R3.	At least every 12 months each Reliability Coordinator, Balancing Authority and Transmission Operator shall provide each of its System Operators with at least 32 hours of emergency operations training applicable to its organization that reflects emergency operations topics, which includes system restoration using drills, exercises or other training required to maintain qualified personnel. [Time Horizon: Long-term Planning]	MEDIUM - Pending
PER-005-1	R3.1.	Each Reliability Coordinator, Balancing Authority and Transmission Operator that has operational authority or control over Facilities with established IROLs or has established operating guides or protection systems to mitigate IROL violations shall provide each System Operator with emergency operations training using simulation technology such as a simulator, virtual technology, or other technology that replicates the operational behavior of the BES during normal and emergency conditions.	
PRC-001-1	R1.	Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of protection system schemes applied in its area.	HIGH
PRC-001-1	R2.	Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:	HIGH
PRC-001-1	R2.1.	If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.	HIGH
PRC-001-1	R2.2.	If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.	HIGH
PRC-001-1	R3.	A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.	No VRF Assigned
PRC-001-1	R3.1.	Each Generator Operator shall coordinate all new protective systems and all protective system changes with its Transmission Operator and Host Balancing Authority.	HIGH

PRC-001-1	R3.2.	Each Transmission Operator shall coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.	HIGH
PRC-001-1	R4.	Each Transmission Operator shall coordinate protection systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.	HIGH
PRC-001-1	R5.	A Generator Operator or Transmission Operator shall coordinate changes in generation, transmission, load or operating conditions that could require changes in the protection systems of others:	HIGH
PRC-001-1	R5.1.	Each Generator Operator shall notify its Transmission Operator in advance of changes in generation or operating conditions that could require changes in the Transmission Operator's protection systems.	HIGH
PRC-001-1	R5.2.	Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems.	HIGH
PRC-001-1	R6.	Each Transmission Operator and Balancing Authority shall monitor the status of each Special Protection System in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status.	HIGH
PRC-004-1	R1.	The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Reliability Organization's procedures developed for Reliability Standard PRC-003 Requirement 1.	HIGH

PRC-004-1	R2.	The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Reliability Organization's procedures developed for PRC-003 R1.	HIGH
PRC-004-1	R3.	The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Reliability Organization, documentation of its Misoperations analyses and Corrective Action Plans according to the Regional Reliability Organization's procedures developed for PRC-003 R1.	LOWER
PRC-004-2	R1.	The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.	HIGH
PRC-004-2	R2.	The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.	HIGH
PRC-004-2	R3.	The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Entity, documentation of its Misoperations analyses and Corrective Action Plans according to the Regional Entity's procedures.	LOWER
PRC-004-WECC-1	R.1.	System Operators and System Protection personnel of the Transmission Owners and Generator Owners shall analyze all Protection System and RAS operations. [Time Horizon: Operations Assessment]	LOWER
PRC-004-WECC-1	R1.1.	System Operators shall review all tripping of transmission elements and RAS operations to identify apparent Misoperations within 24 hours.	
PRC-004-WECC-1	R1.2.	System Protection personnel shall analyze all operations of Protection Systems and RAS within 20 business days for correctness to characterize whether a Misoperation has occurred that may not have been identified by System	

		Operators.	
PRC-004-WECC-1	R.2.	Transmission Owners and Generator Owners shall perform the following actions for each Misoperation of the Protection System or RAS. It is not intended that Requirements R2.1 through R2.4 apply to Protection System and/or RAS actions that appear to be entirely reasonable and correct at the time of occurrence and associated system performance is fully compliant with NERC Reliability Standards. If the Transmission Owner or Generator Owner later finds the Protection System or RAS operation to be incorrect through System Protection personnel analysis, the requirements of R2.1 through R2.4 become applicable at the time the Transmission Owner or Generator Owner identifies the Misoperation:	
PRC-004-WECC-1	R2.1.	If the Protection System or RAS has a Security-Based Misoperation and two or more Functionally Equivalent Protection Systems (FEPS) or Functionally Equivalent RAS (FERAS) remain in service to ensure Bulk Electric System (BES) reliability, the Transmission Owners or Generator Owners shall remove from service the Protection System or RAS that misoperated within 22 hours following identification of the Misoperation. Repair or replacement of the failed Protection System or RAS is at the Transmission Owners' and Generator Owners' discretion. [Time Horizon: Same-day Operations]	HIGH
PRC-004-WECC-1	R2.2.	If the Protection System or RAS has a Security-Based Misoperation and only one FEPS or FERAS remains in service to ensure BES reliability, the Transmission Owner or Generator Owner shall perform the following. [Time Horizon: Same-day Operations]	HIGH
PRC-004-WECC-1	R2.2.1.	Following identification of the Protection System or RAS Misoperation, Transmission Owners and Generator Owners shall remove from service within 22 hours for repair or modification the Protection System or RAS that misoperated.	
PRC-004-WECC-1	R2.2.2.	The Transmission Owner or Generator Owner shall repair or replace any Protection System or RAS that misoperated with a FEPS or FERAS within 20 business days of the date of removal. The Transmission Owner or Generator Owner shall remove the Element from service or disable the RAS if repair or replacement is not completed within 20 business days.	

PRC-004-WECC-1	R2.3.	If the Protection System or RAS has a Security-Based or Dependability-Based Misoperation and a FEPS and FERAS is not in service to ensure BES reliability, Transmission Owners or Generator Owners shall repair and place back in service within 22 hours the Protection System or RAS that misoperated. If this cannot be done, then Transmission Owners and Generator Owners shall perform the following. [Time Horizon: Same-day Operations]	HIGH
PRC-004-WECC-1	R2.3.1.	When a FEPS is not available, the Transmission Owners shall remove the associated Element from service.	
PRC-004-WECC-1	R2.3.2.	When FERAS is not available, then	
PRC-004-WECC-1	2.3.2.1.	The Generator Owners shall adjust generation to a reliable operating level, or	
PRC-004-WECC-1	2.3.2.2.	Transmission Operators shall adjust the SOL and operate the facilities within established limits.	
PRC-004-WECC-1	R2.4.	If the Protection System or RAS has a Dependability-Based Misoperation but has one or more FEPS or FERAS that operated correctly, the associated Element or transmission path may remain in service without removing from service the Protection System or RAS that failed, provided one of the following is performed.	
PRC-004-WECC-1	R2.4.1.	Transmission Owners or Generator Owners shall repair or replace any Protection System or RAS that misoperated with FEPS and FERAS within 20 business days of the date of the Misoperation identification, or	
PRC-004-WECC-1	R2.4.2.	Transmission Owners or Generator Owners shall remove from service the associated Element or RAS. [Time Horizon: Operations Assessment]	LOWER
PRC-004-WECC-1	R.3.	Transmission Owners and Generation Owners shall submit Misoperation incident reports to WECC within 10 business days for the following. [Time Horizon: Operations Assessment]	LOWER
PRC-004-WECC-1	R3.1.	Identification of a Misoperation of a Protection System and/or RAS,	
PRC-004-WECC-1	R3.2.	Completion of repairs or the replacement of Protection System and/or RAS that misoperated.	
PRC-005-1	R1.	Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:	HIGH

PRC-005-1	R1.1.	Maintenance and testing intervals and their basis.	HIGH
PRC-005-1	R1.2.	Summary of maintenance and testing procedures.	HIGH
PRC-005-1	R2.	Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall provide documentation of its Protection System maintenance and testing program and the implementation of that program to its Regional Reliability Organization on request (within 30 calendar days). The documentation of the program implementation shall include:	LOWER
PRC-005-1	R2.1.	Evidence Protection System devices were maintained and tested within the defined intervals.	HIGH
PRC-005-1	R2.2.	Date each Protection System device was last tested/maintained.	HIGH
PRC-007-0	R1.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall ensure that its UFLS program is consistent with its Regional Reliability Organization's UFLS program requirements.	MEDIUM
PRC-007-0	R2.	The Transmission Owner, Transmission Operator, Distribution Provider, and Load-Serving Entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall provide, and annually update, its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database.	LOWER
PRC-007-0	R3.	The Transmission Owner and Distribution Provider that owns a UFLS program (as required by its Regional Reliability Organization) shall provide its documentation of that UFLS program to its Regional Reliability Organization on request (30 calendar days).	LOWER

PRC-008-0	R1.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall have a UFLS equipment maintenance and testing program in place. This UFLS equipment maintenance and testing program shall include UFLS equipment identification, the schedule for UFLS equipment testing, and the schedule for UFLS equipment maintenance.	MEDIUM
PRC-008-0	R2.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall implement its UFLS equipment maintenance and testing program and shall provide UFLS maintenance and testing program results to its Regional Reliability Organization and NERC on request (within 30 calendar days).	MEDIUM
PRC-009-0	R1.	The Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall analyze and document its UFLS program performance in accordance with its Regional Reliability Organization's UFLS program. The analysis shall address the performance of UFLS equipment and program effectiveness following system events resulting in system frequency excursions below the initializing set points of the UFLS program. The analysis shall include, but not be limited to:	MEDIUM
PRC-009-0	R1.1.	A description of the event including initiating conditions.	MEDIUM
PRC-009-0	R1.2.	A review of the UFLS set points and tripping times.	MEDIUM
PRC-009-0	R1.3.	A simulation of the event.	MEDIUM
PRC-009-0	R1.4.	A summary of the findings.	MEDIUM
PRC-009-0	R2.	The Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall provide documentation of the analysis of the UFLS program to its Regional Reliability Organization and NERC on request 90 calendar days after the system event.	LOWER

PRC-010-0	R1.	The Load-Serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates a UVLS program shall periodically (at least every five years or as required by changes in system conditions) conduct and document an assessment of the effectiveness of the UVLS program. This assessment shall be conducted with the associated Transmission Planner(s) and Planning Authority(ies).	MEDIUM
PRC-010-0	R1.1.	This assessment shall include, but is not limited to:	MEDIUM
PRC-010-0	R1.1.1.	Coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate.	MEDIUM
PRC-010-0	R1.1.2.	Simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0.	MEDIUM
PRC-010-0	R1.1.3.	A review of the voltage set points and timing.	MEDIUM
PRC-010-0	R2.	The Load-Serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates a UVLS program shall provide documentation of its current UVLS program assessment to its Regional Reliability Organization and NERC on request (30 calendar days).	LOWER
PRC-011-0	R1.	The Transmission Owner and Distribution Provider that owns a UVLS system shall have a UVLS equipment maintenance and testing program in place. This program shall include:	MEDIUM
PRC-011-0	R1.1.	The UVLS system identification which shall include but is not limited to:	MEDIUM
PRC-011-0	R1.1.1.	Relays.	MEDIUM
PRC-011-0	R1.1.2.	Instrument transformers.	MEDIUM
PRC-011-0	R1.1.3.	Communications systems, where appropriate.	MEDIUM

PRC-011-0	R1.1.4.	Batteries.	MEDIUM
PRC-011-0	R1.2.	Documentation of maintenance and testing intervals and their basis.	MEDIUM
PRC-011-0	R1.3.	Summary of testing procedure.	MEDIUM
PRC-011-0	R1.4.	Schedule for system testing.	MEDIUM
PRC-011-0	R1.5.	Schedule for system maintenance.	MEDIUM
PRC-011-0	R1.6.	Date last tested/maintained.	MEDIUM
PRC-011-0	R2.	The Transmission Owner and Distribution Provider that owns a UVLS system shall provide documentation of its UVLS equipment maintenance and testing program and the implementation of that UVLS equipment maintenance and testing program to its Regional Reliability Organization and NERC on request (within 30 calendar days).	LOWER
PRC-015-0	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall maintain a list of and provide data for existing and proposed SPSs as specified in Reliability Standard PRC-013-0_R 1.	MEDIUM
PRC-015-0	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have evidence it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures as defined in Reliability Standard PRC-012-0_R1 prior to being placed in service.	MEDIUM
PRC-015-0	R3.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of SPS data and the results of studies that show compliance of new or functionally modified SPSs with NERC Reliability Standards and Regional Reliability Organization criteria to affected Regional Reliability Organizations and NERC on request (within 30 calendar days).	LOWER

PRC-016-0.1	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall analyze its SPS operations and maintain a record of all misoperations in accordance with the Regional SPS review procedure specified in Reliability Standard PRC-012-0_R1.	MEDIUM
PRC-016-0.1	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall take corrective actions to avoid future misoperations.	MEDIUM
PRC-016-0.1	R3.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of the misoperation analyses and the corrective action plans to its Regional Reliability Organization and NERC on request (within 90 calendar days).	LOWER
PRC-017-0	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have a system maintenance and testing program(s) in place. The program(s) shall include:	HIGH
PRC-017-0	R1.1.	SPS identification shall include but is not limited to:	HIGH
PRC-017-0	R1.1.1.	Relays.	HIGH
PRC-017-0	R1.1.2.	Instrument transformers.	HIGH
PRC-017-0	R1.1.3.	Communications systems, where appropriate.	HIGH
PRC-017-0	R1.1.4.	Batteries.	HIGH
PRC-017-0	R1.2.	Documentation of maintenance and testing intervals and their basis.	HIGH
PRC-017-0	R1.3.	Summary of testing procedure.	HIGH
PRC-017-0	R1.4.	Schedule for system testing.	HIGH
PRC-017-0	R1.5.	Schedule for system maintenance.	HIGH

PRC-017-0	R1.6.	Date last tested/maintained.	MEDIUM
PRC-017-0	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of the program and its implementation to the appropriate Regional Reliability Organizations and NERC on request (within 30 calendar days).	LOWER
PRC-018-1	R1.	Each Transmission Owner and Generator Owner required to install DMEs by its Regional Reliability Organization (reliability standard PRC-002 Requirements 1-3) shall have DMEs installed that meet the following requirements:	LOWER
PRC-018-1	R1.1.	Internal Clocks in DME devices shall be synchronized to within 2 milliseconds or less of Universal Coordinated Time scale (UTC)	LOWER
PRC-018-1	R1.2.	Recorded data from each Disturbance shall be retrievable for ten calendar days..	LOWER
PRC-018-1	R2.	The Transmission Owner and Generator Owner shall each install DMEs in accordance with its Regional Reliability Organization's installation requirements (reliability standard PRC-002 Requirements 1 through 3).	LOWER
PRC-018-1	R3.	The Transmission Owner and Generator Owner shall each maintain, and report to its Regional Reliability Organization on request, the following data on the DMEs installed to meet that region's installation requirements (reliability standard PRC-002 Requirements 1.1, 2.1 and 3.1):	LOWER
PRC-018-1	R3.1.	Type of DME (sequence of event recorder, fault recorder, or dynamic disturbance recorder).	LOWER
PRC-018-1	R3.2.	Make and model of equipment.	LOWER
PRC-018-1	R3.3.	Installation location.	LOWER
PRC-018-1	R3.4.	Operational status.	LOWER

PRC-018-1	R3.5.	Date last tested.	LOWER
PRC-018-1	R3.6.	Monitored elements, such as transmission circuit, bus section, etc.	LOWER
PRC-018-1	R3.7.	Monitored devices, such as circuit breaker, disconnect status, alarms, etc.	LOWER
PRC-018-1	R3.8.	Monitored electrical quantities, such as voltage, current, etc.	LOWER
PRC-018-1	R4.	The Transmission Owner and Generator Owner shall each provide Disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements (reliability standard PRC-002 Requirement 4).	LOWER
PRC-018-1	R5.	The Transmission Owner and Generator Owner shall each archive all data recorded by DMEs for Regional Reliability Organization-identified events for at least three years.	LOWER
PRC-018-1	R6.	Each Transmission Owner and Generator Owner that is required by its Regional Reliability Organization to have DMEs shall have a maintenance and testing program for those DMEs that includes:	LOWER
PRC-018-1	R6.1.	Maintenance and testing intervals and their basis.	LOWER
PRC-018-1	R6.2.	Summary of maintenance and testing procedures.	LOWER
PRC-021-1	R1.	Each Transmission Owner and Distribution Provider that owns a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall annually update its UVLS data to support the Regional UVLS program database. The following data shall be provided to the Regional Reliability Organization for each installed UVLS system:	LOWER
PRC-021-1	R1.1.	Size and location of customer load, or percent of connected load, to be interrupted.	LOWER
PRC-021-1	R1.2.	Corresponding voltage set points and overall scheme clearing times.	MEDIUM

PRC-021-1	R1.3.	Time delay from initiation to trip signal.	LOWER
PRC-021-1	R1.4.	Breaker operating times.	LOWER
PRC-021-1	R1.5.	Any other schemes that are part of or impact the UVLS programs such as related generation protection, islanding schemes, automatic load restoration schemes, UFLS and Special Protection Systems.	LOWER
PRC-021-1	R2.	Each Transmission Owner and Distribution Provider that owns a UVLS program shall provide its UVLS program data to the Regional Reliability Organization within 30 calendar days of a request.	LOWER
PRC-022-1	R1.	Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall analyze and document all UVLS operations and Misoperations. The analysis shall include:	MEDIUM
PRC-022-1	R1.1.	A description of the event including initiating conditions.	LOWER
PRC-022-1	R1.2.	A review of the UVLS set points and tripping times.	MEDIUM
PRC-022-1	R1.3.	A simulation of the event, if deemed appropriate by the Regional Reliability Organization. For most events, analysis of sequence of events may be sufficient and dynamic simulations may not be needed.	LOWER
PRC-022-1	R1.4.	A summary of the findings.	LOWER
PRC-022-1	R1.5.	For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature.	MEDIUM

PRC-022-1	R2.	Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall provide documentation of its analysis of UVLS program performance to its Regional Reliability Organization within 90 calendar days of a request.	LOWER
PRC-023-1	R1.	Each Transmission Owner, Generator Owner, and Distribution Provider shall use any one of the following criteria (R1.1 through R1.13) for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Bulk Electric System for all fault conditions. Each Transmission Owner, Generator Owner, and Distribution Provider shall evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees: [Mitigation Time Horizon: Long Term Planning].	HIGH
PRC-023-1	R1.1.	Set transmission line relays so they do not operate at or below 150% of the highest seasonal Facility Rating of a circuit, for the available defined loading duration nearest 4 hours (expressed in amperes).	Part of Main Requirement
PRC-023-1	R1.2.	Set transmission line relays so they do not operate at or below 115% of the highest seasonal 15-minute Facility Rating ² of a circuit (expressed in amperes).	Part of Main Requirement
PRC-023-1	R1.3.	Set transmission line relays so they do not operate at or below 115% of the maximum theoretical power transfer capability (using a 90-degree angle between the sending-end and receiving-end voltages and either reactance or complex impedance) of the circuit (expressed in amperes) using one of the following to perform the power transfer calculation:	Part of Main Requirement
PRC-023-1	R1.3.1.	An infinite source (zero source impedance) with a 1.00 per unit bus voltage at each end of the line.	Part of Main Requirement
PRC-023-1	R1.3.2.	An impedance at each end of the line, which reflects the actual system source impedance with a 1.05 per unit voltage behind each source impedance.	Part of Main Requirement
PRC-023-1	R1.4.	Set transmission line relays on series compensated transmission lines so they do not operate at or below the maximum power transfer capability of the line, determined as the greater of: - 115% of the highest emergency rating of the series capacitor. - 115% of the maximum power transfer capability of the circuit (expressed in amperes), calculated in accordance with R1.3, using the full line inductive reactance.	Part of Main Requirement
PRC-023-1	R1.5.	Set transmission line relays on weak source systems so they do not operate at or below 170% of the maximum end-of-line three-phase fault magnitude (expressed	Part of Main Requirement

		in amperes).	
PRC-023-1	R1.6.	Set transmission line relays applied on transmission lines connected to generation stations remote to load so they do not operate at or below 230% of the aggregated generation nameplate capability.	Part of Main Requirement
PRC-023-1	R1.7.	Set transmission line relays applied at the load center terminal, remote from generation stations, so they do not operate at or below 115% of the maximum current flow from the load to the generation source under any system configuration.	Part of Main Requirement
PRC-023-1	R1.8.	Set transmission line relays applied on the bulk system-end of transmission lines that serve load remote to the system so they do not operate at or below 115% of the maximum current flow from the system to the load under any system configuration.	Part of Main Requirement
PRC-023-1	R1.9.	Set transmission line relays applied on the load-end of transmission lines that serve load remote to the bulk system so they do not operate at or below 115% of the maximum current flow from the load to the system under any system configuration.	Part of Main Requirement
PRC-023-1	R1.10.	Set transformer fault protection relays and transmission line relays on transmission lines terminated only with a transformer so that they do not operate at or below the greater of: - 150% of the applicable maximum transformer nameplate rating (expressed in amperes), including the forced cooled ratings corresponding to all installed supplemental cooling equipment. - 115% of the highest operator established emergency transformer rating.	Part of Main Requirement
PRC-023-1	R1.11.	For transformer overload protection relays that do not comply with R1.10 set the relays according to one of the following: - Set the relays to allow the transformer to be operated at an overload level of at least 150% of the maximum applicable nameplate rating, or 115% of the highest operator established emergency transformer rating, whichever is greater. The protection must allow this overload for at least 15 minutes to allow for the operator to take controlled action to relieve the overload. - Install supervision for the relays using either a top oil or simulated winding hot spot temperature element. The setting should be no less than 100° C for the top oil or 140° C for the winding hot spot temperature3.	Part of Main Requirement

PRC-023-1	R1.12.	When the desired transmission line capability is limited by the requirement to adequately protect the transmission line, set the transmission line distance relays to a maximum of 125% of the apparent impedance (at the impedance angle of the transmission line) subject to the following constraints:	Part of Main Requirement
PRC-023-1	R1.12.1.	Set the maximum torque angle (MTA) to 90 degrees or the highest supported by the manufacturer.	Part of Main Requirement
PRC-023-1	R1.12.2.	Evaluate the relay loadability in amperes at the relay trip point at 0.85 per unit voltage and a power factor angle of 30 degrees.	Part of Main Requirement
PRC-023-1	R1.12.3.	Include a relay setting component of 87% of the current calculated in R1.12.2 in the Facility Rating determination for the circuit.	Part of Main Requirement
PRC-023-1	R1.13.	Where other situations present practical limitations on circuit capability, set the phase protection relays so they do not operate at or below 115% of such limitations.	Part of Main Requirement
PRC-023-1	R2.	The Transmission Owner, Generator Owner, or Distribution Provider that uses a circuit capability with the practical limitations described in R1.6, R1.7, R1.8, R1.9, R1.12, or R1.13 shall use the calculated circuit capability as the Facility Rating of the circuit and shall obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability. [Time Horizon: Long Term Planning]	MEDIUM
PRC-023-1	R3.	The Planning Coordinator shall determine which of the facilities (transmission lines operated at 100 kV to 200 kV and transformers with low voltage terminals connected at 100 kV to 200 kV) in its Planning Coordinator Area are critical to the reliability of the Bulk Electric System to identify the facilities from 100 kV to 200 kV that must meet Requirement 1 to prevent potential cascade tripping that may occur when protective relay settings limit transmission loadability. [Time Horizon: Long Term Planning]	MEDIUM
PRC-023-1	R3.1.	The Planning Coordinator shall have a process to determine the facilities that are critical to the reliability of the Bulk Electric System.	Part of Main Requirement
PRC-023-1	R3.1.1.	This process shall consider input from adjoining Planning Coordinators and affected Reliability Coordinators.	Part of Main Requirement
PRC-023-1	R3.2.	The Planning Coordinator shall maintain a current list of facilities determined according to the process described in R3.1.	Part of Main Requirement

PRC-023-1	R3.3.	The Planning Coordinator shall provide a list of facilities to its Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers within 30 days of the establishment of the initial list and within 30 days of any changes to the list.	Part of Main Requirement
PRC-STD-001-1	WR1.	Each Transmission Operator or Transmission Owner identified in Section 4.1 must submit documentation that an officer of the organization certifies that: a. All protective relay applications are appropriate for the Bulk Power Transmission Paths (“BPTP”) identified in Attachment A – Table 2 of this Standard pursuant to applicable WECC Standards and NERC Standards; b. The BPTP protective relay settings and logic are appropriate pursuant to applicable WECC Standards and NERC Standards; c. Since the last certification or for the last three years all network changes in the path, at the terminals of the path, or in nearby facilities that affect operation of the path have been considered in the protective relay application and settings; d. All relay operations since the last certification or during the last three-year period have been analyzed for correctness and appropriate corrective action taken pursuant to applicable WECC Standards and NERC Standards; e. Up-to-date relay information has been provided to the on-shift operating personnel and the appropriate Reliability Coordinator.	

PRC-STD-003-1	WR1.	<p>Owners of protective relays and Remedial Action Schemes (RAS) applied to path elements of selected WECC major transmission path facilities (listed in Attachment A – Table 2) and RAS (listed in Attachment B – Table 3) must take the following action for each known or probable relay misoperation:</p> <p>a. If functionally equivalent protective relaying or RAS remains in service to ensure bulk transmission system reliability; the relay or RAS that misoperated is to be removed from service for repair or modification within 22 hours of the relay or RAS misoperation. The relay or RAS shall be replaced, repaired, or modified such that the incorrect operation will not be repeated.</p> <p>b. If functionally equivalent protective relaying or RAS does not remain in service that will ensure bulk transmission system reliability, and the relay or RAS that misoperated cannot be repaired and placed back in service within 22 hours, the associated transmission path facility must be removed from service. The remaining path facilities, if any, must be de-rated to a reliable operating level.</p> <p>c. If the relay or RAS misoperates and there is some protection but not entirely functionally equivalent, the relay or RAS must be repaired or removed from service within 22 hours. The associated transmission may remain in service; however, system operation must fully comply with WECC and NERC operating standards. This may require an adjustment of operating levels.</p> <p>d. Protective relays or RAS removed from service must be repaired or replaced with functionally equivalent protective relays or RAS within 20 Business Days of removal, or the system shall be operated at levels that meet WECC Standards and NERC Standards or the associated transmission path elements shall be removed from service. It is not intended that the above requirements apply to system protection and/or RAS actions that appear to be entirely reasonable and correct at the time of occurrence and associated system performance is fully compliant with WECC and NERC standards, and the protective relaying or RAS operation is later found to be incorrect. In such cases, upon determination of the incorrect operation, the requirements of (a) through (d) above will become applicable at the time the incorrect operation is identified. (Source: WECC Criterion)</p>	
TOP-001-1	R1.	Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies.	HIGH

TOP-001-1	R2.	Each Transmission Operator shall take immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc.	HIGH
TOP-001-1	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall comply with reliability directives issued by the Reliability Coordinator, and each Balancing Authority and Generator Operator shall comply with reliability directives issued by the Transmission Operator, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances the Transmission Operator, Balancing Authority, or Generator Operator shall immediately inform the Reliability Coordinator or Transmission Operator of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator can implement alternate remedial actions.	HIGH
TOP-001-1	R4.	Each Distribution Provider and Load-Serving Entity shall comply with all reliability directives issued by the Transmission Operator, including shedding firm load, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances, the Distribution Provider or Load-Serving Entity shall immediately inform the Transmission Operator of the inability to perform the directive so that the Transmission Operator can implement alternate remedial actions.	HIGH
TOP-001-1	R5.	Each Transmission Operator shall inform its Reliability Coordinator and any other potentially affected Transmission Operators of real-time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency.	HIGH
TOP-001-1	R6.	Each Transmission Operator, Balancing Authority, and Generator Operator shall render all available emergency assistance to others as requested, provided that the requesting entity has implemented its comparable emergency procedures, unless such actions would violate safety, equipment, or regulatory or statutory requirements.	HIGH
TOP-001-1	R7.	Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:	HIGH

TOP-001-1	R7.1.	For a generator outage, the Generator Operator shall notify and coordinate with the Transmission Operator. The Transmission Operator shall notify the Reliability Coordinator and other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.	HIGH
TOP-001-1	R7.2.	For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.	HIGH
TOP-001-1	R7.3.	When time does not permit such notifications and coordination, or when immediate action is required to prevent a hazard to the public, lengthy customer service interruption, or damage to facilities, the Generator Operator shall notify the Transmission Operator, and the Transmission Operator shall notify its Reliability Coordinator and adjacent Transmission Operators, at the earliest possible time.	HIGH
TOP-001-1	R8.	During a system emergency, the Balancing Authority and Transmission Operator shall immediately take action to restore the Real and Reactive Power Balance. If the Balancing Authority or Transmission Operator is unable to restore Real and Reactive Power Balance it shall request emergency assistance from the Reliability Coordinator. If corrective action or emergency assistance is not adequate to mitigate the Real and Reactive Power Balance, then the Reliability Coordinator, Balancing Authority, and Transmission Operator shall implement firm load shedding.	HIGH
TOP-002-2a	R1.	Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.	MEDIUM

TOP-002-2a	R2.	Each Balancing Authority and Transmission Operator shall ensure its operating personnel participate in the system planning and design study processes, so that these studies contain the operating personnel perspective and system operating personnel are aware of the planning purpose.	MEDIUM
TOP-002-2a	R3.	Each Load-Serving Entity and Generator Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal operations with its Host Balancing Authority and Transmission Service Provider. Each Balancing Authority and Transmission Service Provider shall coordinate its current-day, next-day, and seasonal operations with its Transmission Operator.	MEDIUM
TOP-002-2a	R4.	Each Balancing Authority and Transmission Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal planning and operations with neighboring Balancing Authorities and Transmission Operators and with its Reliability Coordinator, so that normal Interconnection operation will proceed in an orderly and consistent manner.	MEDIUM
TOP-002-2a	R5.	Each Balancing Authority and Transmission Operator shall plan to meet scheduled system configuration, generation dispatch, interchange scheduling and demand patterns.	MEDIUM
TOP-002-2a	R6.	Each Balancing Authority and Transmission Operator shall plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, subregional, and local reliability requirements.	MEDIUM
TOP-002-2a	R7.	Each Balancing Authority shall plan to meet capacity and energy reserve requirements, including the deliverability/capability for any single Contingency.	MEDIUM
TOP-002-2a	R8.	Each Balancing Authority shall plan to meet voltage and/or reactive limits, including the deliverability/capability for any single contingency.	MEDIUM

TOP-002-2a	R9.	Each Balancing Authority shall plan to meet Interchange Schedules and Ramps.	LOWER
TOP-002-2a	R10.	Each Balancing Authority and Transmission Operator shall plan to meet all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs).	MEDIUM
TOP-002-2a	R11.	The Transmission Operator shall perform seasonal, next-day, and current-day Bulk Electric System studies to determine SOLs. Neighboring Transmission Operators shall utilize identical SOLs for common facilities. The Transmission Operator shall update these Bulk Electric System studies as necessary to reflect current system conditions; and shall make the results of Bulk Electric System studies available to the Transmission Operators, Balancing Authorities (subject to confidentiality requirements), and to its Reliability Coordinator.	MEDIUM
TOP-002-2a	R12.	The Transmission Service Provider shall include known SOLs or IROLs within its area and neighboring areas in the determination of transfer capabilities, in accordance with filed tariffs and/or regional Total Transfer Capability and Available Transfer Capability calculation processes.	MEDIUM
TOP-002-2a	R13.	At the request of the Balancing Authority or Transmission Operator, a Generator Operator shall perform generating real and reactive capability verification that shall include, among other variables, weather, ambient air and water conditions, and fuel quality and quantity, and provide the results to the Balancing Authority or Transmission Operator operating personnel as requested.	MEDIUM
TOP-002-2a	R14.	Generator Operators shall, without any intentional time delay, notify their Balancing Authority and Transmission Operator of changes in capabilities and characteristics including but not limited to:	MEDIUM
TOP-002-2a	R14.1.	Changes in real output capabilities.	MEDIUM
TOP-002-2a	R14.2.	Automatic Voltage Regulator status and mode setting. (Retired August 1, 2007)	LOWER

TOP-002-2a	R15.	Generation Operators shall, at the request of the Balancing Authority or Transmission Operator, provide a forecast of expected real power output to assist in operations planning (e.g., a seven-day forecast of real output).	LOWER
TOP-002-2a	R16.	Subject to standards of conduct and confidentiality agreements, Transmission Operators shall, without any intentional time delay, notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics including but not limited to:	MEDIUM
TOP-002-2a	R16.1.	Changes in transmission facility status.	HIGH
TOP-002-2a	R16.2.	Changes in transmission facility rating.	HIGH
TOP-002-2a	R17.	Balancing Authorities and Transmission Operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator.	HIGH
TOP-002-2a	R18.	Neighboring Balancing Authorities, Transmission Operators, Generator Operators, Transmission Service Providers, and Load-Serving Entities shall use uniform line identifiers when referring to transmission facilities of an interconnected network.	MEDIUM
TOP-002-2a	R19.	Each Balancing Authority and Transmission Operator shall maintain accurate computer models utilized for analyzing and planning system operations.	MEDIUM
TOP-003-0	R1.	Generator Operators and Transmission Operators shall provide planned outage information.	No VRF Assigned
TOP-003-0	R1.1.	Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.	MEDIUM

TOP-003-0	R1.2.	Each Transmission Operator shall provide outage information daily to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. The Reliability Coordinator shall establish the outage reporting requirements.	MEDIUM
TOP-003-0	R1.3.	Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	MEDIUM
TOP-003-0	R2.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required.	MEDIUM
TOP-003-0	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.	MEDIUM
TOP-003-0	R4.	Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts.	MEDIUM
TOP-003-1	R1.	Generator Operators and Transmission Operators shall provide planned outage information.	No VRF Assigned - Pending
TOP-003-1	R1.1.	Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.	MEDIUM - Pending

TOP-003-1	R1.2.	Each Transmission Operator shall provide outage information daily to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation.	MEDIUM - Pending
TOP-003-1	R1.3.	Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	MEDIUM - Pending
TOP-003-1	R2.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required.	MEDIUM - Pending
TOP-003-1	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.	MEDIUM - Pending
TOP-003-1	R4.	Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts.	MEDIUM - Pending
TOP-004-2	R1.	Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs).	HIGH
TOP-004-2	R2.	Each Transmission Operator shall operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency.	HIGH
TOP-004-2	R3.	Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator.	HIGH
TOP-004-2	R4.	If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.	HIGH

TOP-004-2	R5.	Each Transmission Operator shall make every effort to remain connected to the Interconnection. If the Transmission Operator determines that by remaining interconnected, it is in imminent danger of violating an IROL or SOL, the Transmission Operator may take such actions, as it deems necessary, to protect its area.	HIGH
TOP-004-2	R6.	Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability, including:	MEDIUM
TOP-004-2	R6.1.	Monitoring and controlling voltage levels and real and reactive power flows.	MEDIUM
TOP-004-2	R6.2.	Switching transmission elements.	MEDIUM
TOP-004-2	R6.3.	Planned outages of transmission elements.	MEDIUM
TOP-004-2	R6.4.	Responding to IROL and SOL violations.	MEDIUM
TOP-005-1.1a	R1.	Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area.	MEDIUM
TOP-005-1.1a	R1.1.	Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1-TOP-005-0 "Electric System Reliability Data" and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area.	MEDIUM
TOP-005-1.1a	R2.	As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for "Electric System Reliability Data."	LOWER

TOP-005-1.1a	R3.	Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 "Electric System Reliability Data," unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.	MEDIUM
TOP-005-1.1a	R4.	Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations.	MEDIUM
TOP-005-2a	R1.	As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for "Electric System Reliability Data."	Pending
TOP-005-2a	R2.	Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005 "Electric System Reliability Data," unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.	Pending
TOP-005-2a	R3.	Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct operational reliability assessments and coordinate reliable operations.	Pending
TOP-006-1	R1.	Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.	MEDIUM

TOP-006-1	R1.1.	Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.	MEDIUM
TOP-006-1	R1.2.	Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.	MEDIUM
TOP-006-1	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.	HIGH
TOP-006-1	R3.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.	MEDIUM
TOP-006-1	R4.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.	MEDIUM
TOP-006-1	R5.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.	MEDIUM
TOP-006-1	R6.	Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.	HIGH
TOP-006-1	R7.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.	HIGH
TOP-006-2	R1.	Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.	MEDIUM - Pending

TOP-006-2	R1.1.	Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.	MEDIUM - Pending
TOP-006-2	R1.2.	Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.	MEDIUM - Pending
TOP-006-2	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.	HIGH - Pending
TOP-006-2	R3.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.	MEDIUM - Pending
TOP-006-2	R4.	Each Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.	MEDIUM - Pending
TOP-006-2	R5.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.	MEDIUM - Pending
TOP-006-2	R6.	Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.	HIGH - Pending
TOP-006-2	R7.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.	HIGH - Pending
TOP-007-0	R1.	A Transmission Operator shall inform its Reliability Coordinator when an IROL or SOL has been exceeded and the actions being taken to return the system to within limits.	HIGH
TOP-007-0	R2.	Following a Contingency or other event that results in an IROL violation, the Transmission Operator shall return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.	HIGH

TOP-007-0	R3.	A Transmission Operator shall take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to comply with Requirement R 2.	HIGH
TOP-007-0	R4.	The Reliability Coordinator shall evaluate actions taken to address an IROL or SOL violation and, if the actions taken are not appropriate or sufficient, direct actions required to return the system to within limits.	HIGH
TOP-007-WECC-1	R.1.	When the actual power flow exceeds an SOL for a Transmission path, the Transmission Operators shall take immediate action to reduce the actual power flow across the path such that at no time shall the power flow for the Transmission path exceed the SOL for more than 30 minutes. [Time Horizon: Real-time Operations]	MEDIUM - Pending
TOP-007-WECC-1	R.2.	The Transmission Operator shall not have the Net Scheduled Interchange for power flow over an interconnection or Transmission path above the path's SOL when the Transmission Operator implements its real-time schedules for the next hour. For paths internal to a Transmission Operator Area that are not scheduled, this requirement does not apply. [Time Horizon: Real-time Operations]	LOWER - Pending
TOP-007-WECC-1	R2.1.	If the path SOL decreases within 20 minutes before the start of the hour, the Transmission Operator shall adjust the Net Scheduled Interchange within 30 minutes to the new SOL value. Net Scheduled Interchange exceeding the new SOL during this 30-minute period will not be a violation of R2.	Part of Main Requirement - Pending
TOP-008-1	R1.	The Transmission Operator experiencing or contributing to an IROL or SOL violation shall take immediate steps to relieve the condition, which may include shedding firm load.	HIGH
TOP-008-1	R2.	Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in its area or another area of the Interconnection. In instances where there is a difference in derived operating limits, the Transmission Operator shall always operate the Bulk Electric System to the most limiting parameter.	HIGH

TOP-008-1	R3.	The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter.	HIGH
TOP-008-1	R4.	The Transmission Operator shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. This analysis shall be conducted in all operating timeframes. The Transmission Operator shall use the results of these analyses to immediately mitigate the SOL violation.	MEDIUM
TPL-001-0.1	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that, with all transmission facilities in service and with normal (pre-contingency) operating procedures in effect, the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services at all Demand levels over the range of forecast system demands, under the conditions defined in Category A of Table I. To be considered valid, the Planning Authority and Transmission Planner assessments shall:	HIGH
TPL-001-0.1	R1.1.	Be made annually.	MEDIUM
TPL-001-0.1	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	MEDIUM
TPL-001-0.1	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category A of Table 1 (no contingencies). The specific elements selected (from each of the following categories) shall be acceptable to the associated Regional Reliability Organization(s).	MEDIUM
TPL-001-0.1	R1.3.1.	Cover critical system conditions and study years as deemed appropriate by the entity performing the study.	MEDIUM

TPL-001-0.1	R1.3.2.	Be conducted annually unless changes to system conditions do not warrant such analyses.	MEDIUM
TPL-001-0.1	R1.3.3.	Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.	MEDIUM
TPL-001-0.1	R1.3.4.	Have established normal (pre-contingency) operating procedures in place.	MEDIUM
TPL-001-0.1	R1.3.5.	Have all projected firm transfers modeled.	MEDIUM
TPL-001-0.1	R1.3.6.	Be performed for selected demand levels over the range of forecast system demands.	MEDIUM
TPL-001-0.1	R1.3.7.	Demonstrate that system performance meets Table 1 for Category A (no contingencies).	MEDIUM
TPL-001-0.1	R1.3.8.	Include existing and planned facilities.	MEDIUM
TPL-001-0.1	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	MEDIUM
TPL-001-0.1	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category A.	MEDIUM
TPL-001-0.1	R2.	When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-001-0_R1, the Planning Authority and Transmission Planner shall each:	MEDIUM
TPL-001-0.1	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon.	MEDIUM
TPL-001-0.1	R2.1.1.	Including a schedule for implementation.	MEDIUM
TPL-001-0.1	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	MEDIUM

TPL-001-0.1	R2.1.3.	Consider lead times necessary to implement plans.	MEDIUM
TPL-001-0.1	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.	LOWER
TPL-001-0.1	R3.	The Planning Authority and Transmission Planner shall each document the results of these reliability assessments and corrective plans and shall annually provide these to its respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	LOWER
TPL-002-0a	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category B of Table I. To be valid, the Planning Authority and Transmission Planner assessments shall:	HIGH
TPL-002-0a	R1.1.	Be made annually.	MEDIUM
TPL-002-0a	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	MEDIUM
TPL-002-0a	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category B of Table 1 (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	MEDIUM

TPL-002-0a	R1.3.1.	Be performed and evaluated only for those Category B contingencies that would produce the more severe System results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.	MEDIUM
TPL-002-0a	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	MEDIUM
TPL-002-0a	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	MEDIUM
TPL-002-0a	R1.3.4.	Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.	MEDIUM
TPL-002-0a	R1.3.5.	Have all projected firm transfers modeled.	MEDIUM
TPL-002-0a	R1.3.6.	Be performed and evaluated for selected demand levels over the range of forecast system Demands.	MEDIUM
TPL-002-0a	R1.3.7.	Demonstrate that system performance meets Category B contingencies.	MEDIUM
TPL-002-0a	R1.3.8.	Include existing and planned facilities.	MEDIUM
TPL-002-0a	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	MEDIUM
TPL-002-0a	R1.3.10.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	MEDIUM
TPL-002-0a	R1.3.11.	Include the effects of existing and planned control devices.	MEDIUM

TPL-002-0a	R1.3.12.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.	MEDIUM
TPL-002-0a	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category B of Table I.	MEDIUM
TPL-002-0a	R1.5.	Consider all contingencies applicable to Category B.	MEDIUM
TPL-002-0a	R2.	When System simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-002-0_R1, the Planning Authority and Transmission Planner shall each:	MEDIUM
TPL-002-0a	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	MEDIUM
TPL-002-0a	R2.1.1.	Including a schedule for implementation.	MEDIUM
TPL-002-0a	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	MEDIUM
TPL-002-0a	R2.1.3.	Consider lead times necessary to implement plans.	MEDIUM
TPL-002-0a	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.	MEDIUM
TPL-002-0a	R3.	The Planning Authority and Transmission Planner shall each document the results of its Reliability Assessments and corrective plans and shall annually provide the results to its respective Regional Reliability Organization(s), as required by the Regional Reliability Organization.	LOWER

TPL-003-0a	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission systems is planned such that the network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand Levels over the range of forecast system demands, under the contingency conditions as defined in Category C of Table I (attached). The controlled interruption of customer Demand, the planned removal of generators, or the Curtailment of firm (non-recallable reserved) power transfers may be necessary to meet this standard. To be valid, the Planning Authority and Transmission Planner assessments shall:	HIGH
TPL-003-0a	R1.1.	Be made annually.	MEDIUM
TPL-003-0a	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	MEDIUM
TPL-003-0a	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category C of Table 1 (multiple contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	MEDIUM
TPL-003-0a	R1.3.1.	Be performed and evaluated only for those Category C contingencies that would produce the more severe system results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.	MEDIUM
TPL-003-0a	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	MEDIUM
TPL-003-0a	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	MEDIUM

TPL-003-0a	R1.3.4.	Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.	MEDIUM
TPL-003-0a	R1.3.5.	Have all projected firm transfers modeled.	MEDIUM
TPL-003-0a	R1.3.6.	Be performed and evaluated for selected demand levels over the range of forecast system demands.	MEDIUM
TPL-003-0a	R1.3.7.	Demonstrate that System performance meets Table 1 for Category C contingencies.	MEDIUM
TPL-003-0a	R1.3.8.	Include existing and planned facilities.	MEDIUM
TPL-003-0a	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet System performance.	MEDIUM
TPL-003-0a	R1.3.10.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	MEDIUM
TPL-003-0a	R1.3.11.	Include the effects of existing and planned control devices.	MEDIUM
TPL-003-0a	R1.3.12.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those Demand levels for which planned (including maintenance) outages are performed.	MEDIUM
TPL-003-0a	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category C.	MEDIUM
TPL-003-0a	R1.5.	Consider all contingencies applicable to Category C.	MEDIUM
TPL-003-0a	R2.	When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-003-0_R1, the Planning Authority and Transmission Planner shall each:	MEDIUM

TPL-003-0a	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	MEDIUM
TPL-003-0a	R2.1.1.	Including a schedule for implementation.	MEDIUM
TPL-003-0a	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	MEDIUM
TPL-003-0a	R2.1.3.	Consider lead times necessary to implement plans.	MEDIUM
TPL-003-0a	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.	MEDIUM
TPL-003-0a	R3.	The Planning Authority and Transmission Planner shall each document the results of these Reliability Assessments and corrective plans and shall annually provide these to its respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	LOWER
TPL-004-0	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed under Category D of Table I. To be valid, the Planning Authority's and Transmission Planner's assessment shall:	MEDIUM
TPL-004-0	R1.1.	Be made annually.	MEDIUM
TPL-004-0	R1.2.	Be conducted for near-term (years one through five).	MEDIUM

TPL-004-0	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category D contingencies of Table I. The specific elements selected (from within each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	MEDIUM
TPL-004-0	R1.3.1.	Be performed and evaluated only for those Category D contingencies that would produce the more severe system results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.	MEDIUM
TPL-004-0	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	MEDIUM
TPL-004-0	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	MEDIUM
TPL-004-0	R1.3.4.	Have all projected firm transfers modeled.	MEDIUM
TPL-004-0	R1.3.5.	Include existing and planned facilities.	MEDIUM
TPL-004-0	R1.3.6.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	MEDIUM
TPL-004-0	R1.3.7.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	MEDIUM
TPL-004-0	R1.3.8.	Include the effects of existing and planned control devices.	MEDIUM

TPL-004-0	R1.3.9.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.	MEDIUM
TPL-004-0	R1.4.	Consider all contingencies applicable to Category D.	MEDIUM
TPL-004-0	R2.	The Planning Authority and Transmission Planner shall each document the results of its reliability assessments and shall annually provide the results to its entities' respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	LOWER
VAR-001-1	R1.	Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and Mvar flows within their individual areas and with the areas of neighboring Transmission Operators.	HIGH
VAR-001-1	R2.	Each Transmission Operator shall acquire sufficient reactive resources within its area to protect the voltage levels under normal and Contingency conditions. This includes the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	HIGH
VAR-001-1	R3.	The Transmission Operator shall specify criteria that exempts generators from compliance with the requirements defined in Requirement 4, and Requirement 6.1.	LOWER
VAR-001-1	R3.1.	Each Transmission Operator shall maintain a list of generators in its area that are exempt from following a voltage or Reactive Power schedule.	LOWER
VAR-001-1	R3.2.	For each generator that is on this exemption list, the Transmission Operator shall notify the associated Generator Owner.	LOWER

VAR-001-1	R4.	Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).	MEDIUM
VAR-001-1	R5.	Each Purchasing-Selling Entity shall arrange for (self-provide or purchase) reactive resources to satisfy its reactive requirements identified by its Transmission Service Provider.	HIGH
VAR-001-1	R6.	The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.	MEDIUM
VAR-001-1	R6.1.	When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.	MEDIUM
VAR-001-1	R7.	The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.	HIGH
VAR-001-1	R8.	Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.	HIGH
VAR-001-1	R9.	Each Transmission Operator shall maintain reactive resources to support its voltage under first Contingency conditions.	HIGH
VAR-001-1	R9.1.	Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.	HIGH

VAR-001-1	R10.	Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.	HIGH
VAR-001-1	R11.	After consultation with the Generator Owner regarding necessary step-up transformer tap changes, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.	LOWER
VAR-001-1	R12.	The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.	HIGH
VAR-001-2	R1.	Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and Mvar flows within their individual areas and with the areas of neighboring Transmission Operators.	HIGH
VAR-001-2	R2.	Each Transmission Operator shall acquire sufficient reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load – within its area to protect the voltage levels under normal and Contingency conditions. This includes the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	HIGH
VAR-001-2	R3.	The Transmission Operator shall specify criteria that exempts generators from compliance with the requirements defined in Requirement 4, and Requirement 6.1.	LOWER
VAR-001-2	R3.1.	Each Transmission Operator shall maintain a list of generators in its area that are exempt from following a voltage or Reactive Power schedule.	LOWER
VAR-001-2	R3.2.	For each generator that is on this exemption list, the Transmission Operator shall notify the associated Generator Owner.	LOWER

VAR-001-2	R4.	Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).	MEDIUM
VAR-001-2	R5.	Each Purchasing-Selling Entity and Load Serving Entity shall arrange for (self-provide or purchase) reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load– to satisfy its reactive requirements identified by its Transmission Service Provider.	HIGH
VAR-001-2	R6.	The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.	MEDIUM
VAR-001-2	R6.1.	When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.	MEDIUM
VAR-001-2	R7.	The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.	HIGH
VAR-001-2	R8.	Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; controllable load; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.	HIGH
VAR-001-2	R9.	Each Transmission Operator shall maintain reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load– to support its voltage under first Contingency conditions.	HIGH

VAR-001-2	R9.1.	Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.	HIGH
VAR-001-2	R10.	Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.	HIGH
VAR-001-2	R11.	After consultation with the Generator Owner regarding necessary step-up transformer tap changes, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.	LOWER
VAR-001-2	R12.	The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.	HIGH
VAR-002-1.1b	R1.	The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.	MEDIUM
VAR-002-1.1b	R2.	Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings. [1] as directed by the Transmission Operator	MEDIUM
VAR-002-1.1b	R2.1.	When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.	MEDIUM
VAR-002-1.1b	R2.2.	When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.	MEDIUM

VAR-002-1.1b	R3.	Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following:	MEDIUM
VAR-002-1.1b	R3.1.	A status or capability change on any generator Reactive Power resource, including the status of each automatic voltage regulator and power system stabilizer and the expected duration of the change in status or capability.	MEDIUM
VAR-002-1.1b	R3.2.	A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or capability.	MEDIUM
VAR-002-1.1b	R4.	The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request.	LOWER
VAR-002-1.1b	R4.1.	For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:	LOWER
VAR-002-1.1b	R4.1.1.	Tap settings.	LOWER
VAR-002-1.1b	R4.1.2.	Available fixed tap ranges.	LOWER
VAR-002-1.1b	R4.1.3.	Impedance data.	LOWER
VAR-002-1.1b	R4.1.4.	The +/- voltage range with step-change in % for load-tap changing transformers.	LOWER
VAR-002-1.1b	R5.	After consultation with the Transmission Operator regarding necessary step-up transformer tap changes, the Generator Owner shall ensure that transformer tap positions are changed according to the specifications provided by the Transmission Operator, unless such action would violate safety, an equipment rating, a regulatory requirement, or a statutory requirement.	MEDIUM

VAR-002-1.1b	R5.1.	If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.	LOWER
VAR-002-WECC-1	R1.	Generator Operators and Transmission Operators shall have AVR in service and in automatic voltage control mode 98% of all operating hours for synchronous generators or synchronous condensers. Generator Operators and Transmission Operators may exclude hours for R1.1 through R1.10 to achieve the 98% requirement. [See <i>standard pdf for R1.1 through R1.10</i>]	MEDIUM
VAR-002-WECC-1	R2.	Generator Operators and Transmission Operators shall have documentation identifying the number of hours excluded for each requirement R1.1 through R1.10.	LOWER
VAR-501-WECC-1	R1.	Generator Operators shall have PSS in service 98% of all operating hours for synchronous generators equipped with PSS. Generator Operators may exclude hours for R1.1 through R1.12 to achieve the 98% requirement. [See <i>standard pdf for R1.1 through R1.12</i>]	MEDIUM
VAR-501-WECC-1	R2.	Generator Operators shall have documentation identifying the number of hours excluded for each requirement in R1.1 through R1.12.	LOWER

Exhibit E

Matrix of Violation Severity Levels for Information

Complete Violation Severity Levels Matrix
Encompassing All Commission-Approved Reliability Standards

July 15, 2011

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
BAL-001-0.1a	R1.	Each Balancing Authority shall operate such that, on a rolling 12-month basis, the average of the clock-minute averages of the Balancing Authority's Area Control Error (ACE) divided by 10B (B is the clock-minute average of the Balancing Authority Area's Frequency Bias) times the corresponding clock-minute averages of the Interconnection's Frequency Error is less than a specific limit. This limit is a constant derived from a targeted frequency bound (separately calculated for each Interconnection) that is reviewed and set as necessary by the NERC Operating Committee. <i>See Standard for Formula.</i>	The Balancing Authority Area's value of CPS1 is less than 100% but greater than or equal to 95%.	The Balancing Authority Area's value of CPS1 is less than 95% but greater than or equal to 90%.	The Balancing Authority Area's value of CPS1 is less than 90% but greater than or equal to 85%.	The Balancing Authority Area's value of CPS1 is less than 85%.
BAL-001-0.1a	R2.	Each Balancing Authority shall operate such that its average ACE for at least 90% of clock-ten-minute periods (6 non-overlapping periods per hour) during a calendar month is within a specific limit, referred to as L ₁₀ . <i>See Standard for Formula.</i>	The Balancing Authority Area's value of CPS2 is less than 90% but greater than or equal to 85%.	The Balancing Authority Area's value of CPS2 is less than 85% but greater than or equal to 80%.	The Balancing Authority Area's value of CPS2 is less than 80% but greater than or equal to 75%.	The Balancing Authority Area's value of CPS2 is less than 75%.
BAL-001-0.1a	R3.	Each Balancing Authority providing Overlap Regulation Service shall evaluate Requirement R1 (i.e., Control Performance Standard 1 or CPS1) and Requirement R2 (i.e., Control Performance Standard 2 or CPS2) using the characteristics of the combined ACE and combined Frequency Bias Settings.	N/A	N/A	N/A	The Balancing Authority providing Overlap Regulation Service failed to use a combined ACE and frequency bias.
BAL-001-0.1a	R4.	Any Balancing Authority receiving Overlap Regulation Service shall not	N/A	N/A	N/A	The Balancing Authority receiving

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		have its control performance evaluated (i.e. from a control performance perspective, the Balancing Authority has shifted all control requirements to the Balancing Authority providing Overlap Regulation Service).				Overlap Regulation Service failed to ensure that control performance was being evaluated in a manner consistent with the calculation methodology as described in BAL-001-01 R3.
BAL-002-0	R1.	Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.	N/A	N/A	The Balancing Authority did not operate Contingency Reserve to respond to a Disturbance.	The Balancing Authority did not have access to Contingency Reserve to respond to a Disturbance.
BAL-002-0	R1.1.	A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002.	N/A	N/A	N/A	The Balancing Authority has elected to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group and the Reserve Sharing Group has not provided the same responsibilities and obligations as required of the responsible entity with respect to monitoring and meeting the requirements of Standard BAL-002.
BAL-002-0	R2.	Each Regional Reliability Organization, sub-Regional Reliability	The Regional Reliability	The Regional Reliability	The Regional Reliability	The Regional Reliability

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:	Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 1 of the following sub-requirements.	Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 2 or 3 of the following sub-requirements.	Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 4 or 5 of the following sub-requirements.	Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify all 6 of the following sub-requirements.
BAL-002-0	R2.1.	The minimum reserve requirement for the group.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the minimum reserve requirement for the group.
BAL-002-0	R2.2.	Its allocation among members.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the allocation of reserves among members.
BAL-002-0	R2.3.	The permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the permissible mix of Operating Reserve –

**Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.
BAL-002-0	R2.4.	The procedure for applying Contingency Reserve in practice.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to provide the procedure for applying Contingency Reserve in practice.
BAL-002-0	R2.5.	The limitations, if any, upon the amount of interruptible load that may be included.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the limitations, if any, upon the amount of interruptible load that may be included.
BAL-002-0	R2.6.	The same portion of resource capacity (e.g., reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has allowed the same portion of resource capacity (e.g., reserves from jointly owned generation) to be

**Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						counted more than once as Contingency Reserve by multiple Balancing Authorities.
BAL-002-0	R3.	Each Balancing Authority or Reserve Sharing Group shall activate sufficient Contingency Reserve to comply with the DCS.	The Balancing Authority or Reserve Sharing Group's average percent recovery per the NERC DCS quarterly report was less than 100% but greater than or equal to 95%. OR The Balancing Authority or Reserve Sharing Group failed to review its probable contingencies to determine its prospective most severe single contingencies annually as specified in R3.1.	The Balancing Authority or Reserve Sharing Group's average percent recovery per the NERC DCS quarterly report was less than 95% but greater than or equal to 90%.	The Balancing Authority or Reserve Sharing Group's average percent recovery per the NERC DCS quarterly report was less than 90% but greater than or equal to 85%.	The Balancing Authority or Reserve Sharing Group's average percent recovery per the NERC DCS quarterly report was less than 85%. OR The Balancing Authority or Reserve Sharing Group failed to carry at least enough Contingency Reserve to cover the most severe single contingency as specified in R3.1.
BAL-002-0	R3.1.	As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently than annually, their probable contingencies to determine their prospective most severe single	N/A	N/A	N/A	N/A

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		contingencies.				
BAL-002-0	R4.	A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 90% and less than 100% of Reportable Disturbances.	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 80% and less than or equal to 90% of Reportable Disturbances.	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 70% and less than or equal to 80% of Reportable Disturbances.	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 0% and less than or equal to 70% of Reportable Disturbances.
BAL-002-0	R4.1.	A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero. For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.	N/A	N/A	N/A	N/A
BAL-002-0	R4.2.	The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance. This period may be adjusted to better suit the needs of an Interconnection based on analysis approved by the NERC Operating Committee.	N/A	N/A	N/A	N/A
BAL-002-0	R5.	Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more other group members. (If a	The Reserve Sharing Group met the DCS requirement for more than 90% and less than 100% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 80% and less than or equal to 90% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 70% and less than or equal to 80% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 0% and less than or equal to 70% of Reportable Disturbances.

**Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:				
BAL-002-0	R5.1.	The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS. To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	N/A	N/A	N/A	N/A
BAL-002-0	R5.2.	The Reserve Sharing Group reviews each member's ACE in response to the activation of reserves. To be in compliance, a member's ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	N/A	N/A	N/A	N/A
BAL-002-0	R6.	A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within the Contingency Reserve Restoration Period for its Interconnection.	The Balancing Authority or Reserve Sharing Group failed to restore 5% or less of its contingency reserves during the Contingency Reserve Restoration Period.	The Balancing Authority or Reserve Sharing Group failed to restore more than 5% up to (and including) 10% of its contingency reserves during the Contingency Reserve	The Balancing Authority or Reserve Sharing Group failed to restore more than 10% up to (and including) 15% of its Contingency Reserve during the Contingency Reserve	The Balancing Authority or Reserve Sharing Group failed to restore more than 15% of its Contingency Reserves during the Contingency Reserve Restoration Period.

**Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Restoration Period.	Restoration Period.	
BAL-002-0	R6.1.	The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.	N/A	N/A	N/A	N/A
BAL-002-0	R6.2.	The default Contingency Reserve Restoration Period is 90 minutes. This period may be adjusted to better suit the reliability targets of the Interconnection based on analysis approved by the NERC Operating Committee.	N/A	N/A	N/A	N/A
BAL-002-1	R1.	Each Balancing Authority shall have access to and/or operate Contingency Reserve to respond to Disturbances. Contingency Reserve may be supplied from generation, controllable load resources, or coordinated adjustments to Interchange Schedules.	N/A	N/A	N/A	The Balancing Authority does not have access to and/or operate Contingency Reserve to respond to Disturbances.
BAL-002-1	R1.1.	A Balancing Authority may elect to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group. In such cases, the Reserve Sharing Group shall have the same responsibilities and obligations as each Balancing Authority with respect to monitoring and meeting the requirements of Standard BAL-002.	N/A	N/A	N/A	The Balancing Authority has elected to fulfill its Contingency Reserve obligations by participating as a member of a Reserve Sharing Group and the Reserve Sharing Group has not provided the same responsibilities and obligations as required of the responsible entity with respect to monitoring and meeting the requirements of Standard BAL-002.

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
BAL-002-1	R2.	Each Regional Reliability Organization, sub-Regional Reliability Organization or Reserve Sharing Group shall specify its Contingency Reserve policies, including:	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 1 of the following sub-requirements.	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 2 or 3 of the following sub-requirements.	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify 4 or 5 of the following sub-requirements.	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify all 6 of the following sub-requirements.
BAL-002-1	R2.1.	The minimum reserve requirement for the group.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the minimum reserve requirement for the group.
BAL-002-1	R2.2.	Its allocation among members.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the allocation of reserves among members.
BAL-002-1	R2.3.	The permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify

Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						the permissible mix of Operating Reserve – Spinning and Operating Reserve – Supplemental that may be included in Contingency Reserve.
BAL-002-1	R2.4.	The procedure for applying Contingency Reserve in practice.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to provide the procedure for applying Contingency Reserve in practice.
BAL-002-1	R2.5.	The limitations, if any, upon the amount of interruptible load that may be included.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has failed to specify the limitations, if any, upon the amount of interruptible load that may be included.
BAL-002-1	R2.6.	The same portion of resource capacity (e.g. reserves from jointly owned generation) shall not be counted more than once as Contingency Reserve by multiple Balancing Authorities.	N/A	N/A	N/A	The Regional Reliability Organization, sub-Regional Reliability Organization, or Reserve Sharing Group has allowed the same portion of resource capacity (e.g., reserves

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						from jointly owned generation) to be counted more than once as Contingency Reserve by multiple Balancing Authorities.
BAL-002-1	R3.	Each Balancing Authority or Reserve Sharing Group shall activate sufficient Contingency Reserve to comply with the DCS.	The Balancing Authority or Reserve Sharing Group's Average Percent Recovery per the NERC DCS quarterly report was less than 100% but greater than or equal to 95%.	The Balancing Authority or Reserve Sharing Group's Average Percent Recovery per the NERC DCS quarterly report was less than 95% but greater than or equal to 90%.	The Balancing Authority or Reserve Sharing Group's Average Percent Recovery per the NERC DCS quarterly report was less than 90% but greater than or equal to 85%.	The Balancing Authority or Reserve Sharing Group's Average Percent Recovery per the NERC DCS quarterly report was less than 85%.
BAL-002-1	R3.1.	As a minimum, the Balancing Authority or Reserve Sharing Group shall carry at least enough Contingency Reserve to cover the most severe single contingency. All Balancing Authorities and Reserve Sharing Groups shall review, no less frequently than annually, their probable contingencies to determine their prospective most severe single contingencies.	The Balancing Authority or Reserve Sharing Group failed to review their probable contingencies to determine their prospective most severe single contingencies annually.	N/A	N/A	The Balancing Authority or Reserve Sharing Group failed to carry at least enough Contingency Reserve to cover the most severe single contingency.
BAL-002-1	R4.	A Balancing Authority or Reserve Sharing Group shall meet the Disturbance Recovery Criterion within the Disturbance Recovery Period for 100% of Reportable Disturbances. The Disturbance Recovery Criterion is:	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 90% and less than 100% of	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 80% and less than or equal to 90% of Reportable	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 70% and less than or equal to 80% of Reportable	The Balancing Authority or Reserve Sharing Group met the Disturbance Recovery Criterion within the Disturbance Recovery Period for more than 0% and less than or equal to 70% of Reportable

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			Reportable Disturbances.	Disturbances.	Disturbances.	Disturbances.
BAL-002-1	R4.1.	A Balancing Authority shall return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero. For negative initial ACE values just prior to the Disturbance, the Balancing Authority shall return ACE to its pre-Disturbance value.	N/A	N/A	N/A	The Balancing Authority failed to return its ACE to zero if its ACE just prior to the Reportable Disturbance was positive or equal to zero or for negative initial ACE values failed to return ACE to its pre-Disturbance value.
BAL-002-1	R4.2.	The default Disturbance Recovery Period is 15 minutes after the start of a Reportable Disturbance.	N/A	N/A	N/A	N/A
BAL-002-1	R5.	Each Reserve Sharing Group shall comply with the DCS. A Reserve Sharing Group shall be considered in a Reportable Disturbance condition whenever a group member has experienced a Reportable Disturbance and calls for the activation of Contingency Reserves from one or more other group members. (If a group member has experienced a Reportable Disturbance but does not call for reserve activation from other members of the Reserve Sharing Group, then that member shall report as a single Balancing Authority.) Compliance may be demonstrated by either of the following two methods:	The Reserve Sharing Group met the DCS requirement for more than 90% and less than 100% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 80% and less than or equal to 90% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 70% and less than or equal to 80% of Reportable Disturbances.	The Reserve Sharing Group met the DCS requirements for more than 0% and less than or equal to 70% of Reportable Disturbances.
BAL-002-1	R5.1.	The Reserve Sharing Group reviews group ACE (or equivalent) and demonstrates compliance to the DCS.	N/A	N/A	N/A	N/A

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		To be in compliance, the group ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.				
BAL-002-1	R5.2.	The Reserve Sharing Group reviews each member's ACE in response to the activation of reserves. To be in compliance, a member's ACE (or its equivalent) must meet the Disturbance Recovery Criterion after the schedule change(s) related to reserve sharing have been fully implemented, and within the Disturbance Recovery Period.	N/A	N/A	N/A	N/A
BAL-002-1	R6.	A Balancing Authority or Reserve Sharing Group shall fully restore its Contingency Reserves within the Contingency Reserve Restoration Period for its Interconnection.	The Balancing Authority or Reserve Sharing Group restored less than 100% but greater than 90% of its contingency reserves during the Contingency Reserve Restoration Period.	The Balancing Authority or Reserve Sharing Group restored less than or equal to 90% but greater than 80% of its contingency reserves during the Contingency Reserve Restoration Period.	The Balancing Authority or Reserve Sharing Group restored less than or equal to 80% but greater than or equal to 70% of its Contingency Reserve during the Contingency Reserve Restoration Period.	The Balancing Authority or Reserve Sharing Group restored less than 70% of its Contingency Reserves during the Contingency Reserve Restoration Period.
BAL-002-1	R6.1.	The Contingency Reserve Restoration Period begins at the end of the Disturbance Recovery Period.	N/A	N/A	N/A	N/A
BAL-002-1	R6.2.	The default Contingency Reserve Restoration Period is 90 minutes.	N/A	N/A	N/A	N/A
BAL-003-0.1b	R1.	Each Balancing Authority shall review its Frequency Bias Settings by January 1 of each year and recalculate its	The Balancing Authority failed to report the method for	The Balancing Authority failed to report its Frequency	The Balancing Authority failed to report its Frequency	The Balancing Authority failed to review its Frequency

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		setting to reflect any change in the Frequency Response of the Balancing Authority Area.	determining its Frequency Bias Setting to the NERC Operating Committee. (R1.2)	Bias Setting to the NERC Operating Committee. (R1.2)	Bias Settings and the method for determining that Frequency Bias Setting to the NERC Operating Committee. (R1.2)	Bias Settings by January 1 of each year and recalculate its setting to reflect any change in the Frequency Response of the Balancing Authority Area.
BAL-003-0.1b	R1.1.	The Balancing Authority may change its Frequency Bias Setting, and the method used to determine the setting, whenever any of the factors used to determine the current bias value change.	N/A	N/A	N/A	N/A
BAL-003-0.1b	R1.2.	Each Balancing Authority shall report its Frequency Bias Setting, and method for determining that setting, to the NERC Operating Committee.	N/A	N/A	N/A	N/A
BAL-003-0.1b	R2.	Each Balancing Authority shall establish and maintain a Frequency Bias Setting that is as close as practical to, or greater than, the Balancing Authority's Frequency Response. Frequency Bias may be calculated several ways:	N/A	N/A	N/A	The Balancing Authority established and maintained a Frequency Bias Setting that was less than, the Balancing Authority's Frequency Response.
BAL-003-0.1b	R2.1.	The Balancing Authority may use a fixed Frequency Bias value which is based on a fixed, straight-line function of Tie Line deviation versus Frequency Deviation. The Balancing Authority shall determine the fixed value by observing and averaging the Frequency Response for several Disturbances during on-peak hours.	N/A	N/A	N/A	The Balancing Authority determination of the fixed Frequency Bias value was not based on observations and averaging the Frequency Response from Disturbances during on-peak hours.
BAL-003-0.1b	R2.2.	The Balancing Authority may use a	N/A	N/A	N/A	The Balancing

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		variable (linear or non-linear) bias value, which is based on a variable function of Tie Line deviation to Frequency Deviation. The Balancing Authority shall determine the variable frequency bias value by analyzing Frequency Response as it varies with factors such as load, generation, governor characteristics, and frequency.				Authorities variable frequency bias maintained was not based on analyses of Frequency Response as it varied with factors such as load, generation, governor characteristics, and frequency.
BAL-003-0.1b	R3.	Each Balancing Authority shall operate its Automatic Generation Control (AGC) on Tie Line Frequency Bias, unless such operation is adverse to system or Interconnection reliability.	N/A	N/A	N/A	The Balancing Authority did not operate its Automatic Generation Control (AGC) on Tie Line Frequency Bias, during periods when such operation would not have been adverse to system or Interconnection reliability.
BAL-003-0.1b	R4.	Balancing Authorities that use Dynamic Scheduling or Pseudo-ties for jointly owned units shall reflect their respective share of the unit governor droop response in their respective Frequency Bias Setting.	N/A	N/A	N/A	The Balancing Authority that used Dynamic Scheduling or Pseudo-ties for jointly owned units did not reflect its respective share of the unit governor droop response in its respective Frequency Bias Setting.
BAL-003-0.1b	R4.1.	Fixed schedules for Jointly Owned Units mandate that Balancing Authority (A) that contains the Jointly Owned Unit must incorporate the	N/A	N/A	N/A	The Balancing Authority (A) that contained the Jointly Owned Unit with fixed

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		respective share of the unit governor droop response for any Balancing Authorities that have fixed schedules (B and C). See the diagram below.				schedules did not incorporate the respective share of the unit governor droop response for any Balancing Authorities that have fixed schedules (B and C).
BAL-003-0.1b	R4.2.	The Balancing Authorities that have a fixed schedule (B and C) but do not contain the Jointly Owned Unit shall not include their share of the governor droop response in their Frequency Bias Setting. <i>See Standard for Graphic</i>	N/A	N/A	N/A	A Balancing Authority that has a fixed schedule (B and C) but does not contain the Jointly Owned Unit included its share of the governor droop response in its Frequency Bias Setting.
BAL-003-0.1b	R5.	Balancing Authorities that serve native load shall have a monthly average Frequency Bias Setting that is at least 1% of the Balancing Authority's estimated yearly peak demand per 0.1 Hz change.	N/A	N/A	N/A	The Balancing Authority that served native load failed to have a monthly average Frequency Bias Setting that was at least 1% of the entities estimated yearly peak demand per 0.1 Hz change.
BAL-003-0.1b	R5.1.	Balancing Authorities that do not serve native load shall have a monthly average Frequency Bias Setting that is at least 1% of its estimated maximum generation level in the coming year per 0.1 Hz change.	N/A	N/A	N/A	The Balancing Authority that does not serve native load did not have a monthly average Frequency Bias Setting that was at least 1% of its estimated maximum generation level in the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						coming year per 0.1 Hz change.
BAL-003-0.1b	R6.	A Balancing Authority that is performing Overlap Regulation Service shall increase its Frequency Bias Setting to match the frequency response of the entire area being controlled. A Balancing Authority shall not change its Frequency Bias Setting when performing Supplemental Regulation Service.	N/A	The Balancing Authority that was performing Overlap Regulation Service changed its Frequency Bias Setting while performing Supplemental Regulation Service.	The Balancing Authority that was performing Overlap Regulation Service failed to increase its Frequency Bias Setting to match the frequency response of the entire area being controlled.	N/A
BAL-004-0	R1.	Only a Reliability Coordinator shall be eligible to act as Interconnection Time Monitor. A single Reliability Coordinator in each Interconnection shall be designated by the NERC Operating Committee to serve as Interconnection Time Monitor.	N/A	N/A	N/A	The responsible entity has designated more than one interconnection time monitor for a single interconnection.
BAL-004-0	R2.	The Interconnection Time Monitor shall monitor Time Error and shall initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.	N/A	N/A	N/A	The responsible entity serving as the Interconnection Time Monitor failed to initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.
BAL-004-0	R3.	Each Balancing Authority, when requested, shall participate in a Time Error Correction by one of the following methods:	The Balancing Authority participated in more than 75% and less than 100% of requested Time Error Corrections for the calendar year.	The Balancing Authority participated in more than 50% and less than or equal to 75% of requested Time Error Corrections for the calendar year.	The Balancing Authority participated in more than 25% and less than or equal to 50% of requested Time Error Corrections for the calendar year.	The Balancing Authority participated in less than or equal to 25% of requested Time Error Corrections for the calendar year.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
BAL-004-0	R3.1.	The Balancing Authority shall offset its frequency schedule by 0.02 Hertz, leaving the Frequency Bias Setting normal; or	The Balancing Authority failed to offset its frequency schedule by 0.02 Hertz and leave their Frequency Bias Setting normal for 0 to 25% of the time error corrections for the year.	The Balancing Authority failed to offset its frequency schedule by 0.02 Hertz and leave their Frequency Bias Setting normal for 25 to 50% of the time error corrections for the year.	The Balancing Authority failed to offset its frequency schedule by 0.02 Hertz and leave their Frequency Bias Setting normal for 50 to 75% of the time error corrections for the year.	The Balancing Authority failed to offset its frequency schedule by 0.02 Hertz and leave their Frequency Bias Setting normal for 75% or more of the time error corrections for the year.
BAL-004-0	R.3.2.	The Balancing Authority shall offset its Net Interchange Schedule (MW) by an amount equal to the computed bias contribution during a 0.02 Hertz Frequency Deviation (i.e. 20% of the Frequency Bias Setting).	The Balancing Authority failed to offset its net interchange schedule frequency schedule by 20% of their frequency bias for 0 to 25% of the time error corrections.	The Balancing Authority failed to offset its net interchange schedule frequency schedule by 20% of their frequency bias for 25 to 50% of the time error corrections.	The Balancing Authority failed to offset its net interchange schedule frequency schedule by 20% of their frequency bias for 50 to 75% of the time error corrections.	The Balancing Authority failed to offset its net interchange schedule frequency schedule by 20% of their frequency bias for 75% or more of the time error corrections.
BAL-004-0	R4.	Any Reliability Coordinator in an Interconnection shall have the authority to request the Interconnection Time Monitor to terminate a Time Error Correction in progress, or a scheduled Time Error Correction that has not begun, for reliability considerations.	N/A	N/A	N/A	The RC serving as the Interconnection Time Monitor failed to initiate or terminate corrective action orders in accordance with the NAESB Time Error Correction Procedure.
BAL-004-0	R4.1.	Balancing Authorities that have reliability concerns with the execution of a Time Error Correction shall notify their Reliability Coordinator and request the termination of a Time Error Correction in progress.	N/A	N/A	N/A	The Balancing Authority with reliability concerns failed to notify the Reliability Coordinator and request the termination of a Time Error Correction in progress.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
BAL-005-0.1b	R1.	All generation, transmission, and load operating within an Interconnection must be included within the metered boundaries of a Balancing Authority Area.	N/A	N/A	N/A	N/A
BAL-005-0.1b	R1.1.	Each Generator Operator with generation facilities operating in an Interconnection shall ensure that those generation facilities are included within the metered boundaries of a Balancing Authority Area.	N/A	N/A	N/A	The Generator Operator with generation facilities operating in an Interconnection failed to ensure that those generation facilities were included within metered boundaries of a Balancing Authority Area.
BAL-005-0.1b	R1.2.	Each Transmission Operator with transmission facilities operating in an Interconnection shall ensure that those transmission facilities are included within the metered boundaries of a Balancing Authority Area.	N/A	N/A	N/A	The Transmission Operator with transmission facilities operating in an Interconnection failed to ensure that those transmission facilities were included within metered boundaries of a Balancing Authority Area.
BAL-005-0.1b	R1.3.	Each Load-Serving Entity with load operating in an Interconnection shall ensure that those loads are included within the metered boundaries of a Balancing Authority Area.	N/A	N/A	N/A	The Load-Serving Entity with load operating in an Interconnection failed to ensure that those loads were included within metered boundaries of a Balancing Authority Area.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
BAL-005-0.1b	R2.	Each Balancing Authority shall maintain Regulating Reserve that can be controlled by AGC to meet the Control Performance Standard.	N/A	N/A	N/A	The Balancing Authority failed to maintain Regulating Reserve that can be controlled by AGC to meet Control Performance Standard.
BAL-005-0.1b	R3.	A Balancing Authority providing Regulation Service shall ensure that adequate metering, communications and control equipment are employed to prevent such service from becoming a Burden on the Interconnection or other Balancing Authority Areas.	N/A	N/A	N/A	The Balancing Authority providing Regulation Service failed to ensure adequate metering, communications, and control equipment was provided.
BAL-005-0.1b	R4.	A Balancing Authority providing Regulation Service shall notify the Host Balancing Authority for whom it is controlling if it is unable to provide the service, as well as any Intermediate Balancing Authorities.	N/A	N/A	N/A	The Balancing Authority providing Regulation Service failed to notify the Host Balancing Authority for whom it is controlling if it was unable to provide the service, as well as any Intermediate Balancing Authorities.
BAL-005-0.1b	R5.	A Balancing Authority receiving Regulation Service shall ensure that backup plans are in place to provide replacement Regulation Service should the supplying Balancing Authority no longer be able to provide this service.	N/A	N/A	N/A	The Balancing Authority receiving Regulation Service failed to ensure that back-up plans were in place to provide replacement Regulation Service.
BAL-005-0.1b	R6.	The Balancing Authority's AGC shall compare total Net Actual Interchange	The Balancing Authority failed to	The Balancing Authority failed to	N/A	The Balancing Authority failed to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		to total Net Scheduled Interchange plus Frequency Bias obligation to determine the Balancing Authority's ACE. Single Balancing Authorities operating asynchronously may employ alternative ACE calculations such as (but not limited to) flat frequency control. If a Balancing Authority is unable to calculate ACE for more than 30 minutes it shall notify its Reliability Coordinator.	notify the Reliability Coordinator within 30 minutes of its inability to calculate ACE.	calculate ACE as specified in the requirement.		notify the Reliability Coordinator within 30 minutes of its inability to calculate ACE and failed to use the ACE calculation specified in the requirement in its attempt to calculate ACE.
BAL-005-0.1b	R7.	The Balancing Authority shall operate AGC continuously unless such operation adversely impacts the reliability of the Interconnection. If AGC has become inoperative, the Balancing Authority shall use manual control to adjust generation to maintain the Net Scheduled Interchange.	N/A	N/A	N/A	The Balancing Authority failed to operate AGC continuously when there were no adverse impacts. OR If its AGC was inoperative the Balancing Authority failed to use manual control to adjust generation to maintain the Net Scheduled Interchange.
BAL-005-0.1b	R8.	The Balancing Authority shall ensure that data acquisition for and calculation of ACE occur at least every six seconds.	N/A	N/A	N/A	The Balancing Authority failed to ensure that data acquisition for and calculation of ACE occurred at least every six seconds.
BAL-005-0.1b	R8.1.	Each Balancing Authority shall provide redundant and independent frequency metering equipment that shall automatically activate upon	N/A	N/A		The Balancing Authority failed to provide redundant and independent frequency

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		detection of failure of the primary source. This overall installation shall provide a minimum availability of 99.95%.				metering equipment that automatically activated upon detection of failure, such that the minimum availability was less than 99.95%.
BAL-005-0.1b	R9.	The Balancing Authority shall include all Interchange Schedules with Adjacent Balancing Authorities in the calculation of Net Scheduled Interchange for the ACE equation.	N/A	N/A	N/A	The Balancing Authority failed to include all Interchange Schedules with Adjacent Balancing Authorities in the calculation of Net Scheduled Interchange for the ACE equation.
BAL-005-0.1b	R9.1.	Balancing Authorities with a high voltage direct current (HVDC) link to another Balancing Authority connected asynchronously to their Interconnection may choose to omit the Interchange Schedule related to the HVDC link from the ACE equation if it is modeled as internal generation or load.	N/A	N/A	N/A	The Balancing Authority with a high voltage direct current (HVDC) link to another Balancing Authority connected asynchronously to its Interconnection chose to omit the Interchange Schedule related to the HVDC link from the ACE equation, but failed to model it as internal generation or load.
BAL-005-0.1b	R10.	The Balancing Authority shall include all Dynamic Schedules in the calculation of Net Scheduled Interchange for the ACE equation.	N/A	N/A	N/A	The Balancing Authority failed to include all Dynamic Schedules in the calculation of Net Scheduled Interchange

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						for the ACE equation.
BAL-005-0.1b	R11.	Balancing Authorities shall include the effect of Ramp rates, which shall be identical and agreed to between affected Balancing Authorities, in the Scheduled Interchange values to calculate ACE.	N/A	N/A	N/A	The Balancing Authority failed to include the effect of Ramp rates in the Scheduled Interchange values to calculate ACE.
BAL-005-0.1b	R12.	Each Balancing Authority shall include all Tie Line flows with Adjacent Balancing Authority Areas in the ACE calculation.	N/A	N/A	N/A	The Balancing Authority failed to include all Tie Line flows with Adjacent Balancing Authority Areas in the ACE calculation.
BAL-005-0.1b	R12.1.	Balancing Authorities that share a tie shall ensure Tie Line MW metering is telemetered to both control centers, and emanates from a common, agreed-upon source using common primary metering equipment. Balancing Authorities shall ensure that megawatt-hour data is telemetered or reported at the end of each hour.	The Balancing Authority failed to ensure 5% or less of all its Tie Line MW metering was telemetered to both control centers and emanates from a common, agreed-upon source OR The Balancing Authority failed to ensure that megawatt-hour data was telemetered or reported for 5% or less of the hours.	The Balancing Authority failed to ensure more than 5% up to (and including) 10% of all its Tie Line MW metering was telemetered to both control centers and emanates from a common, agreed-upon source. OR The Balancing Authority failed to ensure that megawatt-hour data was telemetered or reported for more than 5% up to (and including) 10% of the hours.	The Balancing Authority failed to ensure more than 10% up to (and including) 15% of all its Tie Line MW metering was telemetered to both control centers and emanates from a common, agreed-upon source. OR The Balancing Authority failed to ensure that megawatt-hour data was telemetered or reported for more than 10% up to (and including) 15% of the hours.	The Balancing Authority failed to ensure more than 15% of all its Tie Line MW metering was telemetered to both control centers and emanates from a common, agreed-upon source. OR The Balancing Authority failed to ensure that megawatt-hour data was telemetered or reported for more than 15% of the hours.
BAL-005-0.1b	R12.2.	Balancing Authorities shall ensure the	The responsible	The responsible entity	The responsible entity	The responsible entity

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		power flow and ACE signals that are utilized for calculating Balancing Authority performance or that are transmitted for Regulation Service are not filtered prior to transmission, except for the Anti-aliasing Filters of Tie Lines.	entity did not ensure that 5% or less of the power flow and ACE signals are not filtered except for Anti-aliasing filtering.	did not ensure that more than 5% up to (and including) 10% of the power flow and ACE signals are not filtered except for Anti-aliasing filtering.	did not ensure that more than 10% up to (and including) 15% of the power flow and ACE signals are not filtered except for Anti-aliasing filtering.	did not ensure that more than 15% of the power flow and ACE signals are not filtered except for Anti-aliasing filtering.
BAL-005-0.1b	R12.3.	Balancing Authorities shall install common metering equipment where Dynamic Schedules or Pseudo-Ties are implemented between two or more Balancing Authorities to deliver the output of Jointly Owned Units or to serve remote load.	N/A	N/A	N/A	The applicable entity did not install common metering equipment where Dynamic Schedules or Pseudo-Ties are implemented.
BAL-005-0.1b	R13.	Each Balancing Authority shall perform hourly error checks using Tie Line megawatt-hour meters with common time synchronization to determine the accuracy of its control equipment. The Balancing Authority shall adjust the component (e.g., Tie Line meter) of ACE that is in error (if known) or use the interchange meter error (IME) term of the ACE equation to compensate for any equipment error until repairs can be made.	N/A	N/A	N/A	The Balancing Authority failed to perform hourly error checks using Tie Line megawatt-hour meters with common time synchronization to determine the accuracy of its control equipment OR the Balancing Authority failed to adjust the component (e.g., Tie Line meter) of ACE that is in error (if known) or use the interchange meter error (IME) term of the ACE equation to compensate for any equipment error until repairs can be made.
BAL-005-0.1b	R14.	The Balancing Authority shall provide	N/A	N/A	N/A	The Balancing

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		its operating personnel with sufficient instrumentation and data recording equipment to facilitate monitoring of control performance, generation response, and after-the-fact analysis of area performance. As a minimum, the Balancing Authority shall provide its operating personnel with real-time values for ACE, Interconnection frequency and Net Actual Interchange with each Adjacent Balancing Authority Area.				Authority failed to provide its operating personnel with sufficient instrumentation and data recording equipment to facilitate monitoring of control performance, generation response, and after-the-fact analysis of area performance.
BAL-005-0.1b	R15.	The Balancing Authority shall provide adequate and reliable backup power supplies and shall periodically test these supplies at the Balancing Authority's control center and other critical locations to ensure continuous operation of AGC and vital data recording equipment during loss of the normal power supply.	N/A	N/A	The Balancing Authority failed to periodically test backup power supplies at the Balancing Authority's control center and other critical locations to ensure continuous operation of AGC and vital data recording equipment during loss of the normal power supply.	The Balancing Authority failed to provide adequate and reliable backup power supplies to ensure continuous operation of AGC and vital data recording equipment during loss of the normal power supply.
BAL-005-0.1b	R16.	The Balancing Authority shall sample data at least at the same periodicity with which ACE is calculated. The Balancing Authority shall flag missing or bad data for operator display and archival purposes. The Balancing Authority shall collect coincident data to the greatest practical extent, i.e., ACE, Interconnection frequency, Net Actual Interchange, and other data shall all be sampled at the same time.	The Balancing Authority failed to collect coincident data to the greatest practical extent.	N/A	The Balancing Authority failed to flag missing or bad data for operator display and archival purposes.	The Balancing Authority failed to sample data at least at the same periodicity with which ACE is calculated.

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BAL-005-0.1b	R17.	Each Balancing Authority shall at least annually check and calibrate its time error and frequency devices against a common reference. The Balancing Authority shall adhere to the minimum values for measuring devices as listed below: <i>See Standard for Values</i>	N/A	N/A	N/A	The Balancing Authority failed to at least annually check and calibrate its time error and frequency devices against a common reference.
BAL-006-2	R1.	Each Balancing Authority shall calculate and record hourly Inadvertent Interchange.	N/A	N/A	N/A	Each Balancing Authority failed to calculate and record hourly Inadvertent Interchange.
BAL-006-2	R2.	Each Balancing Authority shall include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. The Balancing Authority shall take into account interchange served by jointly owned generators.	N/A	N/A	The Balancing Authority failed to include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. OR Failed to take into account interchange served by jointly owned generators.	The Balancing Authority failed to include all AC tie lines that connect to its Adjacent Balancing Authority Areas in its Inadvertent Interchange account. AND Failed to take into account interchange served by jointly owned generators.
BAL-006-2	R3.	Each Balancing Authority shall ensure all of its Balancing Authority Area interconnection points are equipped with common megawatt-hour meters, with readings provided hourly to the control centers of Adjacent Balancing Authorities.	N/A	N/A	N/A	The Balancing Authority failed to ensure all of its Balancing Authority Area interconnection points are equipped with common megawatt-hour meters,

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						with readings provided hourly to the control centers of Adjacent Balancing Authorities.
BAL-006-2	R4.	Adjacent Balancing Authority Areas shall operate to a common Net Interchange Schedule and Actual Net Interchange value and shall record these hourly quantities, with like values but opposite sign. Each Balancing Authority shall compute its Inadvertent Interchange based on the following:	The Balancing Authority failed to record Actual Net Interchange values that are equal but opposite in sign to its Adjacent Balancing Authorities.	The Balancing Authority failed to compute Inadvertent Interchange.	The Balancing Authority failed to operate to a common Net Interchange Schedule that is equal but opposite to its Adjacent Balancing Authorities.	N/A
BAL-006-2	R4.1	Each Balancing Authority, by the end of the next business day, shall agree with its Adjacent Balancing Authorities to:	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly values of Net Interchanged Schedule. AND The hourly integrated megawatt-hour values of Net Actual Interchange.
BAL-006-2	R4.1.1.	The hourly values of Net Interchange Schedule.	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly values of

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						Net Interchanged Schedule.
BAL-006-2	R4.1.2.	The hourly integrated megawatt-hour values of Net Actual Interchange.	N/A	N/A	N/A	The Balancing Authority, by the end of the next business day, failed to agree with its Adjacent Balancing Authorities to the hourly integrated megawatt-hour values of Net Actual Interchange.
BAL-006-2	R4.2.	Each Balancing Authority shall use the agreed-to daily and monthly accounting data to compile its monthly accumulated Inadvertent Interchange for the On-Peak and Off-Peak hours of the month.	N/A	N/A	N/A	The Balancing Authority failed to use the agreed-to daily and monthly accounting data to compile its monthly accumulated Inadvertent Interchange for the On-Peak and Off-Peak hours of the month.
BAL-006-2	R4.3.	A Balancing Authority shall make after-the-fact corrections to the agreed-to daily and monthly accounting data only as needed to reflect actual operating conditions (e.g. a meter being used for control was sending bad data). Changes or corrections based on non-reliability considerations shall not be reflected in the Balancing Authority's Inadvertent Interchange. After-the-fact corrections to scheduled or actual values will not be accepted without agreement of the Adjacent Balancing Authority(ies).	N/A	N/A	N/A	The Balancing Authority failed to make after-the-fact corrections to the agreed-to daily and monthly accounting data to reflect actual operating conditions or changes or corrections based on non-reliability considerations were reflected in the Balancing Authority's Inadvertent

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						Interchange.
BAL-006-2	R5.	Adjacent Balancing Authorities that cannot mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following month shall, for the purposes of dispute resolution, submit a report to their respective Regional Reliability Organization Survey Contact. The report shall describe the nature and the cause of the dispute as well as a process for correcting the discrepancy.	Adjacent Balancing Authorities that could not mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities, submitted a report to their respective Regional Reliability Organizations Survey Contact describing the nature and the cause of the dispute but failed to provide a process for correcting the discrepancy.	Adjacent Balancing Authorities that could not mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following month, failed to submit a report to their respective Regional Reliability Organizations Survey Contact describing the nature and the cause of the dispute as well as a process for correcting the discrepancy.	N/A	N/A
BAL-502-RFC-02	R1.	The Planning Coordinator shall perform and document a Resource Adequacy analysis annually. The Resource Adequacy analysis shall:	The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under R1.4 and documentation of how and why they were included in the analysis or why they were not included OR	The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from R1.1 as a percentage of the net Median forecast peak Load per R1.1.2 OR The Planning Coordinator Resource Adequacy analysis failed to include 1 of	The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per R1.2 OR The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5	The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1. OR The Planning Coordinator Resource Adequacy analysis failed to calculate a Planning reserve margin that will result in the sum of the

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			<p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per R1.5</p>	<p>the Load forecast Characteristics subcomponents under R1.3.1 and documentation of its use</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under R1.3.2 and documentation of its use</p> <p>Or</p> <p>The Planning Coordinator Resource Adequacy analysis failed to document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis per R1.7</p>	<p>year period or one year in the 6 though 10 year period or both per R1.2.2</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or more of the Load forecast Characteristics subcomponents under R1.3.1 and documentation of their use</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or more of the Resource Characteristics subcomponents under R1.3.2 and documentation of their use</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis</p>	<p>probabilities for loss of Load for the integrated peak hour for all days of each planning year analyzed for each planning period being equal to 0.1 per R1.1</p> <p>OR</p> <p>The Planning Coordinator failed to perform an analysis for Year One per R1.2.1</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					<p>failed to include Transmission limitations and documentation of its use per R1.3.3</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis failed to include assistance from other interconnected systems and documentation of its use per R1.3.4</p> <p>OR</p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under R1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p>OR</p>	

**Complete Violation Severity Level Matrix (BAL)
Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					The Planning Coordinator Resource Adequacy analysis failed to document that capacity resources are appropriately accounted for in its Resource Adequacy analysis per R1.6	
BAL-502-RFC-02	R1.1.	Calculate a planning reserve margin that will result in the sum of the probabilities for loss of Load for the integrated peak hour for all days of each planning year analyzed (per R1.2) being equal to 0.1. (This is comparable to a “one day in 10 year” criterion).				
BAL-502-RFC-02	R1.1.1.	The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.				
BAL-502-RFC-02	R1.1.2.	The planning reserve margin developed from R1.1 shall be expressed as a percentage of the median forecast peak Net Internal Demand (planning reserve margin).				
BAL-502-RFC-02	R1.2.	Be performed or verified separately for each of the following planning years:				
BAL-502-RFC-02	R1.2.1.	Perform an analysis for Year One.				
BAL-502-RFC-02	R1.2.2.	Perform an analysis or verification at a minimum for one year in the 2 through 5 year period and at a minimum one year in the 6 through 10				

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		year period.				
BAL-502-RFC-02	R1.2.2.1.	If the analysis is verified, the verification must be supported by current or past studies for the same planning year.				
BAL-502-RFC-02	R1.3.	Include the following subject matter and documentation of its use:				
BAL-502-RFC-02	R1.3.1.	Load forecast characteristics: <ul style="list-style-type: none"> • Median (50:50) forecast peak Load. • Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts). • Load diversity. • Seasonal Load variations. • Daily demand modeling assumptions (firm, interruptible). • Contractual arrangements concerning curtailable/Interruptible Demand. 				
BAL-502-RFC-02	R1.3.2.	Resource characteristics: <ul style="list-style-type: none"> • Historic resource performance and any projected changes • Seasonal resource ratings • Modeling assumptions of firm capacity purchases from and sales to entities outside the Planning Coordinator area. • Resource planned outage schedules, deratings, and retirements. • Modeling assumptions of 				

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		intermittent and energy limited resource such as wind and cogeneration. <ul style="list-style-type: none"> • Criteria for including planned resource additions in the analysis 				
BAL-502-RFC-02	R1.3.3.	Transmission limitations that prevent the delivery of generation reserves				
BAL-502-RFC-02	R1.3.3.1.	Criteria for including planned Transmission Facility additions in the analysis				
BAL-502-RFC-02	R1.3.4.	Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.				
BAL-502-RFC-02	R1.4.	Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included: <ul style="list-style-type: none"> • Availability and deliverability of fuel. • Common mode outages that affect resource availability • Environmental or regulatory restrictions of resource availability. • Any other demand (Load) response programs not included in R1.3.1. • Sensitivity to resource outage rates. • Impacts of extreme weather/drought conditions that affect unit availability. 				

Complete Violation Severity Level Matrix (BAL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		<ul style="list-style-type: none"> • Modeling assumptions for emergency operation procedures used to make reserves available. • Market resources not committed to serving Load (uncommitted resources) within the Planning Coordinator area. 				
BAL-502-RFC-02	R1.5.	Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included				
BAL-502-RFC-02	R1.6.	Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis				
BAL-502-RFC-02	R1.7.	Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis				
BAL-502-RFC-02	R2.	The Planning Coordinator shall annually document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis	The Planning Coordinator failed to publicly post the documents as specified per requirement R2.1 and R2.2 later than 30 calendar days prior to the beginning of Year One per R2.3	The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for one of the years in the 2 through 10 year period per R2.1. OR	The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for year 1 of the 10 year period per R2.1. OR The Planning	The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis per R2.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				The Planning Coordinator failed to document the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per R2.2.	Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for two or more of the years in the 2 through 10 year period per R2.1.	
BAL-502-RFC-02	R2.1.	This documentation shall cover each of the years in Year One through ten.				
BAL-502-RFC-02	R2.2.	This documentation shall include the planning reserve margin calculated per requirement R1.1 for each of the three years in the analysis.				
BAL-502-RFC-02	R2.3.	The documentation as specified per requirement R2.1 and R2.2 shall be publicly posted no later than 30 calendar days prior to the beginning of Year One.				

Complete Violation Severity Level Matrix (CIP)
Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
CIP-001-1a	R1.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.	N/A	N/A	The responsible entity has procedures for the recognition of sabotage events on its facilities and multi site sabotage affecting larger portions of the Interconnection but does not have a procedure for making their operating personnel aware of said events.	The responsible entity failed to have procedures for the recognition of and for making their operating personnel aware of sabotage events on its facilities and multi site sabotage affecting larger portions of the Interconnection.
CIP-001-1a	R2.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall have procedures for the communication of information concerning sabotage events to appropriate parties in the Interconnection.	N/A	N/A	The responsible entity has demonstrated the existence of a procedure to communicate information concerning sabotage events, but not all of the appropriate parties in the interconnection are identified.	The responsible entity failed to have a procedure for communicating information concerning sabotage events.
CIP-001-1a	R3.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall provide its operating personnel with sabotage response guidelines, including personnel to contact, for reporting disturbances due to sabotage	N/A	The responsible entity provided its operating personnel with a sabotage response guideline, but failed to include the personnel to contact for reporting	N/A	The responsible entity failed to provide its operating personnel with a sabotage response guideline.

Complete Violation Severity Level Matrix (CIP) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		events.		disturbances due to sabotage events.		
CIP-001-1a	R4.	Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, and Load Serving Entity shall establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.	N/A	N/A	The responsible entity has established communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials, but has not developed a reporting procedure.	The responsible entity failed to establish communications contacts, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials, and has not developed a reporting procedure.
CIP-002-3	R1.	Critical Asset Identification Method — The Responsible Entity shall identify and document a risk-based assessment methodology to use to identify its Critical Assets.	N/A	N/A	N/A	The responsible entity has not documented a risk-based assessment methodology to use to identify its Critical Assets as specified in R1.
CIP-002-3	R1.1	The Responsible Entity shall maintain documentation describing its risk-based assessment methodology that includes procedures and evaluation criteria.	N/A	The Responsible Entity maintained documentation describing its risk-based assessment methodology which includes evaluation criteria, but does not include procedures.	The Responsible Entity maintained documentation describing its risk-based assessment methodology that includes procedures but does not include evaluation criteria.	The Responsible Entity did not maintain documentation describing its risk-based assessment methodology that includes procedures and evaluation criteria.
CIP-002-3	R1.2	The risk-based assessment shall consider the following assets:	N/A	N/A	N/A	The Responsible Entity did not consider all of the

Complete Violation Severity Level Matrix (CIP) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						asset types listed in R1.2.1 through R1.2.7 in its risk-based assessment.
CIP-002-3	R1.2.1.	Control centers and backup control centers performing the functions of the entities listed in the Applicability section of this standard.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.2.	Transmission substations that support the reliable operation of the Bulk Electric System.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.3.	Generation resources that support the reliable operation of the Bulk Electric System.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.4.	Systems and facilities critical to system restoration, including blackstart generators and substations in the electrical path of transmission lines used for initial system restoration.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.5.	Systems and facilities critical to automatic load shedding under a common control system capable of shedding 300 MW or more.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.6.	Special Protection Systems that support the reliable operation of the Bulk Electric System.	N/A	N/A	N/A	N/A
CIP-002-3	R1.2.7.	Any additional assets that support the reliable operation of the Bulk Electric System that the Responsible Entity deems appropriate to include in its assessment.	N/A	N/A	N/A	N/A
CIP-002-3	R2.	Critical Asset Identification — The Responsible Entity shall develop a list of its identified Critical Assets determined through an annual application of the risk-	N/A	N/A	The Responsible Entity has developed a list of Critical Assets but the list has	The Responsible Entity did not develop a list of its identified Critical

Complete Violation Severity Level Matrix (CIP) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		based assessment methodology required in R1. The Responsible Entity shall review this list at least annually, and update it as necessary.			not been reviewed and updated annually as required.	Assets even if such list is null.
CIP-002-3	R3.	Critical Cyber Asset Identification — Using the list of Critical Assets developed pursuant to Requirement R2, the Responsible Entity shall develop a list of associated Critical Cyber Assets essential to the operation of the Critical Asset. Examples at control centers and backup control centers include systems and facilities at master and remote sites that provide monitoring and control, automatic generation control, real-time power system modeling, and real-time inter-utility data exchange. The Responsible Entity shall review this list at least annually, and update it as necessary. For the purpose of Standard CIP-002-3, Critical Cyber Assets are further qualified to be those having at least one of the following characteristics:	N/A	N/A	The Responsible Entity has developed a list of associated Critical Cyber Assets essential to the operation of the Critical Asset list as per requirement R2 but the list has not been reviewed and updated annually as required.	The Responsible Entity did not develop a list of associated Critical Cyber Assets essential to the operation of the Critical Asset list as per requirement R2 even if such list is null.
CIP-002-3	R3.1	The Cyber Asset uses a routable protocol to communicate outside the Electronic Security Perimeter; or,	N/A	N/A	N/A	A Cyber Asset essential to the operation of the Critical Asset was identified that met the criteria in this requirement but was not included in the Critical Cyber Asset List.
CIP-002-3	R3.2.	The Cyber Asset uses a routable protocol within a control center; or,	N/A	N/A	N/A	A Cyber Asset essential to the operation of the Critical Asset was identified that met the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						criteria in this requirement but was not included in the Critical Cyber Asset List.
CIP-002-3	R3.3.	The Cyber Asset is dial-up accessible.	N/A	N/A	N/A	A Cyber Asset essential to the operation of the Critical Asset was identified that met the criteria in this requirement but was not included in the Critical Cyber Asset List.
CIP-002-3	R4.	Annual Approval — The senior manager or delegate(s) shall approve annually the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets. Based on Requirements R1, R2, and R3 the Responsible Entity may determine that it has no Critical Assets or Critical Cyber Assets. The Responsible Entity shall keep a signed and dated record of the senior manager or delegate(s)'s approval of the risk-based assessment methodology, the list of Critical Assets and the list of Critical Cyber Assets (even if such lists are null.)	N/A	The Responsible Entity does not have a signed and dated record of the senior manager or delegate(s)'s annual approval of the risk-based assessment methodology, the list of Critical Assets or the list of Critical Cyber Assets (even if such lists are null.)	The Responsible Entity does not have a signed and dated record of the senior manager or delegate(s)'s annual approval of two of the following: the risk-based assessment methodology, the list of Critical Assets or the list of Critical Cyber Assets (even if such lists are null.)	The Responsible Entity does not have a signed and dated record of the senior manager or delegate(s) annual approval of 1) A risk based assessment methodology for identification of Critical Assets, 2) a signed and dated approval of the list of Critical Assets, nor 3) a signed and dated approval of the list of Critical Cyber Assets (even if such lists are null.)
CIP-003-3	R1.	Cyber Security Policy — The Responsible Entity shall document and implement a	N/A	N/A	N/A	The Responsible Entity has not

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		cyber security policy that represents management's commitment and ability to secure its Critical Cyber Assets. The Responsible Entity shall, at minimum, ensure the following:				documented or implemented a cyber security policy.
CIP-003-3	R1.1.	The cyber security policy addresses the requirements in Standards CIP-002-3 through CIP-009-3, including provision for emergency situations.	N/A	N/A	N/A	The Responsible Entity's cyber security policy does not address all the requirements in Standards CIP-002 through CIP-009, including provision for emergency situations.
CIP-003-3	R1.2.	The cyber security policy is readily available to all personnel who have access to, or are responsible for, Critical Cyber Assets.	N/A	N/A	N/A	The Responsible Entity's cyber security policy is not readily available to all personnel who have access to, or are responsible for, Critical Cyber Assets.
CIP-003-3	R1.3	Annual review and approval of the cyber security policy by the senior manager assigned pursuant to R2.	N/A	N/A	N/A	The Responsible Entity's senior manager, assigned pursuant to R2, did not complete the annual review and approval of its cyber security policy.
CIP-003-3	R2.	Leadership — The Responsible Entity shall assign a senior manager with overall responsibility for leading and managing the entity's implementation of, and adherence to, Standards CIP-002-3	N/A	N/A	N/A	The Responsible Entity has not assigned a single senior manager with overall responsibility and authority for

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		through CIP-009-3.				leading and managing the entity's implementation of, and adherence to, Standards CIP-002 through CIP-009.
CIP-003-3	R2.1.	The senior manager shall be identified by name, title, and date of designation.	N/A	N/A	N/A	Identification of the senior manager is missing one of the following: name, title, or date of designation.
CIP-003-3	R2.2.	Changes to the senior manager must be documented within thirty calendar days of the effective date.	N/A	N/A	N/A	Changes to the senior manager were not documented within 30 days of the effective date.
CIP-003-3	R2.3.	Where allowed by Standards CIP-002-3 through CIP-009-3, the senior manager may delegate authority for specific actions to a named delegate or delegates. These delegations shall be documented in the same manner as R2.1 and R2.2, and approved by the senior manager.	N/A	N/A	<p>The identification of a senior manager's delegate does not include at least one of the following; name, title, or date of the designation,</p> <p>OR</p> <p>The document is not approved by the senior manager,</p> <p>OR</p> <p>Changes to the delegated authority</p>	<p>A senior manager's delegate is not identified by name, title, and date of designation; the document delegating the authority does not identify the authority being delegated; the document delegating the authority is not approved by the senior manager;</p> <p>AND</p> <p>changes to the delegated authority are not documented</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					are not documented within thirty calendar days of the effective date.	within thirty calendar days of the effective date.
CIP-003-3	R2.4	The senior manager or delegate(s), shall authorize and document any exception from the requirements of the cyber security policy.	N/A	N/A	N/A	The senior manager or delegate(s) did not authorize and document any exceptions from the requirements of the cyber security policy as required.
CIP-003-3	R3.	Exceptions — Instances where the Responsible Entity cannot conform to its cyber security policy must be documented as exceptions and authorized by the senior manager or delegate(s).	N/A	N/A	In Instances where the Responsible Entity cannot conform to its cyber security policy, in R1, exceptions were documented, but were not authorized by the senior manager or delegate(s).	In Instances where the Responsible Entity cannot conform to its cyber security policy, in R1, exceptions were not documented.
CIP-003-3	R3.1.	Exceptions to the Responsible Entity's cyber security policy must be documented within thirty days of being approved by the senior manager or delegate(s).	N/A	N/A	N/A	Exceptions to the Responsible Entity's cyber security policy were not documented within 30 days of being approved by the senior manager or delegate(s).
CIP-003-3	R3.2.	Documented exceptions to the cyber security policy must include an explanation as to why the exception is necessary and any compensating measures.	N/A	N/A	The Responsible Entity has a documented exception to the cyber security policy in R1 but did not	The Responsible Entity has a documented exception to the cyber security policy in R1 but did not

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					include either: 1) an explanation as to why the exception is necessary, or 2) any compensating measures.	include both: 1) an explanation as to why the exception is necessary, and 2) any compensating measures.
CIP-003-3	R3.3.	Authorized exceptions to the cyber security policy must be reviewed and approved annually by the senior manager or delegate(s) to ensure the exceptions are still required and valid. Such review and approval shall be documented.	N/A	N/A	N/A	Exceptions to the cyber security policy were not reviewed or were not approved on an annual basis by the senior manager or delegate(s) to ensure the exceptions are still required and valid or the review and approval is not documented.
CIP-003-3	R4.	Information Protection — The Responsible Entity shall implement and document a program to identify, classify, and protect information associated with Critical Cyber Assets.	N/A	N/A	N/A	The Responsible Entity did not implement or did not document a program to identify, classify, and protect information associated with Critical Cyber Assets.
CIP-003-3	R4.1.	The Critical Cyber Asset information to be protected shall include, at a minimum and regardless of media type, operational procedures, lists as required in Standard CIP-002-3, network topology or similar diagrams, floor plans of computing centers that contain Critical Cyber Assets, equipment layouts of Critical Cyber Assets, disaster recovery plans, incident	N/A	N/A	The information protection program does not include one of the minimum information types to be protected as detailed in R4.1.	The information protection program does not include two or more of the minimum information types to be protected as detailed in R4.1.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		response plans, and security configuration information.				
CIP-003-3	R4.2.	The Responsible Entity shall classify information to be protected under this program based on the sensitivity of the Critical Cyber Asset information.	N/A	N/A	N/A	The Responsible Entity did not classify the information to be protected under this program based on the sensitivity of the Critical Cyber Asset information.
CIP-003-3	R4.3.	The Responsible Entity shall, at least annually, assess adherence to its Critical Cyber Asset information protection program, document the assessment results, and implement an action plan to remediate deficiencies identified during the assessment.	N/A	N/A	N/A	The Responsible Entity did not annually assess adherence to its Critical Cyber Asset information protection program, including documentation of the assessment results, OR The Responsible Entity did not implement an action plan to remediate deficiencies identified during the assessment.
CIP-003-3	R5.	Access Control — The Responsible Entity shall document and implement a program for managing access to protected Critical Cyber Asset information.	N/A	N/A	N/A	The Responsible Entity did not implement or did not document a program for managing access to protected Critical Cyber Asset information.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
CIP-003-3	R5.1.	The Responsible Entity shall maintain a list of designated personnel who are responsible for authorizing logical or physical access to protected information.	N/A	N/A	The Responsible Entity maintained a list of designated personnel for authorizing either logical or physical access but not both.	The Responsible Entity did not maintain a list of designated personnel who are responsible for authorizing logical or physical access to protected information.
CIP-003-3	R5.1.1.	Personnel shall be identified by name, title, and the information for which they are responsible for authorizing access.	N/A	N/A	The Responsible Entity did identify the personnel by name, title, and the information for which they are responsible for authorizing access, but the business phone is missing.	Personnel are not identified by name, title, or the information for which they are responsible for authorizing access.
CIP-003-3	R5.1.2.	The list of personnel responsible for authorizing access to protected information shall be verified at least annually.	N/A	N/A	N/A	The Responsible Entity did not verify at least annually the list of personnel responsible for authorizing access to protected information.
CIP-003-3	R5.2.	The Responsible Entity shall review at least annually the access privileges to protected information to confirm that access privileges are correct and that they correspond with the Responsible Entity's needs and appropriate personnel roles and responsibilities.	N/A	N/A	N/A	The Responsible Entity did not review at least annually the access privileges to protected information to confirm that access privileges are correct and that they correspond with the Responsible Entity's

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						needs and appropriate personnel roles and responsibilities.
CIP-003-3	R5.3.	The Responsible Entity shall assess and document at least annually the processes for controlling access privileges to protected information.	N/A	N/A	N/A	The Responsible Entity did not assess and document at least annually the processes for controlling access privileges to protected information.
CIP-003-3	R6.	Change Control and Configuration Management — The Responsible Entity shall establish and document a process of change control and configuration management for adding, modifying, replacing, or removing Critical Cyber Asset hardware or software, and implement supporting configuration management activities to identify, control and document all entity or vendor related changes to hardware and software components of Critical Cyber Assets pursuant to the change control process.	N/A	N/A	N/A	The Responsible Entity has not established or documented a change control process for the activities required in R6, OR The Responsible Entity has not established or documented a configuration management process for the activities required in R6.
CIP-004-3	R1.	Awareness — The Responsible Entity shall establish, document, implement, and maintain a security awareness program to ensure personnel having authorized cyber	N/A	N/A	The Responsible[1] Entity did not provide	The Responsible Entity did not establish, implement, maintain, or

¹ Please note that FERC’s January 20, 2011 Order on Version 2 And Version 3 Violation Risk Factors And Violation Severity Levels For Critical Infrastructure Protection Reliability Standards dictated “Responsible Entity” to be changed to “Responsibility Entity.” NERC assumes FERC intended the VSL to read “Responsible Entity” and therefore is not making this change. NERC proposes to remove this footnote from the final approved list of VSLs.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		<p>or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices. The program shall include security awareness reinforcement on at least a quarterly basis using mechanisms such as:</p> <ul style="list-style-type: none"> • Direct communications (e.g. emails, memos, computer based training, etc.); • Indirect communications (e.g. posters, intranet, brochures, etc.); • Management support and reinforcement (e.g., presentations, meetings, etc.). 			security awareness reinforcement on at least a quarterly basis.	document a security awareness program to ensure personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets receive on-going reinforcement in sound security practices.
CIP-004-3	R2.	Training — The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. The cyber security training program shall be reviewed annually, at a minimum, and shall be updated whenever necessary.	N/A	N/A	The Responsible[2] Entity did not review the training program on an annual basis.	The Responsible Entity did not establish, implement, maintain, or document an annual cyber security training program for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets.
CIP-004-3	R2.1.	This program will ensure that all personnel having such access to Critical Cyber Assets, including contractors and service vendors, are trained prior to their being granted such access except in specified circumstances such as an emergency.	N/A	N/A	N/A	Not all personnel having authorized cyber or unescorted physical access to Critical Cyber Assets, including contractors and service vendors,

² Please see previous footnote. NERC proposes to remove this footnote from the final approved list of VSLs.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						were trained prior to their being granted such access except in specified circumstances such as an emergency.
CIP-004-3	R2.2.	Training shall cover the policies, access controls, and procedures as developed for the Critical Cyber Assets covered by CIP-004-3, and include, at a minimum, the following required items appropriate to personnel roles and responsibilities:	N/A	N/A	N/A	The training does not include one or more of the minimum topics as detailed in R2.2.1, R2.2.2, R2.2.3, R2.2.4.
CIP-004-3	R2.2.1.	The proper use of Critical Cyber Assets;	N/A	N/A	N/A	N/A
CIP-004-3	R2.2.2.	Physical and electronic access controls to Critical Cyber Assets;	N/A	N/A	N/A	N/A
CIP-004-3	R2.2.3.	The proper handling of Critical Cyber Asset information; and,	N/A	N/A	N/A	N/A
CIP-004-3	R2.2.4.	Action plans and procedures to recover or re-establish Critical Cyber Assets and access thereto following a Cyber Security Incident.	N/A	N/A	N/A	N/A
CIP-004-3	R2.3.	The Responsible Entity shall maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.	N/A	N/A	The Responsible Entity did maintain documentation that training is conducted at least annually, but did not include attendance records.	The Responsible Entity did not maintain documentation that training is conducted at least annually, including the date the training was completed and attendance records.
CIP-004-3	R3.	Personnel Risk Assessment —The Responsible Entity shall have a documented personnel risk assessment program, in accordance with federal, state,	N/A	The Responsible Entity has a personnel risk assessment program,	The Responsible Entity has a personnel risk assessment program	The Responsible Entity does not have a documented personnel risk

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		<p>provincial, and local laws, and subject to existing collective bargaining unit agreements, for personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets. A personnel risk assessment shall be conducted pursuant to that program prior to such personnel being granted such access except in specified circumstances such as an emergency.</p> <p>The personnel risk assessment program shall at a minimum include:</p>		as stated in R3, for personnel having authorized cyber or authorized unescorted physical access, but the program is not documented.	as stated in R3, but conducted the personnel risk assessment pursuant to that program after such personnel were granted such access except in specified circumstances such as an emergency.	<p>assessment program, as stated in R3, for personnel having authorized cyber or authorized unescorted physical access.</p> <p>OR</p> <p>The Responsible Entity did not conduct the personnel risk assessment pursuant to that program for personnel granted such access except in specified circumstances such as an emergency.</p>
CIP-004-3	R3.1.	The Responsible Entity shall ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven year criminal check. The Responsible Entity may conduct more detailed reviews, as permitted by law and subject to existing collective bargaining unit agreements, depending upon the criticality of the position.	N/A	N/A	The Responsible Entity did not ensure that an assessment conducted included an identity verification (e.g., Social Security Number verification in the U.S.) or a seven-year criminal check.	The Responsible Entity did not ensure that each assessment conducted include, at least, identity verification (e.g., Social Security Number verification in the U.S.) and seven-year criminal check.
CIP-004-3	R3.2.	The Responsible Entity shall update each personnel risk assessment at least every seven years after the initial personnel risk assessment or for cause.	N/A	The Responsible Entity did not update each personnel risk assessment at least every seven years after the initial	The Responsible Entity did not update each personnel risk assessment for cause (when applicable) but did at least updated it	The Responsible Entity did not update each personnel risk assessment at least every seven years after the initial

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				personnel risk assessment but did update it for cause when applicable.	every seven years after the initial personnel risk assessment.	personnel risk assessment nor was it updated for cause when applicable.
CIP-004-3	R3.3.	The Responsible Entity shall document the results of personnel risk assessments of its personnel having authorized cyber or authorized unescorted physical access to Critical Cyber Assets, and that personnel risk assessments of contractor and service vendor personnel with such access are conducted pursuant to Standard CIP-004-3.	The Responsible Entity did not document the results of personnel risk assessments for at least one individual but less than 5% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004.	The Responsible Entity did not document the results of personnel risk assessments for 5% or more but less than 10% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004.	The Responsible Entity did not document the results of personnel risk assessments for 10% or more but less than 15% of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004.	The Responsible Entity did not document the results of personnel risk assessments for 15% or more of all personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, pursuant to Standard CIP-004.
CIP-004-3	R4.	Access — The Responsible Entity shall maintain list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing at least one individual but less than 5% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 5% or more but less than 10% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 10% or more but less than 15% of the authorized personnel.	The Responsible Entity did not maintain complete list(s) of personnel with authorized cyber or authorized unescorted physical access to Critical Cyber Assets, including their specific electronic and physical access rights to Critical Cyber Assets, missing 15% or more of the authorized personnel.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
CIP-004-3	R4.1.	The Responsible Entity shall review the list(s) of its personnel who have such access to Critical Cyber Assets quarterly, and update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, or any change in the access rights of such personnel. The Responsible Entity shall ensure access list(s) for contractors and service vendors are properly maintained.	N/A	The Responsible Entity did not review the list(s) of its personnel who have access to Critical Cyber Assets quarterly.	The Responsible Entity did not update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, nor any change in the access rights of such personnel.	The Responsible Entity did not review the list(s) of all personnel who have access to Critical Cyber Assets quarterly, nor update the list(s) within seven calendar days of any change of personnel with such access to Critical Cyber Assets, nor any change in the access rights of such personnel.
CIP-004-3	R4.2.	The Responsible Entity shall revoke such access to Critical Cyber Assets within 24 hours for personnel terminated for cause and within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.	N/A	The Responsible Entity did not revoke access within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.	The Responsible Entity did not revoke access to Critical Cyber Assets within 24 hours for personnel terminated for cause.	The Responsible Entity did not revoke access to Critical Cyber Assets within 24 hours for personnel terminated for cause nor within seven calendar days for personnel who no longer require such access to Critical Cyber Assets.
CIP-005-3a	R1.	Electronic Security Perimeter — The Responsible Entity shall ensure that every Critical Cyber Asset resides within an Electronic Security Perimeter. The Responsible Entity shall identify and document the Electronic Security Perimeter(s) and all access points to the perimeter(s).	N/A	N/A	N/A	The Responsible Entity did not ensure that every Critical Cyber Asset resides within an Electronic Security Perimeter. OR The Responsible Entity did not

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						identify and document the Electronic Security Perimeter(s) and all access points to the perimeter(s).
CIP-005-3a	R1.1.	Access points to the Electronic Security Perimeter(s) shall include any externally connected communication end point (for example, dial-up modems) terminating at any device within the Electronic Security Perimeter(s).	N/A	N/A	N/A	Access points to the Electronic Security Perimeter(s) do not include all externally connected communication end point (for example, dial-up modems) terminating at any device within the Electronic Security Perimeter(s).
CIP-005-3a	R1.2.	For a dial-up accessible Critical Cyber Asset that uses a non-routable protocol, the Responsible Entity shall define an Electronic Security Perimeter for that single access point at the dial-up device.	N/A	N/A	N/A	For one or more dial-up accessible Critical Cyber Assets that use a non-routable protocol, the Responsible Entity did not define an Electronic Security Perimeter for that single access point at the dial-up device.
CIP-005-3a	R1.3.	Communication links connecting discrete Electronic Security Perimeters shall not be considered part of the Electronic Security Perimeter. However, end points of these communication links within the Electronic Security Perimeter(s) shall be considered access points to the Electronic Security Perimeter(s).	N/A	N/A	N/A	At least one end point of a communication link within the Electronic Security Perimeter(s) connecting discrete Electronic Security Perimeters was not

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						considered an access point to the Electronic Security Perimeter.
CIP-005-3a	R1.4.	Any non-critical Cyber Asset within a defined Electronic Security Perimeter shall be identified and protected pursuant to the requirements of Standard CIP-005-3.	N/A	N/A	N/A	One or more noncritical Cyber Asset within a defined Electronic Security Perimeter is not identified. OR Is not protected pursuant to the requirements of Standard CIP-005.
CIP-005-3a	R1.5.	Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall be afforded the protective measures as a specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3 Requirement R3; Standard CIP-007-3 Requirements R1 and R3 through R9; Standard CIP-008-3; and Standard CIP-009-3.	N/A	N/A	N/A	A Cyber Asset used in the access control and/or monitoring of the Electronic Security Perimeter(s) was not afforded one (1) or more of the protective measures as specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3c Requirements R3; Standard CIP-007-3 Requirements R1 and R3 through R9;

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						Standard CIP-008-3; and Standard CIP-009-3.
CIP-005-3a	R1.6.	The Responsible Entity shall maintain documentation of Electronic Security Perimeter(s), all interconnected Critical and non-critical Cyber Assets within the Electronic Security Perimeter(s), all electronic access points to the Electronic Security Perimeter(s) and the Cyber Assets deployed for the access control and monitoring of these access points.	N/A	N/A	N/A	The Responsible Entity did not maintain documentation of one or more of the following: Electronic Security Perimeter(s), interconnected Critical and noncritical Cyber Assets within the Electronic Security Perimeter(s), electronic access points to the Electronic Security Perimeter(s) and Cyber Assets deployed for the access control and monitoring of these access points.
CIP-005-3a	R2.	Electronic Access Controls — The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for control of electronic access at all electronic access points to the Electronic Security Perimeter(s).	N/A	N/A	N/A	The Responsible Entity did not implement or did not document the organizational processes and technical and procedural mechanisms for control of electronic access at all electronic access

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						points to the Electronic Security Perimeter(s).
CIP-005-3a	R2.1.	These processes and mechanisms shall use an access control model that denies access by default, such that explicit access permissions must be specified.	N/A	N/A	N/A	The processes and mechanisms did not use an access control model that denies access by default, such that explicit access permissions must be specified.
CIP-005-3a	R2.2.	At all access points to the Electronic Security Perimeter(s), the Responsible Entity shall enable only ports and services required for operations and for monitoring Cyber Assets within the Electronic Security Perimeter, and shall document, individually or by specified grouping, the configuration of those ports and services.	N/A	N/A	N/A	At one or more access points to the Electronic Security Perimeter(s), the Responsible Entity enabled ports and services not required for operations and for monitoring Cyber Assets within the Electronic Security Perimeter, or did not document, individually or by specified grouping, the configuration of those ports and services.
CIP-005-3a	R2.3.	The Responsible Entity shall implement and maintain a procedure for securing dial-up access to the Electronic Security Perimeter(s).	N/A	N/A	N/A	The Responsible Entity did not implement or maintain a procedure for securing dial-up access to the Electronic Security Perimeter(s) where

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						applicable.
CIP-005-3a	R2.4.	Where external interactive access into the Electronic Security Perimeter has been enabled, the Responsible Entity shall implement strong procedural or technical controls at the access points to ensure authenticity of the accessing party, where technically feasible.	N/A	N/A	N/A	Where external interactive access into the Electronic Security Perimeter has been enabled the Responsible Entity did not implement strong procedural or technical controls at the access points to ensure authenticity of the accessing party, where technically feasible.
CIP-005-3a	R2.5.	The required documentation shall, at least, identify and describe:	N/A	N/A	N/A	The required documentation for R2 did not include one or more of the elements described in R2.5.1 through R2.5.4.
CIP-005-3a	R2.5.1.	The processes for access request and authorization.	N/A	N/A	N/A	N/A
CIP-005-3a	R2.5.2.	The authentication methods.	N/A	N/A	N/A	N/A
CIP-005-3a	R2.5.3.	The review process for authorization rights, in accordance with Standard CIP-004-3 Requirement R4.	N/A	N/A	N/A	N/A
CIP-005-3a	R2.5.4.	The controls used to secure dial-up accessible connections.	N/A	N/A	N/A	N/A
CIP-005-3a	R2.6.	Appropriate Use Banner — Where technically feasible, electronic access control devices shall display an appropriate use banner on the user screen upon all interactive access attempts. The Responsible Entity shall maintain a	The Responsible Entity did not maintain a document identifying the content of the	Where technically feasible 5% but less than 10% of electronic access control devices did not display an	Where technically feasible 10% but less than 15% of electronic access control devices did not display an	Where technically feasible, 15% or more electronic access control devices did not display an

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		document identifying the content of the banner.	banner. OR Where technically feasible less than 5% electronic access control devices did not display an appropriate use banner on the user screen upon all interactive access attempts.	appropriate use banner on the user screen upon all interactive access attempts.	appropriate use banner on the user screen upon all interactive access attempts.	appropriate use banner on the user screen upon all interactive access attempts.
CIP-005-3a	R3.	Monitoring Electronic Access — The Responsible Entity shall implement and document an electronic or manual process(es) for monitoring and logging access at access points to the Electronic Security Perimeter(s) twenty-four hours a day, seven days a week.	N/A	N/A	N/A	The Responsible Entity did not implement or did not document electronic or manual processes monitoring and logging access points.
CIP-005-3a	R3.1.	For dial-up accessible Critical Cyber Assets that use non-routable protocols, the Responsible Entity shall implement and document monitoring process(es) at each access point to the dial-up device, where technically feasible.	N/A	N/A	N/A	Where technically feasible, the Responsible Entity did not implement or did not document electronic or manual processes for monitoring at one or more access points to dial-up devices.
CIP-005-3a	R3.2.	Where technically feasible, the security monitoring process(es) shall detect and alert for attempts at or actual unauthorized accesses. These alerts shall provide for appropriate notification to designated response personnel. Where alerting is not technically feasible, the Responsible Entity shall review or otherwise assess access	N/A	N/A	N/A	Where technically feasible, the Responsible Entity did not implement security monitoring process(es) to detect and alert for attempts at or actual

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		logs for attempts at or actual unauthorized accesses at least every ninety calendar days.				<p>unauthorized accesses.</p> <p>OR</p> <p>The above alerts do not provide for appropriate notification to designated response personnel.</p> <p>OR</p> <p>Where alerting is not technically feasible, the Responsible Entity did not review or otherwise assess access logs for attempts at or actual unauthorized accesses at least every ninety calendar days.</p>
CIP-005-3a	R4.	Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of the electronic access points to the Electronic Security Perimeter(s) at least annually. The vulnerability assessment shall include, at a minimum, the following:	N/A	N/A	N/A	<p>The Responsible Entity did not perform a Vulnerability Assessment at least annually for one or more of the access points to the Electronic Security Perimeter(s).</p> <p>OR</p> <p>The vulnerability assessment did not include one (1) or more of the subrequirements</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						R4.1, R4.2, R4.3, R4.4, R4.5.
CIP-005-3a	R4.1.	A document identifying the vulnerability assessment process;	N/A	N/A	N/A	N/A
CIP-005-3a	R4.2.	A review to verify that only ports and services required for operations at these access points are enabled;	N/A	N/A	N/A	N/A
CIP-005-3a	R4.3.	The discovery of all access points to the Electronic Security Perimeter;	N/A	N/A	N/A	N/A
CIP-005-3a	R4.4.	A review of controls for default accounts, passwords, and network management community strings;	N/A	N/A	N/A	N/A
CIP-005-3a	R4.5.	Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.	N/A	N/A	N/A	N/A
CIP-005-3a	R5.	Documentation Review and Maintenance — The Responsible Entity shall review, update, and maintain all documentation to support compliance with the requirements of Standard CIP-005-3.	The Responsible Entity did not review, update, and maintain at least one but less than or equal to 5% of the documentation to support compliance with the requirements of Standard CIP-005.	The Responsible Entity did not review, update, and maintain greater than 5% but less than or equal to 10% of the documentation to support compliance with the requirements of Standard CIP-005.	The Responsible Entity did not review, update, and maintain greater than 10% but less than or equal to 15% of the documentation to support compliance with the requirements of Standard CIP-005.	The Responsible Entity did not review, update, and maintain greater than 15% of the documentation to support compliance with the requirements of Standard CIP-005.
CIP-005-3a	R5.1.	The Responsible Entity shall ensure that all documentation required by Standard CIP-005-2 reflect current configurations and processes and shall review the documents and procedures referenced in Standard CIP-005-3 at least annually.	N/A	The Responsible Entity did not provide evidence of an annual review of the documents and procedures	The Responsible Entity did not document current configurations and processes referenced in Standard CIP-005.	The Responsible Entity did not document current configurations and processes and did not review the documents

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				referenced in Standard CIP-005.		and procedures referenced in Standard CIP-005 at least annually.
CIP-005-3a	R5.2.	The Responsible Entity shall update the documentation to reflect the modification of the network or controls within ninety calendar days of the change.	N/A	N/A	N/A	The Responsible Entity did not update documentation to reflect a modification of the network or controls within ninety calendar days of the change.
CIP-005-3a	R5.3.	The Responsible Entity shall retain electronic access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.	The Responsible Entity retained electronic access logs for 75 or more calendar days, but for less than 90 calendar days.	The Responsible Entity retained electronic access logs for 60 or more calendar days, but for less than 75 calendar days.	The Responsible Entity retained electronic access logs for 45 or more calendar days , but for less than 60 calendar days.	The Responsible Entity retained electronic access logs for less than 45 calendar days.
CIP-006-3c	R1.	Physical Security Plan — The Responsible Entity shall document, implement, and maintain a physical security plan, approved by the senior manager or delegate(s) that shall address, at a minimum, the following:	N/A	N/A	The Responsible Entity created a physical security plan but did not gain approval by a senior manager or delegate(s). OR The Responsible Entity created and implemented but did not maintain a physical security plan.	The Responsible Entity did not document, implement, and maintain a physical security plan.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
CIP-006-3c	R1.1.	All Cyber Assets within an Electronic Security Perimeter shall reside within an identified Physical Security Perimeter. Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity shall deploy and document alternative measures to control physical access to such Cyber Assets.	N/A	N/A	N/A	<p>The Responsible Entity's physical security plan does not include processes to ensure and document that all Cyber Assets within an Electronic Security Perimeter also reside within an identified Physical Security Perimeter.</p> <p>OR</p> <p>Where a completely enclosed (“six-wall”) border cannot be established, the Responsible Entity has not deployed or documented alternative measures to control physical access to such Cyber Assets within the Electronic Security Perimeter.</p>
CIP-006-3c	R1.2.	Identification of all physical access points through each Physical Security Perimeter and measures to control entry at those access points.	N/A	N/A	N/A	The Responsible Entity's physical security plan does not identify all access points through each Physical Security Perimeter or does not identify measures to control entry at those access points.

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CIP-006-3c	R1.3	Processes, tools, and procedures to monitor physical access to the perimeter(s).	N/A	N/A	N/A	The Responsible Entity's physical security plan does not include processes, tools, and procedures to monitor physical access to the perimeter(s).
CIP-006-3c	R1.4	Appropriate use of physical access controls as described in Requirement R4 including visitor pass management, response to loss, and prohibition of inappropriate use of physical access controls.	N/A	N/A	N/A	The Responsible Entity's physical security plan does not address the appropriate use of physical access controls as described in Requirement R4.
CIP-006-3c	R1.5	Review of access authorization requests and revocation of access authorization, in accordance with CIP-004-3 Requirement R4.	N/A	N/A	N/A	The Responsible Entity's physical security plan does not address the review of access authorization requests or the revocation of access authorization, in accordance with CIP-004-3 Requirement R4.
CIP-006-3c	R1.6	A visitor control program for visitors (personnel without authorized unescorted access to a Physical Security Perimeter), containing at a minimum the following:	N/A	N/A	N/A	The Responsible Entity did not include or implement a visitor control program in its physical security plan or it does not meet

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						the requirements of continuous escort.
CIP-006-3c	R1.6.1	Logs (manual or automated) to document the entry and exit of visitors, including the date and time, to and from Physical Security Perimeters.	N/A	N/A	N/A	N/A
CIP-006-3c	R1.6.2	Continuous escorted access of visitors within the Physical Security Perimeter	N/A	N/A	N/A	N/A
CIP-006-3c	R1.7	Update of the physical security plan within thirty calendar days of the completion of any physical security system redesign or reconfiguration, including, but not limited to, addition or removal of access points through the Physical Security Perimeter, physical access controls, monitoring controls, or logging controls.	N/A	N/A	N/A	<p>The Responsible Entity's physical security plan does not address r updating the physical security plan within thirty calendar days of the completion of a physical security system redesign or within thirty calendar days of the completion of a reconfiguration.</p> <p>OR</p> <p>The plan was not updated within thirty calendar days of the completion of a physical security system redesign or reconfiguration</p>
CIP-006-3c	R1.8	Annual review of the physical security plan.	N/A	N/A	N/A	The Responsible Entity's physical

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						security plan does not address a process for ensuring that the physical security plan is reviewed at least annually.
CIP-006-3c	R2	Protection of Physical Access Control Systems — Cyber Assets that authorize and/or log access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access point such as electronic lock control mechanisms and badge readers, shall:	N/A	N/A	N/A	<p>A Cyber Asset that authorizes and/or logs access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access point such as electronic lock control mechanisms and badge readers, was not protected from unauthorized physical access.</p> <p>OR</p> <p>A Cyber Asset that authorizes and/or logs access to the Physical Security Perimeter(s), exclusive of hardware at the Physical Security Perimeter access</p>

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						point such as electronic lock control mechanisms and badge readers was not afforded the protective measures specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3a Requirements R4 and R5; Standard CIP-007-3; Standard CIP-008-3; and Standard CIP-009-3.
CIP-006-3c	R2.1.	Be protected from unauthorized physical access.	N/A	N/A	N/A	N/A
CIP-006-3c	R2.2.	Be afforded the protective measures specified in Standard CIP-003-3; Standard CIP-004-3 Requirement R3; Standard CIP-005-3 Requirements R2 and R3; Standard CIP-006-3a Requirements R4 and R5; Standard CIP-007-3; Standard CIP-008-3; and Standard CIP-009-3.	N/A	N/A	N/A	N/A
CIP-006-3c	R3	Protection of Electronic Access Control Systems — Cyber Assets used in the access control and/or monitoring of the Electronic Security Perimeter(s) shall	N/A	N/A	N/A	A Cyber Assets used in the access control and/or monitoring of the Electronic

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		reside within an identified Physical Security Perimeter.				Security Perimeter(s) does not reside within an identified Physical Security Perimeter.
CIP-006-3c	R4	<p>Physical Access Controls — The Responsible Entity shall document and implement the operational and procedural controls to manage physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. The Responsible Entity shall implement one or more of the following physical access methods:</p> <ul style="list-style-type: none"> • Card Key: A means of electronic access where the access rights of the card holder are predefined in a computer database. Access rights may differ from one perimeter to another. • Special Locks: These include, but are not limited to, locks with “restricted key” systems, magnetic locks that can be operated remotely, and “man-trap” systems. • Security Personnel: Personnel responsible for controlling physical access who may reside on-site or at a monitoring station. • Other Authentication Devices: Biometric, keypad, token, or other equivalent devices that control physical access to the Critical Cyber Assets 	N/A	N/A	N/A	<p>The Responsible Entity has not documented or has not implemented the operational and procedural controls to manage physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week using one or more of the following physical access methods:</p> <ul style="list-style-type: none"> • Card Key: A means of electronic access where the access rights of the card holder are predefined in a computer database. Access rights may differ from one perimeter to another. • Special Locks: These include, but are not limited to, locks with “restricted key” systems, magnetic locks that can be operated remotely, and “man-trap” systems.

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						<ul style="list-style-type: none"> • Security Personnel: Personnel responsible for controlling physical access who may reside on-site or at a monitoring station. • Other Authentication Devices: Biometric, keypad, token, or other equivalent devices that control physical access to the Critical Cyber Assets.
CIP-006-3c	R5	<p>Monitoring Physical Access — The Responsible Entity shall document and implement the technical and procedural controls for monitoring physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week. Unauthorized access attempts shall be reviewed immediately and handled in accordance with the procedures specified in Requirement CIP-008-3. One or more of the following monitoring methods shall be used:</p> <ul style="list-style-type: none"> • Alarm Systems: Systems that alarm to indicate a door, gate or window has been opened without authorization. These alarms must provide for immediate notification to personnel responsible for response. • Human Observation of Access 	N/A	N/A.	N/A	<p>The Responsible Entity has not documented or has not implemented the technical and procedural controls for monitoring physical access at all access points to the Physical Security Perimeter(s) twenty-four hours a day, seven days a week using one or more of the following monitoring methods:</p> <ul style="list-style-type: none"> • Alarm Systems:

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		Points: Monitoring of physical access points by authorized personnel as specified in Requirement R4.				<p>Systems that alarm to indicate a door, gate or window has been opened without authorization. These alarms must provide for immediate notification to personnel responsible for response.</p> <ul style="list-style-type: none"> • Human Observation of Access Points: Monitoring of physical access points by authorized personnel as specified in Requirement R4. <p>OR</p> <p>An unauthorized access attempt was not reviewed immediately and handled in accordance with CIP-008-3.</p>
CIP-006-3c	R6	Logging Physical Access — Logging shall record sufficient information to uniquely identify individuals and the time of access		N/A	N/A	The Responsible Entity has not implemented or has

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		<p>twenty-four hours a day, seven days a week. The Responsible Entity shall implement and document the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:</p> <ul style="list-style-type: none"> • Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method. • Video Recording: Electronic capture of video images of sufficient quality to determine identity. • Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R4 				<p>not documented the technical and procedural mechanisms for logging physical entry at all access points to the Physical Security Perimeter(s) using one or more of the following logging methods or their equivalent:</p> <ul style="list-style-type: none"> • Computerized Logging: Electronic logs produced by the Responsible Entity’s selected access control and monitoring method, • Video Recording: Electronic capture of video images of sufficient quality to determine identity, or • Manual Logging: A log book or sign-in sheet, or other record of physical access maintained by security or other personnel authorized to control and monitor physical access as specified in Requirement R4. <p>OR</p>

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						The Responsible Entity has not recorded sufficient information to uniquely identify individuals and the time of access twenty-four hours a day, seven days a week.
CIP-006-3c	R7	Access Log Retention — The responsible entity shall retain physical access logs for at least ninety calendar days. Logs related to reportable incidents shall be kept in accordance with the requirements of Standard CIP-008-3.	N/A	N/A	N/A	The responsible entity did not retain physical access logs for at least ninety calendar days.
CIP-006-3c	R8	Maintenance and Testing — The Responsible Entity shall implement a maintenance and testing program to ensure that all physical security systems under Requirements R4, R5, and R6 function properly. The program must include, at a minimum, the following:	N/A	N/A	N/A	The Responsible Entity has not implemented a maintenance and testing program to ensure that all physical security systems under Requirements R4, R5, and R6 function properly. OR The implemented program does not include one or more of the requirements; R8.1, R8.2, and R8.3.
CIP-006-3c	R8.1	Testing and maintenance of all physical	N/A	N/A	N/A	N/A

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		security mechanisms on a cycle no longer than three years.				
CIP-006-3c	R8.2	Retention of testing and maintenance records for the cycle determined by the Responsible Entity in Requirement R8.1.	N/A	N/A	N/A	N/A
CIP-006-3c	R8.3	Retention of outage records regarding access controls, logging, and monitoring for a minimum of one calendar year.	N/A	N/A	N/A	N/A
CIP-007-3	R1.	Test Procedures — The Responsible Entity shall ensure that new Cyber Assets and significant changes to existing Cyber Assets within the Electronic Security Perimeter do not adversely affect existing cyber security controls. For purposes of Standard CIP-007-3, a significant change shall, at a minimum, include implementation of security patches, cumulative service packs, vendor releases, and version upgrades of operating systems, applications, database platforms, or other third-party software or firmware.	N/A	N/A	N/A	The Responsible Entity did not ensure the prevention of adverse affects described in R1, by not including the required minimum significant changes. OR The Responsible Entity did not address one or more of the following: R1.1, R1.2, R1.3.
CIP-007-3	R1.1.	The Responsible Entity shall create, implement, and maintain cyber security test procedures in a manner that minimizes adverse effects on the production system or its operation.	N/A	N/A	N/A	N/A
CIP-007-3	R1.2.	The Responsible Entity shall document that testing is performed in a manner that reflects the production environment.	N/A	N/A	N/A	N/A
CIP-007-3	R1.3.	The Responsible Entity shall document test results.	N/A	N/A	N/A	N/A
CIP-007-3	R2.	Ports and Services — The Responsible Entity shall establish, document and implement a process to ensure that only	N/A	N/A	N/A	The Responsible Entity did not establish (implement)

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		those ports and services required for normal and emergency operations are enabled.				or did not document a process to ensure that only those ports and services required for normal and emergency operations are enabled.
CIP-007-3	R2.1.	The Responsible Entity shall enable only those ports and services required for normal and emergency operations.	N/A	N/A	N/A	The Responsible Entity enabled one or more ports or services not required for normal and emergency operations on Cyber Assets inside the Electronic Security Perimeter(s).
CIP-007-3	R2.2.	The Responsible Entity shall disable other ports and services, including those used for testing purposes, prior to production use of all Cyber Assets inside the Electronic Security Perimeter(s).	N/A	N/A	N/A	The Responsible Entity did not disable one or more other ports or services, including those used for testing purposes, prior to production use for Cyber Assets inside the Electronic Security Perimeter(s).
CIP-007-3	R2.3.	In the case where unused ports and services cannot be disabled due to technical limitations, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.	N/A	N/A	N/A	For cases where unused ports and services cannot be disabled due to technical limitations, the Responsible Entity did not document compensating measure(s) applied to mitigate risk.

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CIP-007-3	R3.	Security Patch Management — The Responsible Entity, either separately or as a component of the documented configuration management process specified in CIP-003-3 Requirement R6, shall establish, document and implement a security patch management program for tracking, evaluating, testing, and installing applicable cyber security software patches for all Cyber Assets within the Electronic Security Perimeter(s).	N/A	N/A	N/A	The Responsible Entity did not establish (implement) or did not document, either separately or as a component of the documented configuration management process specified in CIP-003-3 Requirement R6, a security patch management program for tracking, evaluating, testing, and installing applicable cyber security software patches for all Cyber Assets within the Electronic Security Perimeter(s).
CIP-007-3	R3.1.	The Responsible Entity shall document the assessment of security patches and security upgrades for applicability within thirty calendar days of availability of the patches or upgrades.	N/A	N/A	N/A	The Responsible Entity did not document the assessment of security patches and security upgrades for applicability as required in Requirement R3 within 30 calendar days after the availability of the patches and upgrades.
CIP-007-3	R3.2.	The Responsible Entity shall document the	N/A	N/A	N/A	The Responsible

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		implementation of security patches. In any case where the patch is not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.				Entity did not document the implementation of applicable security patches as required in R3. OR Where an applicable patch was not installed, the Responsible Entity did not document the compensating measure(s) applied to mitigate risk.
CIP-007-3	R4.	Malicious Software Prevention — The Responsible Entity shall use anti-virus software and other malicious software (“malware”) prevention tools, where technically feasible, to detect, prevent, deter, and mitigate the introduction, exposure, and propagation of malware on all Cyber Assets within the Electronic Security Perimeter(s).	N/A	N/A	N/A	The Responsible Entity, where technically feasible, did not use anti-virus software or other malicious software (“malware”) prevention tools, on one or more Cyber Assets within the Electronic Security Perimeter(s).
CIP-007-3	R4.1.	The Responsible Entity shall document and implement anti-virus and malware prevention tools. In the case where anti-virus software and malware prevention tools are not installed, the Responsible Entity shall document compensating measure(s) applied to mitigate risk exposure.	N/A	N/A	N/A	The Responsible Entity did not document the implementation of antivirus and malware prevention tools for cyber assets within the electronic security perimeter.

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						OR The Responsible Entity did not document the implementation of compensating measure(s) applied to mitigate risk exposure where antivirus and malware prevention tools are not installed.
CIP-007-3	R4.2.	The Responsible Entity shall document and implement a process for the update of anti-virus and malware prevention “signatures.” The process must address testing and installing the signatures.	N/A	N/A	N/A	The Responsible Entity did not document or did not implement a process including addressing testing and installing the signatures for the update of anti-virus and malware prevention “signatures.”
CIP-007-3	R5.	Account Management — The Responsible Entity shall establish, implement, and document technical and procedural controls that enforce access authentication of, and accountability for, all user activity, and that minimize the risk of unauthorized system access.	N/A	N/A	N/A	The Responsible Entity did not document or did not implement technical and procedural controls that enforce access authentication of, and accountability for, all user activity.
CIP-007-3	R5.1.	The Responsible Entity shall ensure that individual and shared system accounts and authorized access permissions are	N/A	N/A	N/A	The Responsible Entity did not ensure that individual and

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		consistent with the concept of “need to know” with respect to work functions performed.				shared system accounts and authorized access permissions are consistent with the concept of “need to know” with respect to work functions performed.
CIP-007-3	R5.1.1.	The Responsible Entity shall ensure that user accounts are implemented as approved by designated personnel. Refer to Standard CIP-003-3 Requirement R5.	N/A	N/A	N/A	One or more user accounts implemented by the Responsible Entity were not implemented as approved by designated personnel.
CIP-007-3	R5.1.2.	The Responsible Entity shall establish methods, processes, and procedures that generate logs of sufficient detail to create historical audit trails of individual user account access activity for a minimum of ninety days.	N/A	The Responsible Entity generated logs with sufficient detail to create historical audit trails of individual user account access activity, however the logs do not contain activity for a minimum of 90 days.	The Responsible Entity generated logs with insufficient detail to create historical audit trails of individual user account access activity.	The Responsible Entity did not generate logs of individual user account access activity.
CIP-007-3	R5.1.3.	The Responsible Entity shall review, at least annually, user accounts to verify access privileges are in accordance with Standard CIP-003-3 Requirement R5 and Standard CIP-004-3 Requirement R4.	N/A	N/A	N/A	The Responsible Entity did not review, at least annually, user accounts to verify access privileges are in accordance with Standard CIP-003-3

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						Requirement R5 and Standard CIP-004-3 Requirement R4.
CIP-007-3	R5.2.	The Responsible Entity shall implement a policy to minimize and manage the scope and acceptable use of administrator, shared, and other generic account privileges including factory default accounts.	N/A	N/A	N/A	The Responsible Entity did not implement a policy to minimize and manage the scope and acceptable use of administrator, shared, and other generic account privileges including factory default accounts.
CIP-007-3	R5.2.1.	The policy shall include the removal, disabling, or renaming of such accounts where possible. For such accounts that must remain enabled, passwords shall be changed prior to putting any system into service.	N/A	N/A	The Responsible Entity's policy did not include the removal, disabling, or renaming of such accounts where possible, however for accounts that must remain enabled, passwords were changed prior to putting any system into service.	For accounts that must remain enabled, the Responsible Entity did not change passwords prior to putting any system into service.
CIP-007-3	R5.2.2.	The Responsible Entity shall identify those individuals with access to shared accounts.	N/A	N/A	N/A	The Responsible Entity did not identify all individuals with access to shared accounts.
CIP-007-3	R5.2.3.	Where such accounts must be shared, the Responsible Entity shall have a policy for	N/A	N/A	N/A	Where such accounts must be shared, the

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		managing the use of such accounts that limits access to only those with authorization, an audit trail of the account use (automated or manual), and steps for securing the account in the event of personnel changes (for example, change in assignment or termination).				Responsible Entity has not implemented (one or more components of) a policy for managing the use of such accounts that limits access to only those with authorization, an audit trail of the account use (automated or manual), and steps for securing the account in the event of personnel changes (for example, change in assignment or termination).
CIP-007-3	R5.3.	At a minimum, the Responsible Entity shall require and use passwords, subject to the following, as technically feasible:	N/A	N/A	N/A	The Responsible Entity does not require passwords subject to R5.3.1, R5.3.2, R5.3.3. OR Does not use passwords subject to R5.3.1, R5.3.2, R5.3.3.
CIP-007-3	R5.3.1.	Each password shall be a minimum of six characters.	N/A	N/A	N/A	N/A
CIP-007-3	R5.3.2.	Each password shall consist of a combination of alpha, numeric, and “special” characters.	N/A	N/A	N/A	N/A
CIP-007-3	R5.3.3.	Each password shall be changed at least annually, or more frequently based on risk.	N/A	N/A	N/A	N/A

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CIP-007-3	R6.	Security Status Monitoring — The Responsible Entity shall ensure that all Cyber Assets within the Electronic Security Perimeter, as technically feasible, implement automated tools or organizational process controls to monitor system events that are related to cyber security.	N/A	N/A	N/A	The Responsible Entity as technically feasible, did not implement automated tools or organizational process controls, to monitor system events that are related to cyber security on one or more of Cyber Assets inside the Electronic Security Perimeter(s).
CIP-007-3	R6.1.	The Responsible Entity shall implement and document the organizational processes and technical and procedural mechanisms for monitoring for security events on all Cyber Assets within the Electronic Security Perimeter.	N/A	N/A	N/A	The Responsible Entity did not implement or did not document the organizational processes and technical and procedural mechanisms for monitoring for security events on all Cyber Assets within the Electronic Security Perimeter.
CIP-007-3	R6.2.	The security monitoring controls shall issue automated or manual alerts for detected Cyber Security Incidents.	N/A	N/A	N/A	The Responsible entity's security monitoring controls do not issue automated or manual alerts for detected Cyber Security Incidents.
CIP-007-3	R6.3.	The Responsible Entity shall maintain logs	N/A	N/A	N/A	The Responsible

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		of system events related to cyber security, where technically feasible, to support incident response as required in Standard CIP-008-3.				Entity did not maintain logs of system events related to cyber security, where technically feasible, to support incident response as required in Standard CIP-008.
CIP-007-3	R6.4.	The Responsible Entity shall retain all logs specified in Requirement R6 for ninety calendar days.	N/A	N/A	N/A	The Responsible Entity did not retain one or more of the logs specified in Requirement R6 for at least 90 calendar days.
CIP-007-3	R6.5.	The Responsible Entity shall review logs of system events related to cyber security and maintain records documenting review of logs.	N/A	N/A	N/A	The Responsible Entity did not review logs of system events related to cyber security nor maintain records documenting review of logs.
CIP-007-3	R7.	Disposal or Redeployment — The Responsible Entity shall establish and implement formal methods, processes, and procedures for disposal or redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in Standard CIP-005-3.	N/A	N/A	The Responsible Entity established and implemented formal methods, processes, and procedures for redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and	The Responsible Entity did not establish or implement formal methods, processes, and procedures for disposal or redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in

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					documented in Standard CIP-005- 3 but did not address redeployment as specified in R7.2.	<p>Standard CIP-005-3.</p> <p>OR</p> <p>The Responsible Entity established formal methods, processes, and procedures for redeployment of Cyber Assets within the Electronic Security Perimeter(s) as identified and documented in Standard CIP-005-2 but did not address disposal as specified in R7.1.</p> <p>OR</p> <p>The Responsible Entity did not maintain records pertaining to disposal or[3]</p>

³ Please note that FERC’s January 20, 2011 Order on Version 2 And Version 3 Violation Risk Factors And Violation Severity Levels For Critical Infrastructure Protection Reliability Standards dictated that this should read “...records pertaining to disposal **of** redeployment as specified in R7.3.” (Emphasis added) It has come to NERC’s attention that it should read “...records pertaining to disposal **or** redeployment as specified in R7.3.” (emphasis added) and NERC has made this change accordingly. NERC proposes to remove this footnote from the final approved list of VSLs.

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						redeployment as specified in R7.3.
CIP-007-3	R7.1.	Prior to the disposal of such assets, the Responsible Entity shall destroy or erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.	N/A	N/A	N/A	N/A
CIP-007-3	R7.2.	Prior to redeployment of such assets, the Responsible Entity shall, at a minimum, erase the data storage media to prevent unauthorized retrieval of sensitive cyber security or reliability data.	N/A	N/A	N/A	N/A
CIP-007-3	R7.3.	The Responsible Entity shall maintain records that such assets were disposed of or redeployed in accordance with documented procedures.	N/A	N/A	N/A	N/A
CIP-007-3	R8	Cyber Vulnerability Assessment — The Responsible Entity shall perform a cyber vulnerability assessment of all Cyber Assets within the Electronic Security Perimeter at least annually. The vulnerability assessment shall include, at a minimum, the following:	N/A	N/A	N/A	The Responsible Entity did not perform a Vulnerability Assessment on one or more Cyber Assets within the Electronic Security Perimeter at least annually. OR The vulnerability assessment did not include one (1) or more of the subrequirements 8.1, 8.2, 8.3, 8.4.
CIP-007-3	R8.1.	A document identifying the vulnerability assessment process;	N/A	N/A	N/A	N/A
CIP-007-3	R8.2.	A review to verify that only ports and	N/A	N/A	N/A	N/A

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		services required for operation of the Cyber Assets within the Electronic Security Perimeter are enabled;				
CIP-007-3	R8.3.	A review of controls for default accounts; and,	N/A	N/A	N/A	N/A
CIP-007-3	R8.4.	Documentation of the results of the assessment, the action plan to remediate or mitigate vulnerabilities identified in the assessment, and the execution status of that action plan.	N/A	N/A	N/A	N/A
CIP-007-3	R9	Documentation Review and Maintenance — The Responsible Entity shall review and update the documentation specified in Standard CIP-007-3 at least annually. Changes resulting from modifications to the systems or controls shall be documented within thirty calendar days of the change being completed.	N/A	N/A	The Responsible Entity did not review and update the documentation specified in Standard CIP-007-3 at least annually. OR The Responsible Entity did not document changes resulting from modifications to the systems or controls within thirty calendar days of the change being completed.	The Responsible Entity did not review and update the documentation specified in Standard CIP-007-3 at least annually and changes resulting from modifications to the systems or controls were not documented within thirty calendar days of the change being completed.
CIP-008-3	R1.	Cyber Security Incident Response Plan — The Responsible Entity shall develop and maintain a Cyber Security Incident response plan and implement the plan in	N/A	N/A	The Responsible Entity has developed a Cyber Security Incident response	The Responsible Entity has not developed a Cyber Security Incident

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		response to Cyber Security Incidents. The Cyber Security Incident response plan shall address, at a minimum, the following:			plan that addresses all of the components required by R1.1 through R1.6 but has not maintained the plan in accordance with those components.	response plan that addresses all of the components required by R1.1 through R1.6, or has not implemented the plan in response to a Cyber Security Incident.
CIP-008-3	R1.1.	Procedures to characterize and classify events as reportable Cyber Security Incidents.	N/A	N/A	N/A	N/A
CIP-008-3	R1.2.	Response actions, including roles and responsibilities of Cyber Security Incident response teams, Cyber Security Incident handling procedures, and communication plans.	N/A	N/A	N/A	N/A
CIP-008-3	R1.3.	Process for reporting Cyber Security Incidents to the Electricity Sector Information Sharing and Analysis Center (ES-ISAC). The Responsible Entity must ensure that all reportable Cyber Security Incidents are reported to the ES-ISAC either directly or through an intermediary.	N/A	N/A	N/A	N/A
CIP-008-3	R1.4.	Process for updating the Cyber Security Incident response plan within thirty calendar days of any changes.	N/A	N/A	N/A	N/A
CIP-008-3	R1.5.	Process for ensuring that the Cyber Security Incident response plan is reviewed at least annually.	N/A	N/A	N/A	N/A
CIP-008-3	R1.6.	Process for ensuring the Cyber Security Incident response plan is tested at least annually. A test of the Cyber Security Incident response plan can range from a	N/A	N/A	N/A	N/A

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		paper drill, to a full operational exercise, to the response to an actual incident.				
CIP-008-3	R2	Cyber Security Incident Documentation — The Responsible Entity shall keep relevant documentation related to Cyber Security Incidents reportable per Requirement R1.1 for three calendar years.	N/A	N/A	N/A	The Responsible Entity has not kept relevant documentation related to Cyber Security Incidents reportable per Requirement R1.1 for at least three calendar years.
CIP-009-3	R1	Recovery Plans — The Responsible Entity shall create and annually review recovery plan(s) for Critical Cyber Assets. The recovery plan(s) shall address at a minimum the following:	N/A	N/A	N/A	The Responsible Entity has not created or has not annually reviewed their recovery plan(s) for Critical Cyber Assets OR has created a plan but did not address one or more of the requirements CIP-009-1 R1.1 and R1.2.
CIP-009-3	R1.1.	Specify the required actions in response to events or conditions of varying duration and severity that would activate the recovery plan(s).	N/A	N/A	N/A	N/A
CIP-009-3	R1.2.	Define the roles and responsibilities of responders.	N/A	N/A	N/A	N/A
CIP-009-3	R2	Exercises — The recovery plan(s) shall be exercised at least annually. An exercise of the recovery plan(s) can range from a paper drill, to a full operational exercise, to recovery from an actual incident.	N/A	N/A	N/A	The Responsible Entity's recovery plan(s) have not been exercised at least annually.

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CIP-009-3	R3	Change Control — Recovery plan(s) shall be updated to reflect any changes or lessons learned as a result of an exercise or the recovery from an actual incident. Updates shall be communicated to personnel responsible for the activation and implementation of the recovery plan(s) within thirty calendar days of the change being completed.	N/A	N/A	N/A	<p>The Responsible Entity's recovery plan(s) have not been updated to reflect any changes or lessons learned as a result of an exercise or the recovery from an actual incident.</p> <p>OR</p> <p>The Responsible Entity's recovery plan(s) have been updated to reflect any changes or lessons learned as a result of an exercise or the recovery from an actual incident but the updates were not communicated to personnel responsible for the activation and implementation of the recovery plan(s) within thirty calendar days of the change.</p>
CIP-009-3	R4	Backup and Restore — The recovery plan(s) shall include processes and procedures for the backup and storage of information required to successfully restore Critical Cyber Assets. For example, backups may include spare electronic components or equipment, written documentation of configuration settings,	N/A	N/A	N/A	The Responsible Entity's recovery plan(s) do not include processes and procedures for the backup and storage of information required to successfully restore Critical Cyber

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		tape backup, etc.				Assets.
CIP-009-3	R5	Testing Backup Media — Information essential to recovery that is stored on backup media shall be tested at least annually to ensure that the information is available. Testing can be completed off site.	N/A	N/A	N/A	The Responsible Entity's information essential to recovery that is stored on backup media has not been tested at least annually to ensure that the information is available.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
COM-001-1.1	R1.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information:	N/A	The responsible entity failed to provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information to one of the groups specified in R1.1, or R1.2, or R1.3	The responsible entity failed to provide adequate and reliable telecommunications facilities for the exchange of Interconnection or operating information to two of the groups specified in R1.1, or R1.2, or R1.3.	The responsible entity failed to provide adequate and reliable telecommunications facilities for the exchange of Interconnection and operating information to all 3 of the groups specified in R1.1, or R1.2, or R1.3. OR The responsible entity's telecommunications is not redundant or diversely routed as applicable as specified in R1.4
COM-001-1.1	R1.1.	Internally.	N/A	N/A	N/A	N/A
COM-001-1.1	R1.2.	Between the Reliability Coordinator and its Transmission Operators and Balancing Authorities.	N/A	N/A	N/A	N/A
COM-001-1.1	R1.3.	With other Reliability Coordinators, Transmission Operators, and Balancing Authorities as necessary to maintain reliability.	N/A	N/A	N/A	N/A
COM-001-1.1	R1.4.	Where applicable, these facilities shall be redundant and diversely routed.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
COM-001-1.1	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall manage, alarm, test and/or actively monitor vital telecommunications facilities. Special attention shall be given to emergency telecommunications facilities and equipment not used for routine communications.	N/A	The responsible entity failed to give special attention to emergency telecommunications facilities and equipment not used for routine communications.	N/A	The responsible entity failed to manage, alarm, test and/or actively monitor its vital telecommunications facilities.
COM-001-1.1	R3.	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall provide a means to coordinate telecommunications among their respective areas. This coordination shall include the ability to investigate and recommend solutions to telecommunications problems within the area and with other areas.	N/A	N/A	The responsible entity failed to assist in the investigation and recommending of solutions to telecommunications problems within the area and with other areas.	The responsible entity failed to provide a means to coordinate telecommunications among their respective areas including assisting in the investigation and recommending of solutions to telecommunications problems within the area and with other areas.
COM-001-1.1	R4.	Unless agreed to otherwise, each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use English as the language for all communications between and among operating personnel responsible for the real-time generation control and operation of the interconnected Bulk Electric System. Transmission Operators and Balancing Authorities may use an alternate language for internal operations.	N/A	N/A	N/A	The responsible entity used a language other than English and failed to have an agreement to do so.
COM-001-	R5.	Each Reliability Coordinator, Transmission Operator, and Balancing	N/A	N/A	N/A	The responsible entity did not have

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
1.1		Authority shall have written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.				written operating instructions and procedures to enable continued operation of the system during the loss of telecommunications facilities.
COM-001-1.1	R6.	Each NERCNet User Organization shall adhere to the requirements in Attachment 1-COM-001-0, "NERCNet Security Policy."	The NERCNet User Organization failed to adhere to 5% or less of the requirements listed in Attachment 1-COM-001, , "NERCNet Security Policy".	The NERCNet User Organization failed to adhere to more than 5% up to (and including) 10% of the requirements listed in Attachment 1 - COM-001, "NERCNet Security Policy".	The NERCNet User Organization failed to adhere to more than 10% up to (and including) 15% of the requirements listed in Attachment 1-COM-001 "NERCNet Security Policy".	The NERCNet User Organization failed to more than 15% of the requirements listed in Attachment 1-COM-001, "NERCNet Security Policy".
COM-002-2	R1.	Each Transmission Operator, Balancing Authority, and Generator Operator shall have communications (voice and data links) with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators. Such communications shall be staffed and available for addressing a real-time emergency condition.	N/A	The responsible entity did not have data links with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators. OR The responsible entity did not have voice links with appropriate Reliability Coordinators, Balancing Authorities, and	N/A	The responsible entity failed to have communications (voice and data links) with appropriate Reliability Coordinators, Balancing Authorities, and Transmission Operators. OR The responsible entity's communications were not staffed and available for addressing real time emergency

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Transmission Operators.		conditions.
COM-002-2	R1.1.	Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator, and all other potentially affected Balancing Authorities and Transmission Operators through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding is anticipated.	N/A	N/A	The responsible entity failed to notify all other potentially affected Balancing Authorities and Transmission Operators through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding was anticipated.	The responsible entity failed to notify its Reliability Coordinator through predetermined communication paths of any condition that could threaten the reliability of its area or when firm load shedding was anticipated.
COM-002-2	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings.	N/A	The responsible entity provided a clear directive in a clear, concise and definitive manner and required the recipient to repeat the directive, but did not acknowledge the recipient was correct in the repeated directive.	The responsible entity provided a clear directive in a clear, concise and definitive manner, but did not require the recipient to repeat the directive.	The responsible entity failed to provide a clear directive in a clear, concise and definitive manner when required.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-001-0	R1.	Balancing Authorities shall have operating agreements with adjacent Balancing Authorities that shall, at a minimum, contain provisions for emergency assistance, including provisions to obtain emergency assistance from remote Balancing Authorities.	N/A	The Balancing Authority demonstrated the existence of an operating agreement with at least one adjacent Balancing Authority for emergency assistance, but the agreement did not include provision for obtaining emergency assistance from any remote Balancing Authority.	N/A	The Balancing Authority did not demonstrate the existence of any operating agreements with adjacent Balancing Authorities that include provision for emergency assistance with adjacent Balancing Authorities.
EOP-001-0	R2.	The Transmission Operator shall have an emergency load reduction plan for all identified IROLs. The plan shall include the details on how the Transmission Operator will implement load reduction in sufficient amount and time to mitigate the IROL violation before system separation or collapse would occur. The load reduction plan must be capable of being implemented within 30 minutes.	N/A	N/A	The Transmission Operator demonstrated the existence of an emergency load reduction plan for each identified IROL but at least one of the plans will take longer than 30 minutes to implement.	The Transmission Operator failed to demonstrate the existence of an emergency load reduction plan for all identified IROLs.
EOP-001-0	R3.	Each Transmission Operator and Balancing Authority shall:	N/A	N/A	N/A	N/A
EOP-001-0	R3.1.	Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.	N/A	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans to mitigate operating	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans to mitigate operating emergencies for insufficient	The Transmission Operator or Balancing Authority failed to demonstrate the existence of a set of plans to mitigate operating emergencies

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				emergencies for insufficient generating capacity and the plans are implemented but the plans are not maintained.	generating capacity but the plans are neither maintained nor implemented.	for insufficient generating capacity.
EOP-001-0	R3.2.	Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.	N/A	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans to mitigate operating emergencies on the transmission system and the plans are implemented but the plans are not maintained.	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans to mitigate operating emergencies on the transmission system but the plans are neither maintained nor implemented.	The Transmission Operator or Balancing Authority failed to demonstrate the existence of a set of plans to mitigate operating emergencies on the transmission system.
EOP-001-0	R3.3.	Develop, maintain, and implement a set of plans for load shedding.	N/A	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans for load shedding and the plans are implemented but the plans are not maintained.	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans for load shedding but the plans are neither maintained nor implemented.	The Transmission Operator or Balancing Authority failed to demonstrate the existence of a set of plans for load shedding.
EOP-001-0	R3.4.	Develop, maintain, and implement a set of plans for system restoration.	N/A	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans for system restoration and the	The Transmission Operator or Balancing Authority demonstrated the existence of a set of plans for system restoration but the plans are neither maintained	The Transmission Operator or Balancing Authority failed to demonstrate the existence of a set of plans for system restoration.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				plans are implemented but the plans are not maintained.	not implemented.	
EOP-001-0	R4.	Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:	The Transmission Operator or Balancing Authority demonstrated the existence of emergency plans that will enable it to mitigate operating emergencies but the plans do not include sub-requirement R4.4.	The Transmission Operator or Balancing Authority demonstrated the existence of emergency plans that will enable it to mitigate operating emergencies but the plans do not include sub-requirement R4.3.	The Transmission Operator or Balancing Authority demonstrated the existence of emergency plans that will enable it to mitigate operating emergencies but the plans do not include either sub-requirement R4.1 or R4.2.	The Transmission Operator or Balancing Authority demonstrated the existence of emergency plans that will enable it to mitigate operating emergencies but the plans are missing two (2) or more of the sub-requirements identified for R4.
EOP-001-0	R4.1.	Communications protocols to be used during emergencies.	N/A	N/A	N/A	N/A
EOP-001-0	R4.2.	A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.	N/A	N/A	N/A	N/A
EOP-001-0	R4.3.	The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.	N/A	N/A	N/A	N/A
EOP-001-0	R4.4.	Staffing levels for the emergency.	N/A	N/A	N/A	N/A
EOP-001-0	R5.	Each Transmission Operator and Balancing Authority shall include the applicable elements in Attachment 1-EOP-001-0 when developing an emergency plan.	The Transmission Operator and Balancing Authority emergency plan has complied with 90% or more of the number of sub-components.	The Transmission Operator and Balancing Authority emergency plan has complied with 70% to 90% of the number of sub-components.	The Transmission Operator and Balancing Authority emergency plan has complied with between 50% to 70% of the number of sub-components.	The Transmission Operator and Balancing Authority emergency plan has complied with 50% or less of the number of sub-components

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-001-0	R6.	The Transmission Operator and Balancing Authority shall annually review and update each emergency plan. The Transmission Operator and Balancing Authority shall provide a copy of its updated emergency plans to its Reliability Coordinator and to neighboring Transmission Operators and Balancing Authorities.	N/A	N/A	N/A	The Transmission Operator or Balancing Authority failed to provide evidence that it completed an annual review, and updated each of its emergency plans appropriately. OR The Transmission Operator or Balancing Authority failed to provide a copy of one of its updated emergency plans to its Reliability Coordinator, all its neighboring Transmission Operators, and all its neighboring Balancing Authorities.
EOP-001-0	R7.	The Transmission Operator and Balancing Authority shall coordinate its emergency plans with other Transmission Operators and Balancing Authorities as appropriate. This coordination includes the following steps, as applicable:	The Transmission Operator or Balancing Authority demonstrated that it coordinated its emergency plans with other Transmission Operators and Balancing Authorities as appropriate but the coordination specified in R7.4 was applicable and was not included.	The Transmission Operator or Balancing Authority demonstrated that it coordinated its emergency plans with other Transmission Operators and Balancing Authorities as appropriate but the coordination specified in R7.3 was applicable and was not included.	The Transmission Operator or Balancing Authority demonstrated that it coordinated its emergency plans with other Transmission Operators and Balancing Authorities as appropriate but the coordination specified in either R7.1 or R7.2 was applicable and was not included. .	The Transmission Operator or Balancing Authority demonstrated that it coordinated its emergency plans with other Transmission Operators and Balancing Authorities as appropriate but the coordination specified in two (2) or more of the sub-requirements was applicable and was not included.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-001-0	R7.1.	The Transmission Operator and Balancing Authority shall establish and maintain reliable communications between interconnected systems.	N/A	N/A	N/A	N/A
EOP-001-0	R7.2.	The Transmission Operator and Balancing Authority shall arrange new interchange agreements to provide for emergency capacity or energy transfers if existing agreements cannot be used.	N/A	N/A	N/A	N/A
EOP-001-0	R7.3.	The Transmission Operator and Balancing Authority shall coordinate transmission and generator maintenance schedules to maximize capacity or conserve the fuel in short supply. (This includes water for hydro generators.)	N/A	N/A	N/A	N/A
EOP-001-0	R7.4.	The Transmission Operator and Balancing Authority shall arrange deliveries of electrical energy or fuel from remote systems through normal operating channels.	N/A	N/A	N/A	N/A
EOP-002-2.1	R1.	Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.	N/A	N/A	The Balancing Authority or Reliability Coordinator failed to provide evidence that it has responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area.	The responsible entity failed to exercise its authority to alleviate a capacity or energy emergency.
EOP-002-2.1	R2.	Each Balancing Authority shall implement its capacity and energy emergency plan, when required and as appropriate, to reduce risks to the interconnected system.	N/A	N/A	N/A	The Balancing Authority failed to implement its capacity and energy emergency

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						plan, when required and as appropriate, to reduce risks to the interconnected system.
EOP-002-2.1	R3.	A Balancing Authority that is experiencing an operating capacity or energy emergency shall communicate its current and future system conditions to its Reliability Coordinator and neighboring Balancing Authorities.	N/A	N/A	N/A	The Balancing Authority experienced an operating capacity or energy emergency and failed to communicate its current and future system conditions to its Reliability Coordinator and its neighboring Balancing Authorities.
EOP-002-2.1	R4.	A Balancing Authority anticipating an operating capacity or energy emergency shall perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, and being prepared to reduce firm load.	N/A	N/A	N/A	The Balancing Authority anticipating an operating capacity or energy emergency failed to perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, or preparing to reduce firm load.
EOP-002-2.1	R5.	A deficient Balancing Authority shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. The Balancing Authority shall not unilaterally adjust generation in an attempt	N/A	N/A	The Balancing Authority used the assistance provided by the Interconnection's frequency bias for more time than needed to	The Balancing Authority used the assistance provided by the Interconnection's frequency bias for more time than needed

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		to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities.			implement corrective actions. OR The Balancing Authority unilaterally adjusted generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes.	to implement corrective actions AND The Balancing Authority unilaterally adjusted generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes.
EOP-002-2.1	R6.	If the Balancing Authority cannot comply with the Control Performance and Disturbance Control Standards, then it shall immediately implement remedies to do so. These remedies include, but are not limited to:	N/A	N/A	The Balancing Authority was not able to comply with the Control Performance and Disturbance Control Standards and failed to immediately implement one (1) of the sub-requirements R6.1, R6.2, R6.3, R6.4, R6.5 or R6.6.	The Balancing Authority was not able to comply with the Control Performance and Disturbance Control Standards and failed to immediately implement more than one (1) of the sub-requirements R6.1, R6.2, R6.3, R6.4, R6.5 or R6.6. OR The Balancing Authority was not able to comply with the Control Performance and Disturbance Control Standards and did not immediately implement any remedies.
EOP-002-2.1	R6.1.	Loading all available generating capacity.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-002-2.1	R6.2.	Deploying all available operating reserve	N/A	N/A	N/A	N/A
EOP-002-2.1	R6.3.	Interrupting interruptible load and exports.	N/A	N/A	N/A	N/A
EOP-002-2.1	R6.4.	Requesting emergency assistance from other Balancing Authorities.	N/A	N/A	N/A	N/A
EOP-002-2.1	R6.5.	Declaring an Energy Emergency through its Reliability Coordinator; and	N/A	N/A	N/A	N/A
EOP-002-2.1	R6.6.	Reducing load, through procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads.	N/A	N/A	N/A	N/A
EOP-002-2.1	R7.	Once the Balancing Authority has exhausted the steps listed in Requirement 6, or if these steps cannot be completed in sufficient time to resolve the emergency condition, the Balancing Authority shall:	N/A	N/A	The Balancing Authority exhausted the steps listed in R6 or the steps listed in R6 could not be completed in sufficient time to resolve the emergency condition, and the Balancing Authority failed to meet sub-requirement R7.1. OR The Balancing Authority exhausted the steps listed in R6 or the steps listed in R6 could not be completed in sufficient time to resolve the emergency condition, and the Balancing Authority failed to meet sub-requirement R7.2.	The Balancing Authority exhausted the steps listed in R6 or the steps listed in R6 could not be completed in sufficient time to resolve the emergency condition, and the Balancing Authority failed to meet sub-requirement R7.1. AND The Balancing Authority exhausted the steps listed in R6 or the steps listed in R6 could not be completed in sufficient time to resolve the emergency condition, and the Balancing Authority failed to meet sub-requirement R7.2.
EOP-002-2.1	R7.1.	Manually shed firm load without delay to	N/A	N/A	N/A	N/A

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		return its ACE to zero; and				
EOP-002-2.1	R7.2.	Request the Reliability Coordinator to declare an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.”	N/A	N/A	N/A	N/A
EOP-002-2.1	R8.	A Reliability Coordinator that has any Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency Alert shall initiate an Energy Emergency Alert as detailed in Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.” The Reliability Coordinator shall act to mitigate the emergency condition, including a request for emergency assistance if required.	N/A	A Reliability Coordinator had a Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency and the Reliability Coordinator did not initiate an Energy Emergency Alert Level 1 as detailed in Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.”	A Reliability Coordinator had a Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency and the Reliability Coordinator did not initiate an Energy Emergency Alert Level 2 or 3 as detailed in Attachment 1-EOP-002-0 “Energy Emergency Alert Levels.”	A Reliability Coordinator had a Balancing Authority within its Reliability Coordinator area experiencing an actual Energy Emergency and the Reliability Coordinator did not act to mitigate the emergency condition by requesting emergency assistance when this was required.
EOP-002-2.1	R9.	When a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources) as permitted in its transmission tariff (See Attachment 1-IRO-006-0 “Transmission Loading Relief Procedure” for explanation of Transmission Service Priorities):	N/A	N/A	N/A	N/A
EOP-002-2.1	R9.1.	The deficient Load-Serving Entity shall request its Reliability Coordinator to initiate	N/A	N/A	N/A	For an expected elevation in

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.				transmission service priority from Priority 6 to Priority 7, the deficient Load-Serving Entity failed to request its Reliability Coordinator initiate an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.
EOP-002-2.1	R9.2.	The Reliability Coordinator shall submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.	N/A	N/A	N/A	The Reliability Coordinator failed to submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.
EOP-002-2.1	R9.3.	The Reliability Coordinator shall use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	N/A	N/A	N/A	The Reliability Coordinator failed to use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.
EOP-002-2.1	R9.4.	The Reliability Coordinator shall use EEA 2 to announce the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	N/A	N/A	N/A	The Reliability Coordinator failed to use EEA 2 to announce the change of the priority of transmission service

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						of an Interchange Transaction on the system from Priority 6 to Priority 7.
EOP-002-3	R1.	Each Balancing Authority and Reliability Coordinator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area and shall exercise specific authority to alleviate capacity and energy emergencies.	N/A	N/A	N/A	The Balancing Authority or Reliability Coordinator does not have responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its respective area OR The Balancing Authority or Reliability Coordinator did not exercise its authority to alleviate capacity and energy emergencies.
EOP-002-3	R2.	Each Balancing Authority shall, when required and as appropriate, take one or more actions as described in its capacity and energy emergency plan, , to reduce risks to the interconnected system.	N/A	N/A	N/A	The Balancing Authority did not implement its capacity and energy emergency plan, when required and as appropriate, to reduce risks to the interconnected system.
EOP-002-3	R3.	A Balancing Authority that is experiencing an operating capacity or energy emergency shall communicate its current and future system conditions to its Reliability Coordinator and neighboring Balancing Authorities.	N/A	N/A	The Balancing Authority communicated its current and future system conditions to its Reliability Coordinator but did not	The Balancing Authority has failed to communicate its current and future system conditions to its Reliability Coordinator and

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					communicate to one or more of its neighboring Balancing Authorities.	neighboring Balancing Authorities.
EOP-002-3	R4.	A Balancing Authority anticipating an operating capacity or energy emergency shall perform all actions necessary including bringing on all available generation, postponing equipment maintenance, scheduling interchange purchases in advance, and being prepared to reduce firm load.	N/A	N/A	N/A	The Balancing Authority has failed to perform the necessary actions as required and stated in the requirement.
EOP-002-3	R5.	A deficient Balancing Authority shall only use the assistance provided by the Interconnection's frequency bias for the time needed to implement corrective actions. The Balancing Authority shall not unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes. Such unilateral adjustment may overload transmission facilities.	N/A	N/A	The Balancing Authority used the assistance provided by the Interconnection's frequency bias for more time than needed to implement corrective actions.	The Balancing Authority used the assistance provided by the Interconnection's frequency bias for more time than needed to implement corrective actions and unilaterally adjust generation in an attempt to return Interconnection frequency to normal beyond that supplied through frequency bias action and Interchange Schedule changes.
EOP-002-3	R6.	If the Balancing Authority cannot comply with the Control Performance and Disturbance Control Standards, then it shall immediately implement remedies to do so. These remedies include, but are not limited to:	The Balancing Authority failed to comply with one of the sub-components.	The Balancing Authority failed to comply with 2 of the sub-components.	The Balancing Authority failed to comply with 3 of the sub-components.	The Balancing Authority failed to comply with more than 3 of the sub-components.
EOP-002-3	R6.1.	Loading all available generating capacity.	N/A	N/A	N/A	The Balancing Authority did not use

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						all available generating capacity.
EOP-002-3	R6.2.	Deploying all available operating reserve	N/A	N/A	N/A	The Balancing Authority did not deploy all of its available operating reserve.
EOP-002-3	R6.3.	Interrupting interruptible load and exports.	N/A	N/A	N/A	The Balancing Authority did not interrupt interruptible load and exports.
EOP-002-3	R6.4.	Requesting emergency assistance from other Balancing Authorities.	N/A	N/A	N/A	The Balancing Authority did not request emergency assistance from other Balancing Authorities.
EOP-002-3	R6.5.	Declaring an Energy Emergency through its Reliability Coordinator; and	N/A	N/A	N/A	The Balancing Authority did not declare an Energy Emergency through its Reliability Coordinator.
EOP-002-3	R6.6.	Reducing load, through procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads.	N/A	N/A	N/A	The Balancing Authority did not implement one or more of the procedures stated in the requirement.
EOP-002-3	R7.	Once the Balancing Authority has exhausted the steps listed in Requirement 6, or if these steps cannot be completed in sufficient time to resolve the emergency condition, the Balancing Authority shall:	N/A	N/A	The Balancing Authority has met only one of the two requirements	The Balancing Authority has not met either of the two requirements
EOP-002-3	R7.1.	Manually shed firm load without delay to return its ACE to zero; and	N/A	N/A	N/A	The Balancing Authority did not manually shed firm

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						load without delay to return it's ACE to zero.
EOP-002-3	R7.2.	Request the Reliability Coordinator to declare an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0 "Energy Emergency Alert Levels."	The Balancing Authority's implementation of an Energy Emergency Alert has missed minor program/procedural elements in Attachment 1-EOP-002-0.	N/A	N/A	The Balancing Authority has failed to meet one or more of the requirements of Attachment 1-EOP-002-0.
EOP-002-3	R8.	A Reliability Coordinator that has any Balancing Authority within its Reliability Coordinator area experiencing a potential or actual Energy Emergency shall initiate an Energy Emergency Alert as detailed in Attachment 1-EOP-002-0 "Energy Emergency Alert Levels." The Reliability Coordinator shall act to mitigate the emergency condition, including a request for emergency assistance if required.	The Reliability Coordinator's implementation of an Energy Emergency Alert has missed minor program/procedural elements in Attachment 1-EOP-002-0.	N/A	N/A	The Reliability Coordinator has failed to meet one or more of the requirements of Attachment 1-EOP-002-0.
EOP-002-3	R9.	When a Transmission Service Provider expects to elevate the transmission service priority of an Interchange Transaction from Priority 6 (Network Integration Transmission Service from Non-designated Resources) to Priority 7 (Network Integration Transmission Service from designated Network Resources) as permitted in its transmission tariff (See Attachment 1-IRO-006-0 "Transmission Loading Relief Procedure" for explanation of Transmission Service Priorities):	The Reliability Coordinator failed to comply with one (1) of the sub-components.	The Reliability Coordinator failed to comply with two (2) of the sub-components.	The Reliability Coordinator has failed to comply with three (3) of the sub-components.	The Reliability Coordinator has failed to comply with all four (4) of the sub-components.
EOP-002-3	R9.1.	The deficient Load-Serving Entity shall request its Reliability Coordinator to initiate	N/A	N/A	N/A	The Load-Serving Entity failed to request

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		an Energy Emergency Alert in accordance with Attachment 1-EOP-002-0.				its Reliability Coordinator to initiate an Energy Emergency Alert.
EOP-002-3	R9.2.	The Reliability Coordinator shall submit the report to NERC for posting on the NERC Website, noting the expected total MW that may have its transmission service priority changed.	N/A	N/A	N/A	The Reliability Coordinator has failed to report to NERC as directed in the requirement.
EOP-002-3	R9.3.	The Reliability Coordinator shall use EEA 1 to forecast the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	N/A	N/A	N/A	The Reliability Coordinator failed to use EEA 1 to forecast the change of the priority of transmission service as directed in the requirement.
EOP-002-3	R9.4.	The Reliability Coordinator shall use EEA 2 to announce the change of the priority of transmission service of an Interchange Transaction on the system from Priority 6 to Priority 7.	N/A	N/A	N/A	The Reliability Coordinator failed to use EEA 2 to announce the change of the priority of transmission service as directed in the requirement.
EOP-003-1	R1.	After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	N/A	N/A	N/A	The Transmission Operator or Balancing Authority failed to shed customer load.
EOP-003-1	R2.	Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions.	N/A	N/A	N/A	The responsible entity did not establish plans for automatic load shedding as directed by the requirement.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-003-1	R3.	Each Transmission Operator and Balancing Authority shall coordinate load shedding plans among other interconnected Transmission Operators and Balancing Authorities.	The responsible entity did not coordinate load shedding plans, as directed by the requirement, affecting 5% or less of its required entities.	The responsible entity did not coordinate load shedding plans, as directed by the requirement, affecting more than 5% up to (and including) 10% of its required entities.	The responsible entity did not coordinate load shedding plans, as directed by the requirement, affecting more than 10%, up to (and including) 15% or less, of its required entities.	The responsible entity did not coordinate load shedding plans, as directed by the requirement, affecting more than 15% of its required entities.
EOP-003-1	R4.	A Transmission Operator or Balancing Authority shall consider one or more of these factors in designing an automatic load shedding scheme: frequency, rate of frequency decay, voltage level, rate of voltage decay, or power flow levels.	N/A	N/A	N/A	The applicable entity did not consider one of the five required elements, as directed by the requirement.
EOP-003-1	R5.	A Transmission Operator or Balancing Authority shall implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.	N/A	N/A	N/A	The Transmission Operator or Balancing Authority failed to implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.
EOP-003-1	R6.	After a Transmission Operator or Balancing Authority Area separates from the Interconnection, if there is insufficient generating capacity to restore system frequency following automatic underfrequency load shedding, the Transmission Operator or Balancing Authority shall shed additional load.	N/A	N/A	N/A	The Transmission Operator or Balancing Authority failed to shed additional load after it had separated from the Interconnection when there was insufficient generating capacity to restore system frequency following

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						automatic underfrequency load shedding.
EOP-003-1	R7.	The Transmission Operator and Balancing Authority shall coordinate automatic load shedding throughout their areas with underfrequency isolation of generating units, tripping of shunt capacitors, and other automatic actions that will occur under abnormal frequency, voltage, or power flow conditions.	The applicable entity did not coordinate automatic load shedding, as directed by the requirement, affecting 5% or less of its automatic actions.	The applicable entity did not coordinate automatic load shedding, as directed by the requirement, affecting between 5 - 10% of its automatic actions.	The applicable entity did not coordinate automatic load shedding, as directed by the requirement, affecting 10-15%, inclusive, of its automatic actions.	The applicable entity did not coordinate automatic load shedding, as directed by the requirement, affecting greater than 15% of its automatic actions.
EOP-003-1	R8.	Each Transmission Operator or Balancing Authority shall have plans for operator-controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	N/A	The responsible entity did not have plans for operator controlled manual load shedding, as directed by the requirement.	The responsible entity has plans for manual load shedding but did not have the capability to implement the load shedding, as directed by the requirement.	The responsible entity did not have plans for operator controlled manual load shedding, as directed by the requirement nor had the capability to implement the load shedding, as directed by the requirement.
EOP-004-1	R1.	Each Regional Reliability Organization shall establish and maintain a Regional reporting procedure to facilitate preparation of preliminary and final disturbance reports.	The Regional Reliability Organization has demonstrated the existence of a regional reporting procedure, but the procedure is missing minor details or minor program/procedural elements.	The Regional Reliability Organization Regional reporting procedure have been is missing one element that would make the procedure meet the requirement.	The Regional Reliability Organization Regional has a regional reporting procedure but the procedure is not current.	The Regional Reliability Organization does not have a regional reporting procedure.
EOP-004-1	R2.	A Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity shall promptly analyze Bulk Electric System disturbances on its system or	The responsible entity failed to promptly analyze 5% or less of its disturbances on the BES.	The responsible entity failed to promptly analyze more than 5% up to (and including) 10%	The responsible entity failed to promptly analyze more than 10% up to (and including) 15% of its disturbances	The responsible entity failed to promptly analyze more than 15% of its disturbances on the

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		facilities.		of its disturbances on the BES.	on the BES.	BES.
EOP-004-1	R3.	A Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity experiencing a reportable incident shall provide a preliminary written report to its Regional Reliability Organization and NERC.	N/A	N/A	N/A	The responsible entities failed to provide a preliminary written report as directed by the requirement.
EOP-004-1	R3.1.	The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator or Load-Serving Entity shall submit within 24 hours of the disturbance or unusual occurrence either a copy of the report submitted to DOE, or, if no DOE report is required, a copy of the NERC Interconnection Reliability Operating Limit and Preliminary Disturbance Report form. Events that are not identified until some time after they occur shall be reported within 24 hours of being recognized.	The responsible entity submitted the report as required in R3.1 more than 24 but less than or equal to 36 hours after the disturbance or unusual occurrence, or discovery of the disturbance or unusual occurrence.	The responsible entity submitted the report as required in R3.1 more than 36 hours but less than or equal to 48 hours after the disturbance or unusual occurrence, or discovery of the disturbance or unusual occurrence.	The responsible entities submitted the report as required in R3.1 more than 48 hours but less than or equal to 72 hours after the disturbance or unusual occurrence, or discovery of the disturbance or unusual occurrence.	The responsible entities submitted the report as required in R3.1 more than 72-hours after the disturbance or unusual occurrence or discovery of the disturbance or unusual occurrence.
EOP-004-1	R3.2.	Applicable reporting forms are provided in Attachments 022-1 and 022-2.	N/A	N/A	N/A	N/A
EOP-004-1	R3.3.	Under certain adverse conditions, e.g., severe weather, it may not be possible to assess the damage caused by a disturbance and issue a written Interconnection Reliability Operating Limit and Preliminary Disturbance Report within 24 hours. In such cases, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall promptly notify its Regional Reliability Organization(s) and NERC, and verbally provide as much information as is available	N/A	N/A	N/A	The responsible entity did not provide its Regional Reliability Organization(s) and NERC with verbal notification or updates about a disturbance as specified in R3.3.

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		at that time. The affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall then provide timely, periodic verbal updates until adequate information is available to issue a written Preliminary Disturbance Report.				
EOP-004-1	R3.4.	If, in the judgment of the Regional Reliability Organization, after consultation with the Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity in which a disturbance occurred, a final report is required, the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity shall prepare this report within 60 days. As a minimum, the final report shall have a discussion of the events and its cause, the conclusions reached, and recommendations to prevent recurrence of this type of event. The report shall be subject to Regional Reliability Organization approval.	The responsible entity submitted the final report no more than 30 days past the 60 day due date; or the final report was missing one of the three elements specified in R3.4.	The responsible entity submitted the final report between 31 days and 60 days inclusive past the 60 day due date. OR The final report was missing two of the three elements specified in R3.4.	The responsible entity submitted the final report between 61 days and 90 days inclusive past the 60 day due date	The responsible entity failed to submit the final report. OR The responsible entity submitted the final report 91 days or more past the 60 day due date OR The responsible entity submitted a final report that was missing all three of the elements specified in R3.4.
EOP-004-1	R4.	When a Bulk Electric System disturbance occurs, the Regional Reliability Organization shall make its representatives on the NERC Operating Committee and Disturbance Analysis Working Group available to the affected Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator, or Load-Serving Entity immediately affected by the disturbance for the purpose of providing any needed assistance in the investigation and to assist in the preparation of a final report.	N/A	N/A	N/A	The RRO did not make its representatives on the NERC Operating Committee and Disturbance Analysis Working Group available for the purpose of providing any needed assistance in the investigation and to assist in the preparation of a final report.

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EOP-004-1	R5.	The Regional Reliability Organization shall track and review the status of all final report recommendations at least twice each year to ensure they are being acted upon in a timely manner. If any recommendation has not been acted on within two years, or if Regional Reliability Organization tracking and review indicates at any time that any recommendation is not being acted on with sufficient diligence, the Regional Reliability Organization shall notify the NERC Planning Committee and Operating Committee of the status of the recommendation(s) and the steps the Regional Reliability Organization has taken to accelerate implementation.	The Regional Reliability Organization reviewed all final report recommendations less than twice a year.	The Regional Reliability Organization reviewed 75% or more final report recommendations twice a year.	The Regional Reliability Organization has not reported on any recommendation has not been acted on within two years to the NERC Planning and Operating Committees.	The Regional Reliability Organization has not reviewed the final report recommendations or did not notify the NERC Planning and Operating Committees.
EOP-005-1	R1.	Each Transmission Operator shall have a restoration plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in Attachment 1-EOP-005 in developing a restoration plan.	The responsible entity has a restoration plan that includes 75 % or more but less than 100% of the applicable elements listed in Attachment 1.	The responsible entity has a restoration plan that includes 50% to 75% of the applicable elements listed in Attachment 1.	The responsible entity has a restoration plan that includes 25% - 50% of the applicable elements listed in Attachment 1.	The responsible entity has a restoration plan that includes less than 25% of the applicable elements listed in Attachment 1 OR the responsible entity has no restoration plan.
EOP-005-1	R2.	Each Transmission Operator shall review and update its restoration plan at least annually and whenever it makes changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises.	The Transmission Operator failed to review or update its restoration plan when it made changes in the power system network.	The Transmission Operator failed to review and update its restoration plan at least annually.	The Transmission Operator failed to review and update its restoration plan at least annually or whenever it made changes in the power system network, and failed to correct deficiencies found during the simulated restoration exercises.	The Transmission Operator failed to review and update its restoration plan at least annually and whenever it made changes in the power system network, and failed to correct deficiencies found during the simulated

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						restoration exercises.
EOP-005-1	R3.	Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection.	N/A	N/A	N/A	The Transmission Operator's restoration plans failed to make restoration of the integrity of the Interconnection a priority.
EOP-005-1	R4.	Each Transmission Operator shall coordinate its restoration plans with the Generator Owners and Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.	The Transmission Operator failed to coordinate its restoration plans with 5% or less of the entities identified in the requirement.	The Transmission Operator failed to coordinate its restoration plans with more than 5% up to (and including) 10% of the entities identified in the requirement.	The Transmission Operator failed to coordinate its restoration plans with more than 10% up to (and including) 15% of the entities identified in the requirement.	The Transmission Operator failed to coordinate its restoration plans with more than 15% of the entities identified in the requirement.
EOP-005-1	R5.	Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan.	N/A	N/A	N/A	The responsible entity failed to periodically test its telecommunication facilities needed to implement the restoration plan.
EOP-005-1	R6.	Each Transmission Operator and Balancing Authority shall train its operating personnel in the implementation of the restoration plan. Such training shall include simulated exercises, if practicable.	The Transmission Operator or Balancing Authority failed to train 5% or less of its operating personnel in the implementation of the restoration plan.	The Transmission Operator or Balancing Authority failed to train more than 5% up to (and including) 10% of its operating personnel in the implementation of the restoration plan.	The Transmission Operator or Balancing Authority failed to train more than 10% up to (and including) 15% of its operating personnel in the implementation of the restoration plan.	The Transmission Operator or Balancing Authority failed to train more than 15% of its operating personnel in the implementation of the restoration plan.
EOP-005-1	R7.	Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by	N/A	N/A	N/A	The Transmission Operator or Balancing Authority did not

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		simulation.				verify the restoration procedure by actual testing or by simulation.
EOP-005-1	R8.	Each Transmission Operator shall verify that the number, size, availability, and location of system blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements for the Transmission Operator's area.	N/A	N/A	N/A	The Transmission Operator failed to verify that the number, size, availability, and location of system blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements for the Transmission Operator's area.
EOP-005-1	R9.	The Transmission Operator shall document the Cranking Paths, including initial switching requirements, between each blackstart generating unit and the unit(s) to be started and shall provide this documentation for review by the Regional Reliability Organization upon request. Such documentation may include Cranking Path diagrams.	N/A	N/A	The Transmission Operator documented the Cranking Paths, including initial switching requirements, between each blackstart generating unit and the unit(s) to be started, but did not provide the documentation as requested by the Regional Reliability Organization.	The Transmission Operator failed to document the Cranking Paths, including initial switching requirements, between each blackstart generating unit and the unit(s) to be started.
EOP-005-1	R10.	The Transmission Operator shall demonstrate, through simulation or testing, that the blackstart generating units in its restoration plan can perform their intended functions as required in the regional restoration plan.	For less than 25% of the blackstart generating units in its restoration plan, the Transmission Operator failed to demonstrate, through	For 25% or more, but less than 50% of the blackstart generating units in its restoration plan, the Transmission Operator failed to	For 50% or more, but less than 75% of the blackstart generating units in its restoration plan, the Transmission Operator failed to demonstrate, through	For 75% or more of the blackstart generating units in its restoration plan, the Transmission Operator failed to demonstrate, through

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			simulation or testing, that these blackstart generating units can perform their intended functions as required in the regional restoration plan.	demonstrate, through simulation or testing, that these blackstart generating units can perform their intended functions as required in the regional restoration plan.	simulation or testing, that these blackstart generating units can perform their intended functions as required in the regional restoration plan.	simulation or testing, that these blackstart generating units can perform their intended functions as required in the regional restoration plan.
EOP-005-1	R10.1.	The Transmission Operator shall perform this simulation or testing at least once every five years.	N/A	N/A	N/A	The Transmission Operator failed to perform the required simulation or testing at least once every five years.
EOP-005-1	R11.	Following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out, the affected Transmission Operators and Balancing Authorities shall begin immediately to return the Bulk Electric System to normal.	The responsible entity failed to comply with less than 25% of the number of sub-components.	The responsible entity failed to comply with 25% or more and less than 50% of the number of sub-components.	The responsible entity failed to comply with 50% or more and less than 75% of the number of sub-components.	The responsible entity failed to comply with more than 75% of the number of sub-components.
EOP-005-1	R11.1.	The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s).	N/A	N/A	N/A	The responsible entity failed to work in conjunction with their Reliability Coordinator to determine the extent and condition of the isolated area(s)
EOP-005-1	R11.2.	The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators on line, or load shedding.	N/A	N/A	N/A	The affected Transmission Operators and Balancing Authorities failed to take the necessary actions to restore Bulk Electric System frequency to

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						normal.
EOP-005-1	R11.3.	The affected Balancing Authorities, working with their Reliability Coordinator(s), shall immediately review the Interchange Schedules between those Balancing Authority Areas or fragments of those Balancing Authority Areas within the separated area and make adjustments as needed to facilitate the restoration. The affected Balancing Authorities shall make all attempts to maintain the adjusted Interchange Schedules, whether generation control is manual or automatic.	N/A	N/A	The responsible entity failed to make all attempts to maintain adjusted Interchange Schedules as required in R11.3	The responsible entity failed to immediately review the Interchange Schedules between those Balancing Authority Areas or fragments of those Balancing Authority Areas within the separated area and make adjustments to facilitate the restoration as required in R11.3.
EOP-005-1	R11.4.	The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations.	N/A	N/A	N/A	The affected Transmission Operators failed to give high priority to restoration of off-site power to nuclear stations.
EOP-005-1	R11.5.	The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met:	N/A	N/A	N/A	The Transmission Operator attempted to resynchronize an isolated area(s) with a surrounding area(s) when one (1) or more of the sub-requirements of R11.5 were not met.
EOP-005-1	R11.5.1.	Voltage, frequency, and phase angle permit.	N/A	N/A	N/A	N/A
EOP-005-1	R11.5.2.	The size of the area being reconnected and the capacity of the transmission lines effecting the reconnection and the number of synchronizing points across the system are considered.	N/A	N/A	N/A	N/A

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EOP-005-1	R11.5.3.	Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given.	N/A	N/A	N/A	N/A
EOP-005-1	R11.5.4.	Load is shed in neighboring areas, if required, to permit successful interconnected system restoration.	N/A	N/A	N/A	N/A
EOP-006-1	R1.	Each Reliability Coordinator shall be aware of the restoration plan of each Transmission Operator in its Reliability Coordinator Area in accordance with NERC and regional requirements.	The Reliability Coordinator is not aware of 5% or less of its Transmission Operators' restoration plans.	The Reliability Coordinator is not aware of more than 5% up to (and including) 10% of its Transmission Operators' restoration plans.	The Reliability Coordinator is not aware of more than 10% up to (and including) 15% of its Transmission Operators' restoration plans.	The Reliability Coordinator is not aware of more than 15% of its Transmission Operators' restoration plans.
EOP-006-1	R2.	The Reliability Coordinator shall monitor restoration progress and coordinate any needed assistance.	N/A	N/A	The Reliability Coordinator failed to monitor restoration progress or failed to coordinate assistance.	The Reliability Coordinator failed to monitor restoration progress and failed to coordinate assistance.
EOP-006-1	R3.	The Reliability Coordinator shall have a Reliability Coordinator Area restoration plan that provides coordination between individual Transmission Operator restoration plans and that ensures reliability is maintained during system restoration events.	N/A	The Reliability Coordinator's Reliability Coordinator Area restoration plan did not provide coordination between less than 10% of its individual Transmission Operator restoration plans.	The Reliability Coordinator's Reliability Coordinator Area restoration plan did not provide coordination between 10% or more of the Transmission Operator restoration plans.	The Reliability Coordinator does not have a Reliability Coordinator Area restoration plan. OR The Reliability Coordinator's Reliability Coordinator Area restoration plan does not ensure reliability is maintained during system restoration events.

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EOP-006-1	R4.	The Reliability Coordinator shall serve as the primary contact for disseminating information regarding restoration to neighboring Reliability Coordinators and Transmission Operators or Balancing Authorities not immediately involved in restoration.	N/A	N/A	N/A	The Reliability Coordinator failed to serve as primary contact for disseminating information regarding restoration in accordance with Requirement R4.
EOP-006-1	R5.	Reliability Coordinators shall approve, communicate, and coordinate the re-synchronizing of major system islands or synchronizing points so as not to cause a Burden on adjacent Transmission Operator, Balancing Authority, or Reliability Coordinator Areas.	N/A	N/A	N/A	The Reliability Coordinator failed to approve, communicate, and coordinate the re-synchronizing of major system islands or synchronizing points as stated in Requirement R5.
EOP-006-1	R6.	The Reliability Coordinator shall take actions to restore normal operations once an operating emergency has been mitigated in accordance with its restoration plan.	N/A	N/A	N/A	The Reliability Coordinator failed to take actions to restore normal operations once an operating emergency was mitigated in accordance with its restoration plan.
EOP-008-0	R1.	Each Reliability Coordinator, Transmission Operator and Balancing Authority shall have a plan to continue reliability operations in the event its control center becomes inoperable. The contingency plan must meet the following requirements:	The Reliability Coordinator, Transmission Operator and Balancing Authority failed to comply with one of the sub-requirements.	The Reliability Coordinator, Transmission Operator and Balancing Authority failed to comply with two of the sub-requirements.	The Reliability Coordinator, Transmission Operator and Balancing Authority failed to comply with three or four of the sub-requirements.	The Reliability Coordinator, Transmission Operator and Balancing Authority failed to comply with more than four of the sub-requirements.
EOP-008-0	R1.1.	The contingency plan shall not rely on data	The responsible	The responsible	The responsible entity's	The responsible

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		or voice communication from the primary control facility to be viable.	entity's contingency plan relies on data or voice communication from the primary control facility for up to 25% of the functions identified in R1.2 and R1.3.	entity's contingency plan relies on data or voice communication from the primary control facility for 25% to 50% of the functions identified in R1.2 and R1.3.	contingency plan relies on data or voice communication from the primary control facility for 50% to 75% of the functions identified in R1.2 and R1.3.	entity's contingency plan relies on data and voice communication from the primary control facility for more than 75% of the functions identified in R1.2 and R1.3.
EOP-008-0	R1.2.	The plan shall include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules.	N/A	N/A	N/A	The responsible entity's plan failed to include procedures and responsibilities for providing basic tie line control and procedures and for maintaining the status of all inter-area schedules, such that there is an hourly accounting of all schedules.
EOP-008-0	R1.3.	The contingency plan must address monitoring and control of critical transmission facilities, generation control, voltage control, time and frequency control, control of critical substation devices, and logging of significant power system events. The plan shall list the critical facilities.	The responsible entity's contingency plan failed to address one of the elements listed in the requirement.	The responsible entity's contingency plan failed to address two of the elements listed in the requirement.	The responsible entity's contingency plan failed to address three of the elements listed in the requirement.	The responsible entity's contingency plan failed to address four or more of the elements listed in the requirement.
EOP-008-0	R1.4.	The plan shall include procedures and responsibilities for maintaining basic voice communication capabilities with other areas.	N/A	N/A	N/A	The responsible entity's plan failed to include procedures and responsibilities for maintaining basic voice communication capabilities with other areas.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
EOP-008-0	R1.5.	The plan shall include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.	N/A	N/A	N/A	The responsible entity's plan failed to include procedures and responsibilities for conducting periodic tests, at least annually, to ensure viability of the plan.
EOP-008-0	R1.6.	The plan shall include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans.	N/A	N/A	N/A	The responsible entity's plan failed to include procedures and responsibilities for providing annual training to ensure that operating personnel are able to implement the contingency plans.
EOP-008-0	R1.7.	The plan shall be reviewed and updated annually.	The responsible entity's plan was reviewed within 3 months of passing its annual review date.	The responsible entity's plan was reviewed within 6 months of passing its annual review date.	The responsible entity's plan was reviewed within 9 months of passing its annual review date.	The responsible entity's plan was reviewed more than 9 months of passing its annual review date.
EOP-008-0	R1.8.	Interim provisions must be included if it is expected to take more than one hour to implement the contingency plan for loss of primary control facility.	N/A	N/A	N/A	The responsible entity failed to make interim provisions when it is took more than one hour to implement the contingency plan for loss of primary control facility.
EOP-009-0	R1.	The Generator Operator of each blackstart generating unit shall test the startup and operation of each system blackstart generating unit identified in the BCP as required in the Regional BCP (Reliability Standard EOP-007-0_R1). Testing records shall include the dates of the tests, the	The Generator Operator Blackstart unit testing and recording is missing minor program/procedural elements.	Startup and testing of each Blackstart unit was performed, but the testing records are incomplete. The testing records are	The Generator Operator's failed to test 25% or less of the Blackstart units or testing records are incomplete. The testing records are missing	The Generator Operator failed to test more than 25% of its Blackstart units or does not have Blackstart testing records or is missing

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		duration of the tests, and an indication of whether the tests met Regional BCP requirements.		missing 25% or less of data requested in the requirement'.	between 25% and 50% of data requested in the requirement.	more than 50% of the required data.
EOP-009-0	R2.	The Generator Owner or Generator Operator shall provide documentation of the test results of the startup and operation of each blackstart generating unit to the Regional Reliability Organizations and upon request to NERC.	N/A	N/A	N/A	The Generator Owner or Generator Operator did not provide the required blackstart documentation to its Regional Reliability Organization or upon request to NERC.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-001-0	R1.	The Transmission Owner shall document, maintain, and publish facility connection requirements to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization, subregional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements. The Transmission Owner's facility connection requirements shall address connection requirements for:	Not Applicable.	The Transmission Owner failed to do one of the following: Document or maintain or publish facility connection requirements as specified in the Requirement OR Failed to include one (1) of the components and specified in R1.1, R1.2 or R1.3.	The Transmission Owner failed to do one of the following: Document or maintain or publish its facility connection requirements as specified in the Requirement. OR Failed to include (2) of the components as specified in R1.1, R1.2 or R1.3 OR Failed to document or maintain or publish its facility connection requirements as specified in the Requirement and failed to include one (1) of the components as specified in R1.1, R1.2 or R1.3	The Transmission Owner did not develop facility connection requirements
FAC-001-0	R1.1.	Generation facilities,	N/A	N/A	N/A	N/A
FAC-001-0	R1.2.	Transmission facilities, and	N/A	N/A	N/A	N/A
FAC-001-0	R1.3.	End-user facilities	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-001-0	R2.	The Transmission Owner's facility connection requirements shall address, but are not limited to, the following items:	The Transmission Owner's facility connection requirements do not address one to four of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address five to eight of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address nine to twelve of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address thirteen or more of the sub-components. (R2.1.1 to R2.1.16)
FAC-001-0	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	The Transmission Owner's facility connection requirements do not address one to four of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address five to eight of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address nine to twelve of the sub-components. (R2.1.1 to R2.1.16)	The Transmission Owner's facility connection requirements do not address thirteen or more of the sub-components. (R2.1.1 to R2.1.16)
FAC-001-0	R2.1.1.	Procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.2.	Procedures for notification of new or modified facilities to others (those responsible for the reliability of the interconnected transmission systems) as soon as feasible.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-001-0	R2.1.3.	Voltage level and MW and MVAR capacity or demand at point of connection.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.4.	Breaker duty and surge protection.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.5.	System protection and coordination.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.6.	Metering and telecommunications.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.7.	Grounding and safety issues.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.8.	Insulation and insulation coordination.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.9.	Voltage, Reactive Power, and power factor control.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.10.	Power quality impacts.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.11.	Equipment Ratings.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.12.	Synchronizing of facilities.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.13.	Maintenance coordination.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.14.	Operational issues (abnormal frequency and	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		voltages).				owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.15.	Inspection requirements for existing or new facilities.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R2.1.16.	Communications and procedures during normal and emergency operating conditions.	Not Applicable.	Not Applicable.	Not Applicable.	The Transmission owner's procedures for coordinated joint studies of new facilities and their impacts on the interconnected transmission systems failed to include this subrequirement.
FAC-001-0	R3.	The Transmission Owner shall maintain and update its facility connection requirements as required. The Transmission Owner shall make documentation of these requirements available to the users of the transmission system, the Regional Reliability Organization, and NERC on request (five business days).	The responsible entity made the requirements available more than five business days but less than or equal to 10 business days after a request.	The responsible entity made the requirements available more than 10 business days but less than or equal to 20 business days after a request.	The responsible entity made the requirements available more than 20 business days less than or equal to 30 business days after a request.	The responsible entity made the requirements available more than 30 business days after a request.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-002-0	R1.	The Generator Owner, Transmission Owner, Distribution Provider, and Load-Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall each coordinate and cooperate on its assessments with its Transmission Planner and Planning Authority. The assessment shall include:	The responsible entity failed to include in its assessment one of the subcomponents (R1.1 to R1.5).	The responsible entity failed to include in its assessment two of the subcomponents (R1.1 to R1.5).	The responsible entity failed to include in its assessment three of the subcomponents (R1.1 to R1.5).	The responsible entity failed to include in its assessment four or more of the subcomponents (R1.1 to R1.5).
FAC-002-0	R1.1.	Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.	N/A	N/A	N/A	N/A
FAC-002-0	R1.2.	Ensurance of compliance with NERC Reliability Standards and applicable Regional, subregional, Power Pool, and individual system planning criteria and facility connection requirements.	N/A	N/A	N/A	N/A
FAC-002-0	R1.3.	Evidence that the parties involved in the assessment have coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.	N/A	N/A	N/A	N/A
FAC-002-0	R1.4.	Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance in accordance with Reliability Standard TPL-001-0.	N/A	N/A	N/A	N/A
FAC-002-0	R1.5.	Documentation that the assessment included study assumptions, system performance, and alternatives considered, and jointly coordinated recommendations.	N/A	N/A	N/A	N/A
FAC-002-0	R2.	The Planning Authority, Transmission	The responsible entity	The responsible	The responsible entity	The responsible entity

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems) for three years and shall provide the documentation to the Regional Reliability Organization(s) Regional Reliability Organization(s) and NERC on request (within 30 calendar days).	provided the documentation more than 30 calendar days but less than or equal to 40 calendar days after a request.	entity provided the documentation more than 40 calendar days but less than or equal to 50 calendar days after a request.	provided the documentation more than 50 calendar days but less than or equal to 60 calendar days after a request.	provided the documentation more than 60 calendar days after a request or was unable to provide the documentation for the required three-year period.
FAC-002-1	R1.	The Generator Owner, Transmission Owner, Distribution Provider, and Load-Serving Entity seeking to integrate generation facilities, transmission facilities, and electricity end-user facilities shall each coordinate and cooperate on its assessments with its Transmission Planner and Planning Authority. The assessment shall include:	The Responsible Entity failed to include in their assessment one of the subrequirements.	The Responsible Entity failed to include in their assessment two of the subrequirements.	The Responsible Entity failed to include in their assessment three of the subrequirements.	The Responsible Entity failed to include in their assessment four or more of the subrequirements.
FAC-002-1	R1.1.	Evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems.	Not Applicable.	Not Applicable.	Not Applicable.	The responsible entity's assessment did not include the evaluation.
FAC-002-1	R1.2.	Ensurance of compliance with NERC Reliability Standards and applicable Regional, subregional, Power Pool, and individual system planning criteria and facility connection requirements.	Not Applicable.	Not Applicable.	Not Applicable.	The responsible entity's assessment did not include the ensurance of compliance.
FAC-002-1	R1.3.	Evidence that the parties involved in the assessment have coordinated and cooperated on the assessment of the reliability impacts of new facilities on the interconnected transmission systems. While these studies may be performed independently, the results shall be jointly evaluated and coordinated by the entities involved.	Not Applicable.	Not Applicable.	Not Applicable.	The responsible entity's assessment did not include the evidence of coordination.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-002-1	R1.4.	Evidence that the assessment included steady-state, short-circuit, and dynamics studies as necessary to evaluate system performance under both normal and contingency conditions in accordance with Reliability Standards TPL-001-0, TPL-002-0, and TPL-003-0.	Not Applicable.	Not Applicable.	Not Applicable.	The responsible entity's assessment did not include the evidence of the studies.
FAC-002-1	R1.5.	Documentation that the assessment included study assumptions, system performance, alternatives considered, and jointly coordinated recommendations.	Not Applicable.	Not Applicable.	Not Applicable.	The responsible entity's assessment did not include the documentation.
FAC-002-1	R2.	The Planning Authority, Transmission Planner, Generator Owner, Transmission Owner, Load-Serving Entity, and Distribution Provider shall each retain its documentation (of its evaluation of the reliability impact of the new facilities and their connections on the interconnected transmission systems) for three years and shall provide the documentation to the Regional Reliability Organization(s) and NERC on request (within 30 calendar days).	The responsible entity provided the documentation more than 30 calendar days, but not more than 45 calendar days, after a request.	The responsible entity provided the documentation more than 45 calendar days, but not more than 60 calendar days, after a request.	The responsible entity provided the documentation more than 60 calendar days, but not more than 120 calendar days, after a request.	The responsible entity provided the documentation more than 120 calendar days after a request or was unable to provide the documentation.
FAC-003-1	R1.	The Transmission owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner's objectives, practices, approved procedures, and work Specifications. 1. ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.	The responsible entity did not include and keep current one of the four required elements of its TVMP, as directed by the requirement.	The responsible entity did not include and keep current two of the four required elements of its TVMP, as directed by the requirement.	The responsible entity did not include and keep current three of the four required elements of its TVMP, as directed by the requirement.	The responsible entity did not include and keep current all required elements of the TVMP, as directed by the requirement.
FAC-003-1	R1.1.	The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing	N/A	N/A	The applicable entity TVMP did not define a schedule, as directed by the requirement, or the	The applicable entity TVMP did not define a schedule, as directed by the requirement,

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the Transmission Owner's transmission lines.			type of ROW vegetation inspections, as directed by the requirement.	nor the type of ROW vegetation inspections, as directed by the requirement.
FAC-003-1	R1.2.	The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the Transmission Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.	N/A	N/A	N/A	The responsible entity, in its TVMP, failed to identify and document clearances between vegetation and any overhead, ungrounded supply conductors. OR The responsible entity, in its TVMP, failed to take into consideration transmission line voltage, or the effects of ambient temperature on conductor sag under maximum design loading, or the effects of wind velocities on conductor sway. OR The responsible entity, in its TVMP, failed to establish Clearance 1 or Clearance 2 values.
FAC-003-1	R1.2.1.	Clearance 1 — The Transmission Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in	N/A	N/A	N/A	The responsible entity failed to determine and document an appropriate clearance distance to be achieved at the time of

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		which the Transmission Owner plans to return for future vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.				transmission vegetation management work taking into account local conditions and the expected time frame in which the responsible entity expects to return for future vegetation management work. OR The responsible entity documented a Clearance 1 value that was smaller than its Clearance 2 value.
FAC-003-1	R1.2.2.	Clearance 2 — The Transmission Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These Transmission Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (<i>Guide for Maintenance Methods on Energized Power Lines</i>) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.	N/A	N/A	N/A	The responsible entity failed to determine and document Clearance 2 values taking into account local conditions and the expected time frame in which the responsible entity expects to return for future vegetation management work.
FAC-003-1	R1.2.2.1.	Where transmission system transient overvoltage factors are not known,	N/A	N/A	N/A	Where transmission system transient overvoltage factors

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.				were not known, clearances were not derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.
FAC-003-1	R1.2.2.2.	Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.	Not Applicable.	Not Applicable.	Not Applicable.	Where transmission system transient overvoltage factors are known, clearances were not derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.
FAC-003-1	R1.3.	All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner, to perform their duties.	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, one of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, two of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, three of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design and implementation of the	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, more than three of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more

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			and implementation of the TVMP, 5% or less of those persons did not hold appropriate qualifications and training to perform their duties.	design and implementation of the TVMP, more than 5% up to (and including) 10% of those persons did not hold appropriate qualifications and training to perform their duties.	TVMP, more than 10% up to (and including) 15% of those persons did not hold appropriate qualifications and training to perform their duties.	persons in the design and implementation of the TVMP, more than 15% of those persons did not hold appropriate qualifications and training to perform their duties.
FAC-003-1	R1.4.	Each Transmission Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner is restricted from attaining the clearances specified in Requirement 1.2.1.	N/A	N/A	N/A	The responsible entity's TVMP does not include mitigation measures to achieve sufficient clearances where restrictions to the ROW are in effect.
FAC-003-1	R1.5.	Each Transmission Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action (temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.	N/A	N/A	N/A	The responsible entity did not establish or did not document a process for the immediate communication of vegetation conditions that present an imminent threat of line outage, as directed by the requirement.
FAC-003-1	R2.	The Transmission Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions,	The responsible entity did not meet one of the three required elements (including in the annual plan a description of methods used for vegetation management,	The responsible entity did not meet two of the three required elements (including in the annual plan a description of methods used for	The responsible entity did not meet the three required elements (including in the annual plan a description of methods used for vegetation management,	The responsible entity does not have an annual plan for vegetation management. OR The responsible entity has not implemented

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		taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each Transmission Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.	maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	vegetation management, maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	the annual plan for vegetation management.
FAC-003-1	R3.	The Transmission Owner shall report quarterly to its RRO, or the RRO's designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.	The responsible entity failed to provide a quarterly outage report, but did not experience any reportable outages. OR The responsible entity provided a quarterly report, but failed to report in the manner specified by one or more of the following subcomponents of R3: R3.1 or R3.2.	The responsible entity provided a quarterly report, but failed to include information required by R3.3.	The responsible entity provided a quarterly outage report, but failed to include a reportable Category 3 outage as described in R3.4.3.	The responsible entity experienced reportable outages but failed to provide a quarterly report. OR The responsible entity provided a quarterly outage report, but failed to include a reportable Category 1 (as described in R3.4.1) or Category 2 outage (as described in R3.4.2).
FAC-003-1	R3.1.	Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.	N/A	N/A	N/A	N/A
FAC-003-1	R3.2.	The Transmission Owner is not required to report to the RRO, or the RRO's designee,	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the Transmission Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).				
FAC-003-1	R3.3.	The outage information provided by the Transmission Owner to the RRO, or the RRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.	N/A	N/A	N/A	N/A
FAC-003-1	R3.4.	An outage shall be categorized as one of the following:	N/A	N/A	N/A	N/A
FAC-003-1	R3.4.1.	Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
FAC-003-1	R3.4.2.	Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;	N/A	N/A	N/A	N/A
FAC-003-1	R3.4.3.	Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.	N/A	N/A	N/A	N/A
FAC-003-1	R4.	The RRO shall report the outage information provided to it by Transmission Owner's, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.	Not applicable.	Not applicable.	The RRO did not submit a quarterly report to NERC for a single quarter.	The RRO did not submit a quarterly report to NERC for more than two consecutive quarters.
FAC-008-1	R1.	The Transmission Owner and Generator Owner shall each document its current methodology used for developing Facility Ratings (Facility Ratings Methodology) of its solely and jointly owned Facilities. The methodology shall include all of the following:	The responsible entity failed to include in their methodology one of the subcomponents of R1.3, (R1.3.1 to R1.3.5).	The responsible entity failed to include in their methodology two of the subcomponents of R1.3, (R1.3.1 to R1.3.5).	The responsible entity rating methodology did not address either of the sub-components of R1.2 (R1.2.1 or R1.2.2). OR The responsible entity failed to include in their methodology three of the subcomponents of R1.3, (R1.3.1 to R1.3.5).	The Transmission Owner or Generation Owner does not have a documented Facility Ratings Methodology for use in developing facility ratings. The responsible entity's rating methodology failed to recognize a facility's rating based on the most limiting component rating as required in R1.1. OR The responsible entity rating methodology did not address the components of R1.2, (R1.2.1 and R1.2.2). OR The responsible entity failed to include in their methodology

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						four or more of the subcomponents of R1.3, (R1.3.1 to R1.3.5).
FAC-008-1	R1.1.	A statement that a Facility Rating shall equal the most limiting applicable Equipment Rating of the individual equipment that comprises that Facility.	N/A	N/A	N/A	N/A
FAC-008-1	R1.2.	The method by which the Rating (of major BES equipment that comprises a Facility) is determined.	N/A	N/A	N/A	N/A
FAC-008-1	R1.2.1.	The scope of equipment addressed shall include, but not be limited to, generators, transmission conductors, transformers, relay protective devices, terminal equipment, and series and shunt compensation devices.	N/A	N/A	N/A	N/A
FAC-008-1	R1.2.2.	The scope of Ratings addressed shall include, as a minimum, both Normal and Emergency Ratings.	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.	Consideration of the following:	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.1.	Ratings provided by equipment manufacturers.	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.2.	Design criteria (e.g., including applicable references to industry Rating practices such as manufacturer's warranty, IEEE, ANSI or other standards).	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.3.	Ambient conditions.	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.4.	Operating limitations.	N/A	N/A	N/A	N/A
FAC-008-1	R1.3.5.	Other assumptions.	N/A	N/A	N/A	N/A
FAC-008-1	R2.	The Transmission Owner and Generator Owner shall each make its Facility Ratings Methodology available for inspection and technical review by those Reliability	The responsible entity made the Facility Ratings Methodology available within more	The responsible entity made the Facility Ratings Methodology	The responsible entity made the Facility Ratings Methodology available within more	The responsible entity failed to make available the Facility Ratings Methodology

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Coordinators, Transmission Operators, Transmission Planners, and Planning Authorities that have responsibility for the area in which the associated Facilities are located, within 15 business days of receipt of a request.	than 15 business days but less than or equal to 25 business days after a request.	available within more than 25 business days but less than or equal to 35 business days after a request.	than 35 business days but less than or equal to 45 business days after a request.	available in more than 45 business days after a request.
FAC-008-1	R3.	If a Reliability Coordinator, Transmission Operator, Transmission Planner, or Planning Authority provides written comments on its technical review of a Transmission Owner's or Generator Owner's Facility Ratings Methodology, the Transmission Owner or Generator Owner shall provide a written response to that commenting entity within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the Facility Ratings Methodology and, if no change will be made to that Facility Ratings Methodology, the reason why.	The responsible entity provided a response in more than 45 calendar days but less than or equal to 60 calendar days after a request.	The responsible entity provided a response in more than 60 calendar days but less than or equal to 70 calendar days after a request. OR The responsible entity provided a response within 45 calendar days, and the response indicated that a change will not be made to the Facility Ratings Methodology but did not indicate why no change will be made.	The responsible entity provided a response in more than 70 calendar days but less than or equal to 80 calendar days after a request. OR The responsible entity provided a response within 45 calendar days, but the response did not indicate whether a change will be made to the Facility Ratings Methodology.	The responsible entity failed to provide a response as required in more than 80 calendar days after a request.
FAC-009-1	R1.	The Transmission Owner and Generator Owner shall each establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the associated Facility Ratings Methodology.	The responsible entity failed to establish Facility Ratings consistent with the associated Facility Ratings Methodology for 5% or less of its solely owned and jointly owned Facilities.	The responsible entity failed to establish Facility Ratings consistent with the associated Facility Ratings Methodology for more than 5% up to (and including) 10% of its solely owned	The responsible entity failed to establish Facility Ratings consistent with the associated Facility Ratings Methodology for more than 10% up to (and including) 15% of its solely owned and jointly owned Facilities.	The responsible entity failed to establish Facility Ratings consistent with the associated Facility Ratings Methodology for more than 15% of its solely owned and jointly owned Facilities.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				and jointly owned Facilities.		
FAC-009-1	R2.	The Transmission Owner and Generator Owner shall each provide Facility Ratings for its solely and jointly owned Facilities that are existing Facilities, new Facilities, modifications to existing Facilities and re-ratings of existing Facilities to its associated Reliability Coordinator(s), Planning Authority(ies), Transmission Planner(s), and Transmission Operator(s) as scheduled by such requesting entities.	The Transmission Owner or Generator Owner provided its Facility Ratings to all of the requesting entities but missed meeting the schedules by up to 15 calendar days.	The Transmission Owner or Generator Owner provided its Facility Ratings to all but one of the requesting entities.	The Transmission Owner or Generator Owner provided its Facility Ratings to two of the requesting entities.	The Transmission Owner or Generator Owner has provided its Facility Ratings to none of the requesting entities within 30 calendar days of the associated schedules.
FAC-010-2.1	R1	The Planning Authority shall have a documented SOL Methodology for use in developing SOLs within its Planning Authority Area. This SOL Methodology shall:	Not applicable.	The Planning Authority has a documented SOL Methodology for use in developing SOLs within its Planning Authority Area, but it does not address R1.2	The Planning Authority has a documented SOL Methodology for use in developing SOLs within its Planning Authority Area, but it does not address R1.3.	The Planning Authority has a documented SOL Methodology for use in developing SOLs within its Planning Authority Area, but it does not address R1.1. OR The Planning Authority has no documented SOL Methodology for use in developing SOLs within its Planning Authority Area.
FAC-010-2.1	R1.1.	Be applicable for developing SOLs used in the planning horizon.	Not applicable.	Not applicable.	Not applicable.	Planning Authority SOL methodology is not applicable for developing SOL in the planning horizon.
FAC-010-2.1	R1.2.	State that SOLs shall not exceed associated Facility Ratings.	Not applicable.	Not applicable.	Not applicable.	Planning Authority SOL Methodology did not state that SOLs

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						shall not exceed associated Facility Ratings
FAC-010-2.1	R1.3.	Include a description of how to identify the subset of SOLs that qualify as IROLs.	Not applicable.	Not applicable.	Not applicable.	Planning Authority SOL Methodology did not include a description of how to identify the subset of SOLs that qualify as IROLs.
FAC-010-2.1	R2.	The Planning Authority's SOL Methodology shall include a requirement that SOLs provide BES performance consistent with the following				
FAC-010-2.1	R2.1.	In the pre-contingency state and with all Facilities in service, the BES shall demonstrate transient, dynamic and voltage stability; all Facilities shall be within their Facility Ratings and within their thermal, voltage and stability limits. In the determination of SOLs, the BES condition used shall reflect expected system conditions and shall reflect changes to system topology such as Facility outages.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority's methodology does not include a requirement that SOLs provide BES performance consistent with sub-requirement R2.1.
FAC-010-2.1	R2.2.	Following the single Contingencies identified in Requirement 2.2.1 through Requirement 2.2.3, the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority's methodology does not include a requirement that SOLs provide BES performance consistent with sub-requirement R2.2.
FAC-010-2.1	R2.2.1.	Single line to ground or three-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line,	Not applicable.	Not applicable.	Not applicable.	The methodology does not address single line to ground or 3-phase

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		transformer, or shunt device.				Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device.
FAC-010-2.1	R2.2.2.	Loss of any generator, line, transformer, or shunt device without a Fault.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address the loss of any generator, line, transformer, or shunt device without a Fault.
FAC-010-2.1	R2.2.3.	Single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.
FAC-010-2.1	R2.3.	Starting with all Facilities in service, the system's response to a single Contingency, may include any of the following:	Not applicable.	Not applicable.	Not applicable.	The methodology does not include one or more of the following: 2.3.1. through 2.3.3.
FAC-010-2.1	R2.3.1.	Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area.	Not applicable.	Not applicable.	Not applicable.	The SOL Methodology does not provide that starting with all Facilities in service, the system's response to a single Contingency may include planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						the affected area.
FAC-010-2.1	R2.3.2.	System reconfiguration through manual or automatic control or protection actions.	Not applicable.	Not applicable.	Not applicable.	The SOL Methodology does not provide that starting with all Facilities in service, the system's response to a single Contingency may include System reconfiguration through manual or automatic control or protection actions.
FAC-010-2.1	R2.4.	To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.	Not applicable.	Not applicable.	Not applicable.	The SOL Methodology does not provide that in order to prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.
FAC-010-2.1	R2.5.	Starting with all Facilities in service and following any of the multiple Contingencies identified in Reliability Standard TPL-003 the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	Not applicable.	Not applicable.	Not applicable.	The SOL methodology does not include a requirement that SOLs provide BES performance consistent with sub-requirement R2.5.
FAC-010-2.1	R2.6.	In determining the system's response to any of the multiple Contingencies, identified in Reliability Standard TPL-003, in addition to	Not applicable.	Not applicable.	Not applicable.	Not applicable.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		the actions identified in R2.3.1 and R2.3.2, the following shall be acceptable:				
FAC-010-2.1	R2.6.1.	Planned or controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted Firm (non-recallable reserved) electric power Transfers.	Not applicable.	Not applicable.	Not applicable.	The SOL Methodology does not provide that in determining the system's response to any of the multiple Contingencies, identified in Reliability Standard TPL-003, in addition to the actions identified in R2.3.1 and R2.3.2, Planned or controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted Firm (non-recallable reserved) electric power Transfers shall be acceptable.
FAC-010-2.1	R3.	The Planning Authority's methodology for determining SOLs, shall include, as a minimum, a description of the following, along with any reliability margins applied for each:	The Planning Authority has a methodology for determining SOLs that includes a description for all but one of the following: R3.1 through R3.6.	The Planning Authority has a methodology for determining SOLs that includes a description for all but two of the following: R3.1 through R3.6.	The Planning Authority has a methodology for determining SOLs that includes a description for all but three of the following: R3.1 through R3.6.	The Planning Authority has a methodology for determining SOLs that is missing a description of four or more of the following: R3.1 through R3.6.
FAC-010-2.1	R3.1.	Study model (must include at least the	Not applicable.	Not applicable.	Not applicable.	The methodology does

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		entire Planning Authority Area as well as the critical modeling details from other Planning Authority Areas that would impact the Facility or Facilities under study).				not include a study model that includes the entire Planning Authority Area, and the critical modeling details of other Planning Authority Areas that would impact the facility or facilities under study.
FAC-010-2.1	R3.2.	Selection of applicable Contingencies.	Not applicable.	Not applicable.	Not applicable.	The methodology does not include the selection of applicable Contingencies.
FAC-010-2.1	R3.3	Level of detail of system models used to determine SOLs.	Not applicable.	Not applicable.	Not applicable.	The methodology does not describe the level of detail of system models used to determine SOLs.
FAC-010-2.1	R3.4.	Allowed uses of Special Protection Systems or Remedial Action Plans.	Not applicable.	Not applicable.	Not applicable.	The methodology does not describe the allowed uses of Special Protection Systems or Remedial Action Plans.
FAC-010-2.1	R3.5.	Anticipated transmission system configuration, generation dispatch and Load level.	Not applicable.	Not applicable.	Not applicable.	The methodology does not include the description of anticipated transmission system configuration, generation dispatch and Load level.
FAC-010-2.1	R3.6.	Criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit (IROL) and	Not applicable.	Not applicable.	Not applicable.	The methodology does not include a description of the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		criteria for developing any associated IROL T _v .				criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit (IROL) and criteria for developing any associated IROL T _v .
FAC-010-2.1	R4.	The Planning Authority shall issue its SOL Methodology, and any change to that methodology, to all of the following prior to the effectiveness of the change:	<p>One or both of the following: The Planning Authority issued its SOL Methodology and changes to that methodology to all but one of the required entities.</p> <p>For a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>One of the following: The Planning Authority issued its SOL Methodology and changes to that methodology to all but one of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar days or more, but less than 60 calendar days after the effectiveness of the change. OR The Planning Authority issued its SOL Methodology and changes to that methodology to all</p>	<p>One of the following: The Planning Authority issued its SOL Methodology and changes to that methodology to all but one of the required entities AND for a change in methodology, the changed methodology was provided 60 calendar days or more, but less than 90 calendar days after the effectiveness of the change. OR The Planning Authority issued its SOL Methodology and changes to that methodology to all but two of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar</p>	<p>One of the following: The Planning Authority failed to issue its SOL Methodology and changes to that methodology to more than three of the required entities. The Planning Authority issued its SOL Methodology and changes to that methodology to all but one of the required entities AND for a change in methodology, the changed methodology was provided 90 calendar days or more after the effectiveness of the change. OR The Planning Authority issued its</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				<p>but two of the required entities AND for a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>days or more, but less than 60 calendar days after the effectiveness of the change. OR The Planning Authority issued its SOL Methodology and changes to that methodology to all but three of the required entities AND for a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>SOL Methodology and changes to that methodology to all but two of the required entities AND for a change in methodology, the changed methodology was provided 60 calendar days or more, but less than 90 calendar days after the effectiveness of the change. OR The Planning Authority issued its SOL Methodology and changes to that methodology to all but three of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar days or more, but less than 60 calendar days after the effectiveness of the change. The Planning Authority issued its SOL Methodology and changes to that methodology to all but four of the required entities AND for a change in methodology, the</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						changed methodology was provided up to 30 calendar days after the effectiveness of the change.
FAC-010-2.1	R4.1.	Each adjacent Planning Authority and each Planning Authority that indicated it has a reliability-related need for the methodology.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not issue its SOL Methodology and any change to that methodology, prior to the effectiveness of the change, to each adjacent Planning Authority and each Planning Authority that indicated it has a reliability-related need for the methodology.
FAC-010-2.1	R4.2.	Each Reliability Coordinator and Transmission Operator that operates any portion of the Planning Authority's Planning Authority Area.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not issue its SOL Methodology and any change to that methodology, prior to the effectiveness of the change, to each Reliability Coordinator and Transmission Operator that operates any portion of the Planning Authority's Planning Authority Area.
FAC-010-2.1	R4.3.	Each Transmission Planner that works in the Planning Authority's Planning Authority Area.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not issue its SOL Methodology and any change to that methodology, prior to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						the effectiveness of the change, to each Transmission Planner that works in the Planning Authority's Planning Authority Area prior to the effectiveness of the change.
FAC-010-2.1	R5.	If a recipient of the SOL Methodology provides documented technical comments on the methodology, the Planning Authority shall provide a documented response to that recipient within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the SOL Methodology and, if no change will be made to that SOL Methodology, the reason why.	The Planning Authority received documented technical comments on its SOL Methodology and provided a complete response in a time period that was longer than 45 calendar days but less than 60 calendar days.	The Planning Authority received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 60 calendar days or longer but less than 75 calendar days.	The Planning Authority received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 75 calendar days or longer but less than 90 calendar days. OR The Planning Authority's response to documented technical comments on its SOL Methodology indicated that a change will not be made, but did not include an explanation of why the change will not be made.	The Planning Authority received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 90 calendar days or longer. OR The Planning Authority's response to documented technical comments on its SOL Methodology did not indicate whether a change will be made to the SOL Methodology.
FAC-011-2	R1.	The Reliability Coordinator shall have a documented methodology for use in developing SOLs (SOL Methodology) within its Reliability Coordinator Area. This SOL Methodology shall:	Not applicable.	The Reliability Coordinator has a documented SOL Methodology for use in developing SOLs within its Reliability Coordinator Area,	The Reliability Coordinator has a documented SOL Methodology for use in developing SOLs within its Reliability Coordinator Area, but it does not address R1.3.	The Reliability Coordinator has a documented SOL Methodology for use in developing SOLs within its Reliability Coordinator Area, but it does not address

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				but it does not address R1.2		R1.1. OR The Reliability Coordinator has no documented SOL Methodology for use in developing SOLs within its Reliability Coordinator Area.
FAC-011-2	R1.1.	Be applicable for developing SOLs used in the operations horizon.	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator's SOL methodology is not applicable for developing SOL in the operations horizon.
FAC-011-2	R1.2.	State that SOLs shall not exceed associated Facility Ratings.	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator's SOL Methodology did not state that SOLs shall not exceed associated Facility Ratings
FAC-011-2	R1.3	Include a description of how to identify the subset of SOLs that qualify as IROLs	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator's SOL Methodology did not include a description of how to identify the subset of SOLs that qualify as IROLs.
FAC-011-2	R2.	The Reliability Coordinator's SOL Methodology shall include a requirement that SOLs provide BES performance consistent with the following:				
FAC-011-2	R2.1.	In the pre-contingency state, the BES shall demonstrate transient, dynamic and voltage stability; all Facilities shall be within their Facility Ratings and within their thermal,	Not applicable.	Not applicable.	Not applicable.	The SOL methodology does not include a requirement that SOLs provide BES

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		voltage and stability limits. In the determination of SOLs, the BES condition used shall reflect current or expected system conditions and shall reflect changes to system topology such as Facility outages.				performance consistent with sub-requirement R2.1.
FAC-011-2	R2.2.	Following the single Contingencies ¹ identified in Requirement 2.2.1 through Requirement 2.2.3, the system shall demonstrate transient, dynamic and voltage stability; all Facilities shall be operating within their Facility Ratings and within their thermal, voltage and stability limits; and Cascading or uncontrolled separation shall not occur.	Not applicable.	Not applicable.	Not applicable.	The SOL methodology does not include a requirement that SOLs provide BES performance consistent with sub-requirement R2.2.
FAC-011-2	R2.2.1.	Single line to ground or 3-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device	Not applicable.	Not applicable.	Not applicable.	The methodology does not require that SOLs provide BES performance consistent with: single line to ground or 3-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device.
FAC-011-2	R2.2.2.	Loss of any generator, line, transformer, or shunt device without a Fault.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address the loss of any generator, line, transformer, or shunt device without a Fault.
FAC-011-2	R2.2.3.	Single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address single pole block, with Normal Clearing, in a monopolar or bipolar

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						high voltage direct current system.
FAC-011-2	R2.3.	In determining the system's response to a single Contingency, the following shall be acceptable:	Not applicable.	Not applicable.	Not applicable.	The methodology does not include one or more of the following 2.3.1. through 2.3.3.
FAC-011-2	R2.3.1.	Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address that, in determining the systems response to a single contingency, Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area is acceptable.
FAC-011-2	R2.3.2.	Interruption of other network customers, (a) only if the system has already been adjusted, or is being adjusted, following at least one prior outage, or (b) if the real-time operating conditions are more adverse than anticipated in the corresponding studies	Not applicable.	Not applicable.	Not applicable.	The methodology does not address that, in determining the systems response to a single contingency, Interruption of other network customers is acceptable, (a) only if the system has already been adjusted, or is being adjusted, following at least one prior outage, or (b) if the real-time operating conditions are more adverse than

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						anticipated in the corresponding studies.
FAC-011-2	R2.3.3.	System reconfiguration through manual or automatic control or protection actions.	Not applicable.	Not applicable.	Not applicable.	The methodology does not address that, in determining the systems response to a single contingency, system reconfiguration through manual or automatic control or protection actions is acceptable.
FAC-011-2	R2.4.	To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.	Not applicable.	Not applicable.	Not applicable.	The methodology does not provide that to prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.
FAC-011-2	R3.	The Reliability Coordinator's methodology for determining SOLs, shall include, as a minimum, a description of the following, along with any reliability margins applied for each:	The Reliability Coordinator has a methodology for determining SOLs that includes a description for all but one of the following: R3.1 through R3.7.	The Reliability Coordinator has a methodology for determining SOLs that includes a description for all but two of the following: R3.1 through R3.7.	The Reliability Coordinator has a methodology for determining SOLs that includes a description for all but three of the following: R3.1 through R3.7.	The Reliability Coordinator has a methodology for determining SOLs that is missing a description of four or more of the following: R3.1 through R3.7.
FAC-011-2	R3.1.	Study model (must include at least the entire Reliability Coordinator Area as well as the critical modeling details from other Reliability Coordinator Areas that would impact the Facility or Facilities under	Not applicable.	Not applicable.	Not applicable.	The methodology does not include a description of the study model to be used which must include

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		study.)				the entire Reliability Coordinator area, and the critical details of other Reliability Coordinator areas that would impact the facility or facilities under study
FAC-011-2	R3.2.	Selection of applicable Contingencies	Not applicable.	Not applicable.	Not applicable.	The methodology does not include the selection of applicable Contingencies.
FAC-011-2	R3.3.	A process for determining which of the stability limits associated with the list of multiple contingencies (provided by the Planning Authority in accordance with FAC-014 Requirement 6) are applicable for use in the operating horizon given the actual or expected system conditions.	Not applicable.	Not applicable.	Not applicable.	The methodology does not include a description of a process for determining which of the stability limits associated with the list of multiple contingencies (provided by the Planning Authority in accordance with FAC-014 Requirement 6) are applicable for use in the operating horizon given the actual or expected system conditions.
FAC-011-2	R3.3.1.	This process shall address the need to modify these limits, to modify the list of limits, and to modify the list of associated multiple contingencies	Not applicable.	Not applicable.	Not applicable.	The methodology for determining SOL's does not address the need to modify the limits described in R3.3, the list of limits, or the list of

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						associated multiple contingencies.
FAC-011-2	R3.4.	Level of detail of system models used to determine SOLs.	Not applicable.	Not applicable.	Not applicable.	Methodology does not describe the level of detail of system models used to determine SOLs.
FAC-011-2	R3.5.	Allowed uses of Special Protection Systems or Remedial Action Plans.	Not applicable.	Not applicable.	Not applicable.	The methodology does not describe the allowed uses of Special Protection Systems or Remedial Action Plans.
FAC-011-2	R3.6.	Not applicable.	Not applicable.	Not applicable.	The methodology does not describe the anticipated transmission system configuration, generation dispatch and Load level.	
FAC-011-2	R3.7.	Criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit (IROL) and criteria for developing any associated IROL T _v .	Not applicable.	Not applicable.	Not applicable.	The methodology does not describe criteria for determining when violating a SOL qualifies as an Interconnection Reliability Operating Limit and criteria for developing any associated IROL T _v .
FAC-011-2	R4	The Reliability Coordinator shall issue its SOL Methodology and any changes to that methodology, prior to the effectiveness of the Methodology or of a change to the Methodology, to all of the following:	One or both of the following : The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but	One of the two following : The Reliability Coordinator issued its SOL Methodology and changes to that	One of the following : The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but one of the required	One of the following: The Reliability Coordinator failed to issue its SOL Methodology and changes to that methodology to more

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			<p>one of the required entities. For a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>methodology to all but one of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar days or more, but less than 60 calendar days after the effectiveness of the change. OR The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but two of the required entities AND for a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>entities AND for a change in methodology, the changed methodology was provided 60 calendar days or more, but less than 90 calendar days after the effectiveness of the change. OR The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but two of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar days or more, but less than 60 calendar days after the effectiveness of the change. OR The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but three of the required entities AND for a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change.</p>	<p>than three of the required entities. The Planning Authority issued its SOL Methodology and changes to that methodology to all but one of the required entities AND for a change in methodology, the changed methodology was provided 90 calendar days or more after the effectiveness of the change. OR The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but two of the required entities AND for a change in methodology, the changed methodology was provided 60 calendar days or more, but less than 90 calendar days after the effectiveness of the change. OR The Reliability Coordinator issued its SOL Methodology and changes to that</p>

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						<p>methodology to all but three of the required entities AND for a change in methodology, the changed methodology was provided 30 calendar days or more, but less than 60 calendar days after the effectiveness of the change.</p> <p>OR</p> <p>The Reliability Coordinator issued its SOL Methodology and changes to that methodology to all but four of the required entities AND for a change in methodology, the changed methodology was provided up to 30 calendar days after the effectiveness of the change</p>
FAC-011-2	R4.1.	Each adjacent Reliability Coordinator and each Reliability Coordinator that indicated it has a reliability-related need for the methodology.	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator did not issue its SOL Methodology or any changes to that methodology to each adjacent Reliability Coordinator and each Reliability Coordinator that indicated it has a

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						reliability-related need for the methodology.
FAC-011-2	R4.2.	Each Planning Authority and Transmission Planner that models any portion of the Reliability Coordinator's Reliability Coordinator Area.	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator did not issue its SOL Methodology or any changes to that methodology to each Planning Authority or Transmission Planner that models any portion of the Reliability Coordinator's Reliability Coordinator Area.
FAC-011-2	R4.3.	Each Transmission Operator that operates in the Reliability Coordinator Area.	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator did not issue its SOL Methodology or any changes to that methodology to each Transmission Operator that operates in the Reliability Coordinator Area.
FAC-011-2	R5.	If a recipient of the SOL Methodology provides documented technical comments on the methodology, the Reliability Coordinator shall provide a documented response to that recipient within 45 calendar days of receipt of those comments. The response shall indicate whether a change will be made to the SOL Methodology and, if no change will be made to that SOL Methodology, the reason why.	The Reliability Coordinator received documented technical comments on its SOL Methodology and provided a complete response in a time period that was longer than 45 calendar days but less than 60 calendar days.	The Reliability Coordinator received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 60 calendar days or	The Reliability Coordinator received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 75 calendar days or longer but less than 90 calendar days. OR	The Reliability Coordinator received documented technical comments on its SOL Methodology and provided a complete response in a time period that was 90 calendar days or longer. OR

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				longer but less than 75 calendar days.	The Reliability Coordinator's response to documented technical comments on its SOL Methodology indicated that a change will not be made, but did not include an explanation of why the change will not be made.	The Reliability Coordinator's response to documented technical comments on its SOL Methodology did not indicate whether a change will be made to the SOL Methodology.
FAC-013-1	R1.	The Reliability Coordinator and Planning Authority shall each establish a set of inter-regional and intra-regional Transfer Capabilities that is consistent with its current Transfer Capability Methodology.	The responsible entity has established a set of Transfer Capabilities, but 5% or less of all Transfer Capabilities required to be established, are inconsistent with the current Transfer Capability Methodology.	The responsible entity has established a set of Transfer Capabilities, but more than 5% up to (and including) 10% of all Transfer Capabilities required to be established, are inconsistent with the current Transfer Capability Methodology.	The responsible entity has established a set of Transfer Capabilities, but more than 10% up to (and including) 15% of all Transfer Capabilities required to be established, are inconsistent with the current Transfer Capability Methodology.	The responsible entity has established a set of Transfer Capabilities, but more than 15% of those Transfer Capabilities are not consistent with the current Transfer Capability Methodology OR The responsible entity has not established a set of Transfer Capabilities.
FAC-013-1	R2.	The Reliability Coordinator and Planning Authority shall each provide its inter-regional and intra-regional Transfer Capabilities to those entities that have a reliability-related need for such Transfer Capabilities and make a written request that includes a schedule for delivery of such Transfer Capabilities as follows:	The Reliability Coordinator or Planning Authority has provided its Transfer Capabilities but missed meeting one schedule by up to 15 calendar days.	The Reliability Coordinator or Planning Authority has provided its Transfer Capabilities but missed meeting two schedules.	The Reliability Coordinator or Planning Authority has provided its Transfer Capabilities but missed meeting more than two schedules.	The Reliability Coordinator or Planning Authority has provided its Transfer Capabilities but missed meeting all schedules within 30 calendar days of the associated schedules.
FAC-013-1	R2.1.	The Reliability Coordinator shall provide its Transfer Capabilities to its associated	The responsible entity failed to provide	The responsible entity failed to	The responsible entity failed to provide	The responsible entity failed to provide

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		Regional Reliability Organization(s), to its adjacent Reliability Coordinators, and to the Transmission Operators, Transmission Service Providers and Planning Authorities that work in its Reliability Coordinator Area.	Transfer Capabilities to 5% or less of the required entities.	provide Transfer Capabilities to more than 5% up to (and including) 10% of the required entities.	Transfer Capabilities to more than 10% up to (and including) 15% of the required entities.	Transfer Capabilities to more than 15% of the required entities.
FAC-013-1	R2.2.	The Planning Authority shall provide its Transfer Capabilities to its associated Reliability Coordinator(s) and Regional Reliability Organization(s), and to the Transmission Planners and Transmission Service Provider(s) that work in its Planning Authority Area.	The responsible entity failed to provide Transfer Capabilities 5% or less of the required entities.	The responsible entity failed to provide Transfer Capabilities to more than 5% up to (and including) 10% of the required entities.	The responsible entity failed to provide Transfer Capabilities to more than 10% up to (and including) 15% of the required entities.	The responsible entity failed to provide Transfer Capabilities to more than 15% of the required entities.
FAC-014-2	R1.	The Reliability Coordinator shall ensure that SOLs, including Interconnection Reliability Operating Limits (IROLs), for its Reliability Coordinator Area are established and that the SOLs (including Interconnection Reliability Operating Limits) are consistent with its SOL Methodology.	There are SOLs, for the Reliability Coordinator Area, but from 1% up to but less than 25% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R1)	There are SOLs, for the Reliability Coordinator Area, but 25% or more, but less than 50% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R1)	There are SOLs, for the Reliability Coordinator Area, but 50% or more, but less than 75% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R1)	There are SOLs for the Reliability Coordinator Area, but 75% or more of these the SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R1)
FAC-014-2	R2.	The Transmission Operator shall establish SOLs (as directed by its Reliability Coordinator) for its portion of the Reliability Coordinator Area that are consistent with its Reliability Coordinator's SOL Methodology	The Transmission Operator has established SOLs for its portion of the Reliability Coordinator Area, but from 1% up to but less than 25% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R2)	The Transmission Operator has established SOLs for its portion of the Reliability Coordinator Area, but 25% or more, but less than 50% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R2)	The Transmission Operator has established SOLs for its portion of the Reliability Coordinator Area, but 50% or more, but less than 75% of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R2)	The Transmission Operator has established SOLs for its portion of the Reliability Coordinator Area, but 75% or more of these SOLs are inconsistent with the Reliability Coordinator's SOL Methodology. (R2)

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FAC-014-2	R3.	The Planning Authority shall establish SOLs, including IROLs, for its Planning Authority Area that are consistent with its SOL Methodology	There are SOLs, for the Planning Coordinator Area, but from 1% up to, but less than, 25% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R3)	There are SOLs, for the Planning Coordinator Area, but 25% or more, but less than 50% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R3)	There are SOLs for the Planning Coordinator Area, but 50% or more, but less than 75% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R3)	There are SOLs, for the Planning Coordinator Area, but 75% or more of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R3)
FAC-014-2	R4.	The Transmission Planner shall establish SOLs, including IROLs, for its Transmission Planning Area that are consistent with its Planning Authority's SOL Methodology.	The Transmission Planner has established SOLs for its portion of the Planning Coordinator Area, but up to 25% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R4)	The Transmission Planner has established SOLs for its portion of the Planning Coordinator Area, but 25% or more, but less than 50% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R4)	The Transmission Planner has established SOLs for its portion of the Reliability Coordinator Area, but 50% or more, but less than 75% of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R4)	The Transmission Planner has established SOLs for its portion of the Planning Coordinator Area, but 75% or more of these SOLs are inconsistent with the Planning Coordinator's SOL Methodology. (R4)
FAC-014-2	R5.	The Reliability Coordinator, Planning Authority and Transmission Planner shall each provide its SOLs and IROLs to those entities that have a reliability-related need for those limits and provide a written request that includes a schedule for delivery of those limits as follows	The responsible entity provided its SOLs to all the requesting entities but missed meeting one or more of the schedules by less than 15 calendar days. (R5)	One of the following: The responsible entity provided its SOLs to all but one of the requesting entities within the schedules provided. (R5) OR The responsible entity provided its SOLs to all the requesting entities	One of the following: The responsible entity provided its SOLs to all but two of the requesting entities within the schedules provided. (R5) OR The responsible entity provided its SOLs to all the requesting entities but missed meeting one or more of the schedules for 30 or	One of the following: The responsible entity failed to provide its SOLs to more than two of the requesting entities within 45 calendar days of the associated schedules. (R5) OR The supporting information provided with the IROLs does not address 5.1.1 and

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				but missed meeting one or more of the schedules for 15 or more but less than 30 calendar days. (R5) OR The supporting information provided with the IROLs does not address 5.1.4	more but less than 45 calendar days. (R5) OR The supporting information provided with the IROLs does not address 5.1.3	5.1.2.
FAC-014-2	R5.1.	The Reliability Coordinator shall provide its SOLs (including the subset of SOLs that are IROLs) to adjacent Reliability Coordinators and Reliability Coordinators who indicate a reliability-related need for those limits, and to the Transmission Operators, Transmission Planners, Transmission Service Providers and Planning Authorities within its Reliability Coordinator Area. For each IROL, the Reliability Coordinator shall provide the following supporting information	Not applicable.	Not applicable.	Not applicable.	The Reliability Coordinator did not provide its SOLs (including the subset of SOLs that are IROLs) to adjacent Reliability Coordinators and Reliability Coordinators who indicate a reliability-related need for those limits, and to the Transmission Operators, Transmission Planners, Transmission Service Providers and Planning Authorities within its Reliability Coordinator Area.
FAC-014-2	R5.1.1.	Identification and status of the associated Facility (or group of Facilities) that is (are) critical to the derivation of the IROL	Not applicable.	Not applicable.	Not applicable.	For any IROL, the Reliability Coordinator did not

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						provide the Identification and status of the associated Facility (or group of Facilities) that is (are) critical to the derivation of the IROL.
FAC-014-2	R5.1.2.	The value of the IROL and its associated Tv.	Not applicable.	Not applicable.	Not applicable.	For any IROL, the Reliability Coordinator did not provide the value of the IROL and its associated Tv.
FAC-014-2	R5.1.3.	The associated Contingency (ies).	Not applicable.	Not applicable.	Not applicable.	For any IROL, the Reliability Coordinator did not provide the associated Contingency(ies).
FAC-014-2	R5.1.4.	The type of limitation represented by the IROL (e.g., voltage collapse, angular stability).	Not applicable.	Not applicable.	Not applicable.	For any IROL, the Reliability Coordinator did not provide the type of limitation represented by the IROL (e.g., voltage collapse, angular stability).
FAC-014-2	R5.2.	The Transmission Operator shall provide any SOLs it developed to its Reliability Coordinator and to the Transmission Service Providers that share its portion of the Reliability Coordinator Area.	Not applicable.	Not applicable.	Not applicable.	The Transmission Operator did not provide the complete set of SOLs it developed to its Reliability Coordinator and to the Transmission Service Providers that share its portion of the

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						Reliability Coordinator Area.
FAC-014-2	R5.3.	The Planning Authority shall provide its SOLs (including the subset of SOLs that are IROLs) to adjacent Planning Authorities, and to Transmission Planners, Transmission Service Providers, Transmission Operators and Reliability Coordinators that work within its Planning Authority Area.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not provide its complete set of SOLs (including the subset of SOLs that are IROLs) to adjacent Planning Authorities, and to Transmission Planners, Transmission Service Providers, Transmission Operators and Reliability Coordinators that work within its Planning Authority Area.
FAC-014-2	R5.4.	The Transmission Planner shall provide its SOLs (including the subset of SOLs that are IROLs) to its Planning Authority, Reliability Coordinators, Transmission Operators, and Transmission Service Providers that work within its Transmission Planning Area and to adjacent Transmission Planners.	Not applicable.	Not applicable.	Not applicable.	The Transmission Planner did not provide its complete set of SOLs (including the subset of SOLs that are IROLs) to its Planning Authority, Reliability Coordinators, Transmission Operators, and Transmission Service Providers that work within its Transmission Planning Area and to adjacent Transmission

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						Planners.
FAC-014-2	R6.	The Planning Authority shall identify the subset of multiple contingencies (if any), from Reliability Standard TPL-003 which result in stability limits.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not identify the subset of multiple contingencies which result in stability limits. (R6)
FAC-014-2	R6.1.	The Planning Authority shall provide this list of multiple contingencies and the associated stability limits to the Reliability Coordinators that monitor the facilities associated with these contingencies and limits.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not identify the subset of multiple contingencies, from TPL-003 that resulted in stability limits and provide the complete list of multiple contingencies and the associated stability limits to the Reliability Coordinators that monitor the facilities associated with these contingencies and limits.
FAC-014-2	R6.2.	If the Planning Authority does not identify any stability-related multiple contingencies, the Planning Authority shall so notify the Reliability Coordinator.	Not applicable.	Not applicable.	Not applicable.	The Planning Authority did not notify the Reliability Coordinator that it did not identify any stability-related multiple contingencies,
FAC-501-WECC-1	R1.	Transmission Owners shall have a TMIP detailing their inspection and maintenance requirements that apply to all transmission facilities necessary for System Operating Limits associated with each of the	The TMIP does not include associated Facilities for one of the Paths identified in Attachment 1 FAC-	The TMIP does not include associated Facilities for two of the Paths identified in the most current	The TMIP does not include associated Facilities for three of the Paths identified in the most current Table	The TMIP does not include associated Facilities for more than three of the Paths identified in the most

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		transmission paths identified in table titled “Major WECC Transfer Paths in the Bulk Electric System.”	501-WECC-1 as required by R.1 but Transmission Owners are performing maintenance and inspection for the missing Facilities.	Table titled “Major WECC Transfer Paths in the Bulk Electric System” as required by R.1 and Transmission Owners are not performing maintenance and inspection for the missing Facilities.	titled “Major WECC Transfer Paths in the Bulk Electric System” as required by R.1 and Transmission Owners are not performing maintenance and inspection for the missing Facilities.	current Table titled “Major WECC Transfer Paths in the Bulk Electric System” as required by R.1 and Transmission Owners are not performing maintenance and inspection for the missing Facilities.
FAC-501-WECC-1	R1.1.	Transmission Owners shall annually review their TMIP and update as required.	Transmission Owners did not review their TMIP annually as required by R.1.1.	N/A	N/A	N/A
FAC-501-WECC-1	R2.	Transmission Owners shall include the maintenance categories in Attachment 1-FAC-501-WECC-1 when developing their TMIP.	The TMIP does not include one maintenance category identified in Attachment 1 FAC-501-WECC-1 as required by R.2 but Transmission Owners are performing maintenance and inspection for the missing maintenance categories.	The TMIP does not include two maintenance categories identified in Attachment 1 FAC-501-WECC-1 as required by R.2 but Transmission Owners are performing maintenance and inspection for the missing maintenance categories.	The TMIP does not include three maintenance categories identified in Attachment 1 FAC-501-WECC-1 as required by R.2 but Transmission Owners are performing maintenance and inspection for the missing maintenance categories.	The TMIP does not exist or does not include more than three maintenance categories identified in Attachment 1 FAC-501-WECC-1 as required by R.2 but Transmission Owners are performing maintenance and inspection for the missing maintenance categories.
FAC-501-WECC-1	R3.	Transmission Owners shall implement and follow their TMIP.	Transmission Owners do not have maintenance and inspection records as required by R.3 but have evidence that they are implementing	Transmission Owners are not performing maintenance and inspection for one maintenance category identified	Transmission Owners are not performing maintenance and inspection for two maintenance categories identified in Attachment 1 FAC-	Transmission Owners are not performing maintenance and inspection for more than two maintenance categories identified in Attachment 1 FAC-

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			and following their TMIP.	in Attachment 1 FAC-501-WECC-1 as required in R3.	501-WECC-1 as required in R3.	501-WECC-1 as required in R3.

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INT-001-3	R1.	The Load-Serving, Purchasing-Selling Entity shall ensure that Arranged Interchange is submitted to the Interchange Authority for:	The Load-Serving, Purchasing-Selling Entity experienced one instance of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for: (see below)	The Load-Serving, Purchasing-Selling Entity experienced two instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for: (see below)	The Load-Serving, Purchasing-Selling Entity experienced three instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for: (see below)	The Load-Serving, Purchasing-Selling Entity experienced four instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for: (see below)
INT-001-3	R1.1.	All Dynamic Schedules at the expected average MW profile for each hour.	The Load-Serving, Purchasing-Selling Entity experienced one instance of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for all Dynamic Schedules at the expected average MW profile for each hour.	The Load-Serving, Purchasing-Selling Entity experienced two instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for all Dynamic Schedules at the expected average MW profile for each hour.	The Load-Serving, Purchasing-Selling Entity experienced three instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for all Dynamic Schedules at the expected average MW profile for each hour.	The Load-Serving, Purchasing-Selling Entity experienced four instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for all Dynamic Schedules at the expected average MW profile for each hour.
INT-001-3	R2.	The Sink Balancing Authority shall ensure that Arranged Interchange is submitted to the Interchange Authority:	The Sink Balancing Authority experienced one instance of failing to ensure that Arranged Interchange was submitted to the Interchange Authority (see below)	The Sink Balancing Authority experienced two instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority (see below)	The Sink Balancing Authority experienced three instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority (see below)	The Sink Balancing Authority experienced four instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority (see below)

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
INT-001-3	R2.1.	If a Purchasing-Selling Entity is not involved in the Interchange, such as delivery from a jointly owned generator.	The Sink Balancing Authority experienced one instance of failing to ensure that Arranged Interchange was submitted to the Interchange Authority if a Purchasing-Selling Entity was not involved in the Interchange, such as delivery from a jointly owned generator.	The Sink Balancing Authority experienced two instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority if a Purchasing-Selling Entity was not involved in the Interchange, such as delivery from a jointly owned generator.	The Sink Balancing Authority experienced three instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority if a Purchasing-Selling Entity was not involved in the Interchange, such as delivery from a jointly owned generator.	The Sink Balancing Authority experienced four instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority if a Purchasing-Selling Entity was not involved in the Interchange, such as delivery from a jointly owned generator.
INT-001-3	R2.2.	For each bilateral Inadvertent Interchange payback.	The Sink Balancing Authority experienced one instance of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for each bilateral Inadvertent Interchange payback.	The Sink Balancing Authority experienced two instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for each bilateral Inadvertent Interchange payback.	The Sink Balancing Authority experienced three instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for each bilateral Inadvertent Interchange payback.	The Sink Balancing Authority experienced four instances of failing to ensure that Arranged Interchange was submitted to the Interchange Authority for each bilateral Inadvertent Interchange payback.
INT-003-3	R1.	Each Receiving Balancing Authority shall confirm Interchange Schedules with the Sending Balancing Authority prior to implementation in the Balancing Authority's ACE equation.	There shall be a separate Lower VSL, if either of the following conditions exists: One instance of entering a schedule into its ACE equation without confirming the	There shall be a separate Moderate VSL, if either of the following conditions exists: Two instances of entering a schedule into its ACE equation	There shall be a separate High VSL, if either of the following conditions exists: Three instances of entering a schedule into its ACE equation without confirming the schedule	There shall be a separate Severe VSL, if either of the following conditions exists: Four or more instances of entering a schedule into its ACE equation without

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. One instance of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. Two instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	as specified in R1, R1.1, R1.1.1 and R1.1.2. Three instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2. Four or more instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2
INT-003-3	R1.1.	The Sending Balancing Authority and Receiving Balancing Authority shall agree on Interchange as received from the Interchange Authority, including:	The Balancing Authority experienced one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
INT-003-3	R1.1.1.	Interchange Schedule start and end time.	The Balancing Authority experienced one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	The Balancing Authority experienced four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
INT-003-3	R1.1.2	Energy profile.	The Balancing Authority experienced	The Balancing Authority	The Balancing Authority experienced	The Balancing Authority experienced

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			one instance of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	experienced two instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	three instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.	four instances of entering a schedule into its ACE equation without confirming the schedule as specified in R1, R1.1, R1.1.1 and R1.1.2.
INT-003-3	R1.2.	If a high voltage direct current (HVDC) tie is on the Scheduling Path, then the Sending Balancing Authorities and Receiving Balancing Authorities shall coordinate the Interchange Schedule with the Transmission Operator of the HVDC tie.	The sending or receiving Balancing Authority experienced one instance of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	The sending or receiving Balancing Authority experienced two instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	The sending or receiving Balancing Authority experienced three instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2	The sending or receiving Balancing Authority experienced four instances of not coordinating the Interchange Schedule with the Transmission Operator of the HVDC tie as specified in R1.2
INT-004-2	R1.	At such time as the reliability event allows for the reloading of the transaction, the entity that initiated the curtailment shall release the limit on the Interchange Transaction tag to allow reloading the transaction and shall communicate the release of the limit to the Sink Balancing Authority.	The entity that initiated the curtailment failed to communicate the transaction reload to the Sink Balancing Authority	The entity that initiated the curtailment failed to reload the transaction and failed to communicate to the Sink Balancing Authority	N/A	N/A
INT-004-2	R2.	The Purchasing-Selling Entity responsible for tagging a Dynamic Interchange Schedule shall ensure the tag is updated for the next available scheduling hour and future hours when any one of the following occurs:	N/A	N/A	The responsible entity failed to update the tag when required by sub-requirements R2.1 or R2.2.	The responsible entity failed to update the tag when required by sub-requirement R2.3.
INT-004-2	R2.1.	The average energy profile in an hour is greater than 250 MW and in that hour the	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +10%.				
INT-004-2	R2.2.	The average energy profile in an hour is less than or equal to 250 MW and in that hour the actual hourly integrated energy deviates from the hourly average energy profile indicated on the tag by more than +25 megawatt-hours.	N/A	N/A	N/A	N/A
INT-004-2	R2.3.	A Reliability Coordinator or Transmission Operator determines the deviation, regardless of magnitude, to be a reliability concern and notifies the Purchasing-Selling Entity of that determination and the reasons.	N/A	N/A	N/A	N/A
INT-005-3	R1.	Prior to the expiration of the time period defined in the timing requirements tables in this standard, Column A, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment to all reliability entities involved in the Interchange.	The Interchange Authority experienced one occurrence of not distributing information to all involved reliability entities.	The Interchange Authority experienced two occurrences of not distributing information to all involved reliability entities	The Interchange Authority experienced three occurrences of not distributing information to all involved reliability entities	The Interchange Authority experienced four occurrences of not distributing information to all involved reliability entities
INT-005-3	R1.1.	When a Balancing Authority or Reliability Coordinator initiates a Curtailment to Confirmed or Implemented Interchange for reliability, the Interchange Authority shall distribute the Arranged Interchange information for reliability assessment only to the Source Balancing Authority and the Sink Balancing Authority.	N/A	N/A	The Responsible Entity initiated a Curtailment to Confirmed or Implemented Interchange for reliability but the Interchange Authority failed to distribute the Arranged Interchange information to the Source Balancing Authority or the Sink Balancing Authority.	The Responsible Entity initiated a Curtailment to Confirmed or Implemented Interchange for reliability but the Interchange Authority failed to distribute the Arranged Interchange information to the Source Balancing Authority and the Sink Balancing Authority.
INT-006-3	R1.	Prior to the expiration of the reliability	The Responsible	The Responsible	The Responsible Entity	The Responsible

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		assessment period defined in the timing requirements tables in this standard, Column B, the Balancing Authority and Transmission Service Provider shall respond to each On-time Request for Interchange (RFI), and to each Emergency RFI and Reliability Adjustment RFI from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange	Entity failed on one occasion to respond to a request from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.	Entity failed on two occasions to respond to a request from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.	failed on three occasions to respond to a request from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.	Entity failed on four occasions to respond to a request from an Interchange Authority to transition an Arranged Interchange to a Confirmed Interchange.
INT-006-3	R1.1.	Each involved Balancing Authority shall evaluate the Arranged Interchange with respect to:	The Balancing Authority failed to evaluate arranged interchange with respect to one of the requirements in the 3 sub-components.	N/A	The Balancing Authority failed to evaluate arranged interchange with respect to two of the requirements in the 3 sub-components.	The Balancing Authority failed to evaluate arranged interchange with respect to three of the requirements in the 3 sub-components.
INT-006-3	R1.1.1.	Energy profile (ability to support the magnitude of the Interchange).	N/A	N/A	N/A	The Balancing Authority failed to evaluate Energy profile (ability to support the magnitude of the Interchange).
INT-006-3	R1.1.2.	Ramp (ability of generation maneuverability to accommodate).	N/A	N/A	N/A	The Balancing Authority failed to evaluate Ramp (ability of generation maneuverability to accommodate).
INT-006-3	R1.1.3.	Scheduling path (proper connectivity of Adjacent Balancing Authorities).	N/A	N/A	N/A	The Balancing Authority failed to evaluate Scheduling path (proper connectivity of Adjacent Balancing Authorities).

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
INT-006-3	R1.2.	Each involved Transmission Service Provider shall confirm that the transmission service arrangements associated with the Arranged Interchange have adjacent Transmission Service Provider connectivity, are valid and prevailing transmission system limits will not be violated	The Transmission Service Provider experienced one instance of failing to confirm that the transmission service arrangements associated with the Arranged Interchange had adjacent Transmission Service Provider connectivity, were valid and prevailing transmission system limits would not be violated.	The Transmission Service Provider experienced two instances of failing to confirm that the transmission service arrangements associated with the Arranged Interchange had adjacent Transmission Service Provider connectivity, were valid and prevailing transmission system limits would not be violated.	The Transmission Service Provider experienced three instances of failing to confirm that the transmission service arrangements associated with the Arranged Interchange had adjacent Transmission Service Provider connectivity, were valid and prevailing transmission system limits would not be violated.	The Transmission Service Provider experience four instances of failing to confirm that the transmission service arrangements associated with the Arranged Interchange had adjacent Transmission Service Provider connectivity, were valid and prevailing transmission system limits would not be violated.
INT-007-1	R1.	The Interchange Authority shall verify that Arranged Interchange is balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange by verifying the following:	The Interchange Authority failed to verify one time, as indicated in R1.1, R1.2, R1.3, R1.3.1, R1.3.2, R1.3.3, or R1.3.4 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify two times, as indicated in R1.1, R1.2, R1.3, R1.3.1, R1.3.2, R1.3.3, or R1.3.4 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify three times, as indicated in R1.1, R1.2, R1.3, R1.3.1, R1.3.2, R1.3.3, or R1.3.4 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify four times, as indicated in R1.1, R1.2, R1.3, R1.3.1, R1.3.2, R1.3.3, or R1.3.4 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.1.	Source Balancing Authority megawatts equal sink Balancing Authority megawatts (adjusted for losses, if appropriate).	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.2.	All reliability entities involved in the Arranged Interchange are currently in the NERC registry.	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.3.	The following are defined:	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.3.1.	Generation source and load sink.	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			valid prior to transitioning Arranged Interchange to Confirmed Interchange.	balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	prior to transitioning Arranged Interchange to Confirmed Interchange.	valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.3.2.	Megawatt profile.	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.3.3.	Ramp start and stop times.	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.3.4.	Interchange duration.	The Interchange Authority failed to verify one time, as indicated in R1 that Arranged Interchange was balanced and valid prior to	The Interchange Authority failed to verify two times, as indicated in R1 that Arranged Interchange was balanced and valid	The Interchange Authority failed to verify three times, as indicated in R1 that Arranged Interchange was balanced and valid prior to transitioning	The Interchange Authority failed to verify four times, as indicated in R1 that Arranged Interchange was balanced and valid prior to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			transitioning Arranged Interchange to Confirmed Interchange.	prior to transitioning Arranged Interchange to Confirmed Interchange.	Arranged Interchange to Confirmed Interchange.	transitioning Arranged Interchange to Confirmed Interchange.
INT-007-1	R1.4.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment has provided approval.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment has provided approval, with minor exception and is substantially compliant with the directives of the requirement.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment has provided approval, with some exception and is mostly compliant with the directives of the requirement.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment has provided approval but was substantially deficient in meeting the directives of the requirement.	Each Balancing Authority and Transmission Service Provider that received the Arranged Interchange information from the Interchange Authority for reliability assessment did not provide approval and failed to meet the requirement.
INT-008-3	R1.	Prior to the expiration of the time period defined in the Timing Table, Column C, the Interchange Authority shall distribute to all Balancing Authorities (including Balancing Authorities on both sides of a direct current tie), Transmission Service Providers and Purchasing-Selling Entities involved in the Arranged Interchange whether or not the Arranged Interchange has transitioned to a Confirmed Interchange.	The Interchange Authority experienced one occurrence of not distributing information to all involved reliability entities as delineated in R1.1, R1.1.1 or R1.1.2.	The Interchange Authority experienced two occurrences of not distributing information to all involved reliability entities.	The Interchange Authority experienced three occurrences of not distributing information to all involved reliability entities.	The Interchange Authority experienced four occurrences of not distributing information to all involved reliability entities or no evidence provided.
INT-008-3	R1.1.	For Confirmed Interchange, the Interchange Authority shall also communicate:	The Interchange Authority experienced one occurrence of not distributing	The Interchange Authority experienced two occurrences of not	The Interchange Authority experienced three occurrences of not distributing information	The Interchange Authority experienced four occurrences of not distributing

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			information to all involved reliability entities as defined in R1.	distributing information to all involved reliability entities as defined in R1.	to all involved reliability entities as defined in R1.	information to all involved reliability entities as defined in R1 or no evidence provided.
INT-008-3	R1.1.1.	Start and stop times, ramps, and megawatt profile to Balancing Authorities.	The Interchange Authority experienced one occurrence of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced two occurrences of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced three occurrences of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced four occurrences of not distributing information to all involved reliability entities as defined in R1 or no evidence provided.
INT-008-3	R1.1.2.	Necessary Interchange information to NERC-identified reliability analysis services.	The Interchange Authority experienced one occurrence of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced two occurrences of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced three occurrences of not distributing information to all involved reliability entities as defined in R1.	The Interchange Authority experienced four occurrences of not distributing information to all involved reliability entities as defined in R1 or no evidence provided.
INT-009-1	R1.	The Balancing Authority shall implement Confirmed Interchange as received from the Interchange Authority.	N/A	N/A	N/A	The responsible entity failed to implement a Confirmed Interchange as received from the Interchange Authority.
INT-010-1	R1.	The Balancing Authority that experiences a loss of resources covered by an energy sharing agreement shall ensure that a request for an Arranged Interchange is submitted with a start time no more than 60 minutes beyond the resource loss. If the use of the energy sharing agreement does not exceed 60 minutes from the time of the resource loss,	The responsible entity that experienced a loss of resources that exceeded 60 minutes and was covered by an energy sharing agreement ensured that a request for an	The responsible entity that experienced a loss of resources that exceeded 60 minutes and was covered by an energy sharing	The responsible entity that experienced a loss of resources that exceeded 60 minutes and was covered by an energy sharing agreement ensured that a request for an	The responsible entity that experienced a loss of resources that exceeded 60 minutes and was covered by an energy sharing agreement ensured that a request for an

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		no request for Arranged Interchange is required.	Arranged Interchange was submitted, but with a start time that was more than 60 minutes but less than 75 minutes beyond the resource loss.	agreement ensured that a request for an Arranged Interchange was submitted, but with a start time that was 75 minutes or more, but less than 90 minutes beyond the resource loss.	Arranged Interchange was submitted, but with a start time that was 90 minutes or more, but less than 105 minutes beyond the resource loss.	Arranged Interchange was submitted, but with a start time that was more than 105 minutes beyond the resource loss. OR The responsible entity that experienced a loss of resources that exceeded 60 minutes and was covered by an energy sharing agreement, failed to ensure that a request for an Arranged Interchange was submitted.
INT-010-1	R2.	For a modification to an existing Interchange schedule that is directed by a Reliability Coordinator for current or imminent reliability-related reasons, the Reliability Coordinator shall direct a Balancing Authority to submit the modified Arranged Interchange reflecting that modification within 60 minutes of the initiation of the event.	N/A	N/A	N/A	The responsible entity failed to direct a Balancing Authority to submit the modified Arranged Interchange reflecting the modification, within 60 minutes of the initiation of the event.
INT-010-1	R3.	For a new Interchange schedule that is directed by a Reliability Coordinator for current or imminent reliability-related reasons, the Reliability Coordinator shall direct a Balancing Authority to submit an Arranged Interchange reflecting that Interchange schedule within 60 minutes of the initiation of the event.	N/A	N/A	N/A	The responsible entity failed to direct a Balancing Authority to submit an Arranged Interchange reflecting the new Interchange schedule within 60 minutes of the initiation of the event.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
IRO-001-1.1	R1.	Each Regional Reliability Organization, subregion, or interregional coordinating group shall establish one or more Reliability Coordinators to continuously assess transmission reliability and coordinate emergency operations among the operating entities within the region and across the regional boundaries.	The RRO, subregion or interregional coordinating group did not communicate the assignment of the Reliability Coordinators to operating entities clearly.	The RRO, subregion or interregional coordinating group did not clearly identify the coordination of Reliability Coordinator areas within the region.	The RRO, subregion or interregional coordinating group did not coordinate assignment of the Reliability Coordinators across regional boundaries.	The RRO, subregion or interregional coordinating group did not assign any Reliability Coordinators.
IRO-001-1.1	R2.	The Reliability Coordinator shall comply with a regional reliability plan approved by the NERC Operating Committee.	The Reliability Coordinator has failed to follow the administrative portions of its regional reliability plan.	The Reliability Coordinator has failed to follow steps in its regional reliability plan that requires operator interventions or actions.	The Reliability Coordinator does not have a regional reliability plan approved by the NERC OC.	The Reliability Coordinator does not have an unapproved regional reliability plan.
IRO-001-1.1	R3.	The Reliability Coordinator shall have clear decision-making authority to act and to direct actions to be taken by Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities within its Reliability Coordinator Area to preserve the integrity and reliability of the Bulk Electric System. These actions shall be taken without delay, but no longer than 30 minutes.	N/A	N/A	The Reliability Coordinator cannot demonstrate that it has clear authority to act or direct actions to preserve transmission security and reliability of the Bulk Electric System.	The Reliability Coordinator failed to take or direct to preserve the reliability and security of the Bulk Electric System within 30 minutes of identifying those actions.
IRO-001-1.1	R4.	Reliability Coordinators that delegate tasks to other entities shall have formal operating agreements with each entity to which tasks are delegated. The Reliability Coordinator shall verify that all delegated tasks are understood, communicated, and addressed within its Reliability Coordinator Area. All	1. Less than 25% of the tasks are not documented in the agreement or 2. Less than 25% of the tasks are not performed according	1. More than 25% but 50% or less of the tasks are not documented in the agreement or 2. More than 25% but 50% or less of	1. More than 50% but 75% or less of the tasks are not documented in the agreement or 2. More than 50% but 75% or less of the tasks are not performed	1. There is no formal operating agreement for tasks delegated by the Reliability Coordinator, 2. More than 75% of the tasks are not

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		responsibilities for complying with NERC and regional standards applicable to Reliability Coordinators shall remain with the Reliability Coordinator.	to the agreement.	the tasks are not performed according to the agreement.	according to the agreement.	documented in the agreement or 3. More than 75% of the tasks are not performed according to the agreement.
IRO-001-1.1	R5.	The Reliability Coordinator shall list within its reliability plan all entities to which the Reliability Coordinator has delegated required tasks.	5% or less of the delegate entities are not identified in the reliability plan.	More than 5% up to (and including) 10% of the delegate entities are not identified in the reliability plan.	More than 10% up to (and including) 15% of the delegate entities are not identified in the reliability plan.	There is no reliability plan. OR More than 15% of the delegate entities are not identified in the reliability plan.
IRO-001-1.1	R6.	The Reliability Coordinator shall verify that all delegated tasks are carried out by NERC-certified Reliability Coordinator operating personnel.	The Reliability Coordinator failed to demonstrate that 5% or less of its delegated tasks were being performed by NERC certified Reliability Coordinator operating personnel.	The Reliability Coordinator failed to demonstrate that more than 5% up to (and including) 10% of its delegated tasks were being performed by NERC certified Reliability Coordinator operating personnel.	The Reliability Coordinator failed to demonstrate that more than 10% up to (and including) 15% of its delegated tasks were being performed by NERC certified Reliability Coordinator operating personnel.	The Reliability Coordinator failed to demonstrate that more than 15% of its delegated tasks were being performed by NERC certified Reliability Coordinator operating personnel.
IRO-001-1.1	R7.	The Reliability Coordinator shall have clear, comprehensive coordination agreements with adjacent Reliability Coordinators to ensure that System Operating Limit or Interconnection Reliability Operating Limit violation mitigation requiring actions in adjacent Reliability Coordinator Areas are coordinated.	The Reliability Coordinator has demonstrated the existence of coordination agreements with adjacent Reliability Coordinators but the agreements are not clear or comprehensive.	The Reliability Coordinator has demonstrated the existence of the coordination agreements with adjacent Reliability Coordinators but the agreements do not coordinate actions required in the adjacent Reliability Coordinator to	The Reliability Coordinator has demonstrated the existence of the coordination agreements with adjacent Reliability Coordinators but the agreements do not coordinate actions required in the adjacent Reliability Coordinator to mitigate SOL and	The Reliability Coordinator has failed to demonstrate the existence of any coordination agreements with adjacent Reliability Coordinators.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				mitigate SOL or IROL violations in its own Reliability Coordinator area.	IROL violations in its own Reliability Coordinator area.	
IRO-001-1.1	R8.	Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall comply with Reliability Coordinator directives unless such actions would violate safety, equipment, or regulatory or statutory requirements. Under these circumstances, the Transmission Operator, Balancing Authority, Generator Operator, Transmission Service Provider, Load-Serving Entity, or Purchasing-Selling Entity shall immediately inform the Reliability Coordinator of the inability to perform the directive so that the Reliability Coordinator may implement alternate remedial actions.	N/A	The responsible entity could not comply with a directive due to qualified reasons (violation of safety, equipment or regulatory or statutory requirements) and did not immediately inform the Reliability Coordinator.	N/A	The responsible entity did not follow the Reliability Coordinator's directive.
IRO-001-1.1	R9.	The Reliability Coordinator shall act in the interests of reliability for the overall Reliability Coordinator Area and the Interconnection before the interests of any other entity.	N/A	N/A	N/A	The Reliability Coordinator did not act in the interests of reliability for the overall Reliability Coordinator Area and the Interconnection before the interests of one or more other entities.
IRO-002-1	R1.	Each Reliability Coordinator shall have adequate communications facilities (voice and data links) to appropriate entities within its Reliability Coordinator Area. These communications facilities shall be staffed and available to act in addressing a real-time	The Reliability Coordinator demonstrated that it has adequate voice communication facilities and staff but	The Reliability Coordinator demonstrated that it has adequate voice communication facilities and staff	The Reliability Coordinator demonstrated that it has adequate voice communication facilities and staff but is	The Reliability Coordinator demonstrated that it has adequate voice communication facilities and staff but

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		emergency condition.	is deficient by 5% or less of its needed data links for at least one of the appropriate entities within its Reliability Coordinator Area.	but is deficient with more than 5% up to (and including) 10% of its needed data links for at least one of the appropriate entities within its Reliability Coordinator Area.	deficient for more than 10% up to (and including) 15% of its needed data links for at least one of the appropriate entities within its Reliability Coordinator Area.	is deficient for more than 15% of its needed data links for at least one of the appropriate entities with which it interfaces. OR The Reliability Coordinator demonstrated that it has adequate voice and data communications facilities with all appropriate entities within its Reliability Coordinator Area but failed to have sufficient staff to address a real-time emergency event. OR The Reliability Coordinator failed to demonstrate it has adequate voice communications facilities with appropriate entities within its Reliability Coordinator Area.
IRO-002-1	R2.	Each Reliability Coordinator shall determine the data requirements to support its reliability coordination tasks and shall request such data from its Transmission Operators, Balancing Authorities, Transmission Owners, Generation Owners, Generation Operators, and Load-Serving Entities, or	The Reliability Coordinator failed to demonstrate that it determined and requested the data requirements needed to support its	The Reliability Coordinator failed to demonstrate that it determined and requested the data requirements needed to support its	The Reliability Coordinator failed to demonstrate that it determined and requested the data requirements needed to support its reliability	The Reliability Coordinator failed to demonstrate that it determined and requested the data requirements needed to support its

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		adjacent Reliability Coordinators.	reliability coordination tasks from One of the applicable entities with which it interfaces.	reliability coordination tasks from Two of the applicable entities with which it interfaces.	coordination tasks from Three of the applicable entities with which it interfaces.	reliability coordination tasks from Four or more of the applicable entities with which it interfaces.
IRO-002-1	R3.	Each Reliability Coordinator – or its Transmission Operators and Balancing Authorities – shall provide, or arrange provisions for, data exchange to other Reliability Coordinators or Transmission Operators and Balancing Authorities via a secure network.	The responsible entity failed to demonstrate it provided or arranged provision for the exchange of data with 5% or less of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.	The responsible entity failed to demonstrate it provided or arranged provision for the exchange of data with more than 5% up to (and including) 10% of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.	The responsible entity failed to demonstrate it provided or arranged provision for the exchange of data with more than 10% up to (and including) 15% of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.	The responsible entity failed to demonstrate it provided or arranged provision for the exchange of data with more than 15% of the other Reliability Coordinators or Transmission Operators and Balancing Authorities.
IRO-002-1	R4.	Each Reliability Coordinator shall have multi-directional communications capabilities with its Transmission Operators and Balancing Authorities, and with neighboring Reliability Coordinators, for both voice and data exchange as required to meet reliability needs of the Interconnection.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to 5% or less of the applicable entities with which it interfaces.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to more than 5% up to (and including) 10% of the applicable entities with which it interfaces.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities to more than 10% up to (and including) 15% of the applicable entities with which it interfaces.	The Reliability Coordinator has failed to demonstrate multi-directional communication capabilities with more than 15% of the applicable entities with which it interfaces.
IRO-002-1	R5.	Each Reliability Coordinator shall have detailed real-time monitoring capability of its Reliability Coordinator Area and sufficient monitoring capability of its surrounding	The Reliability Coordinator's SOL/IROL monitoring systems provide	The Reliability Coordinator's SOL/IROL monitoring systems	The Reliability Coordinator's SOL/IROL monitoring systems did not give	The Reliability Coordinator's SOL/IROL monitoring systems did not give

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		Reliability Coordinator Areas to ensure that potential or actual System Operating Limit or Interconnection Reliability Operating Limit violations are identified. Each Reliability Coordinator shall have monitoring systems that provide information that can be easily understood and interpreted by the Reliability Coordinator's operating personnel, giving particular emphasis to alarm management and awareness systems, automated data transfers, and synchronized information systems, over a redundant and highly reliable infrastructure.	information in a way that is not easily understood and interpreted by the Reliability Coordinator's operating personnel.	did not give particular emphasis to One of the following: <ul style="list-style-type: none"> ● alarm management and awareness systems ● automated data transfers ● synchronized information systems 	particular emphasis to Two of the following: <ul style="list-style-type: none"> ● alarm management and awareness systems ● automated data transfers ● synchronized information systems 	particular emphasis to any of the following: <ul style="list-style-type: none"> ● alarm management and awareness systems ● automated data transfers ● synchronized information systems. OR The Reliability Coordinator's SOL/IROL monitoring systems were not implemented over a highly reliable redundant infrastructure.
IRO-002-1	R6.	Each Reliability Coordinator shall monitor Bulk Electric System elements (generators, transmission lines, buses, transformers, breakers, etc.) that could result in SOL or IROL violations within its Reliability Coordinator Area. Each Reliability Coordinator shall monitor both real and reactive power system flows, and operating reserves, and the status of Bulk Electric System elements that are or could be critical to SOLs and IROLs and system restoration requirements within its Reliability Coordinator Area.	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements that could result in one SOL violations or 2) or operating reserves for a small portion of the Reliability Authority Area.	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing one IROL or to system restoration, 2) the status, real power flow or reactive power flow of Bulk Electric System elements that could result in	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing two or more IROLs; or one IROL and to system restoration, 2) the status, real power flow or reactive power flow of Bulk Electric System elements that could	The Reliability Coordinator failed to monitor: 1) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing all IROLs and to system restoration, or 2) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing all SOL

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				multiple SOL violations, or 3) operating reserves.	result in multiple SOL violations and operating reserves, or 3) the status, real power flow or reactive power flow of Bulk Electric System elements critical to assessing one IROL or system restoration and operating reserves.	violations and operating reserves.
IRO-002-1	R7.	Each Reliability Coordinator shall have adequate analysis tools such as state estimation, pre- and post-contingency analysis capabilities (thermal, stability, and voltage), and wide-area overview displays.	N/A	N/A	N/A	The Reliability Coordinator failed to demonstrate that it has adequate analysis tools such as: <ul style="list-style-type: none"> • State estimation • Pre-contingency analysis capability (thermal, stability, and voltage); • Post-contingency analysis capability (thermal, stability, and voltage), • Wide-area overview displays.
IRO-002-1	R8.	Each Reliability Coordinator shall continuously monitor its Reliability Coordinator Area. Each Reliability Coordinator shall have provisions for backup facilities that shall be exercised if the main monitoring system is unavailable. Each Reliability Coordinator shall ensure SOL and	.N/A	The Reliability Coordinator demonstrated provisions for back-up facilities, but it failed to continuously	N/A	The Reliability Coordinator failed to demonstrate provisions for back-up facilities AND The Reliability

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		IROL monitoring and derivations continue if the main monitoring system is unavailable.		monitor SOL/IROL conditions when the main monitoring system was unavailable.		Coordinator failed to continuously monitor SOL/IROL conditions when the main monitoring system was unavailable.
IRO-002-1	R9.	Each Reliability Coordinator shall control its Reliability Coordinator analysis tools, including approvals for planned maintenance. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.	Reliability Coordinator has approval rights for planned maintenance outages of analysis tools but does not have approval rights for work on analysis tools that creates a greater risk of an unplanned outage of the tools.	Reliability Coordinator has approval rights for planned maintenance but does not have plans to mitigate the effects of outages of the analysis tools.	Reliability Coordinator has approval rights for planned maintenance but does not have plans to mitigate the effects of outages of the analysis tools and does not have approval rights for work on analysis tools that creates a greater risk of an unplanned outage of the tools.	Reliability Coordinator approval is not required for planned maintenance.
IRO-003-2	R1.	Each Reliability Coordinator shall monitor all Bulk Electric System facilities, which may include sub-transmission information, within its Reliability Coordinator Area and adjacent Reliability Coordinator Areas, as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.	N/A	N/A	The Reliability Coordinator failed to monitor all Bulk Electric System facilities, which may include sub-transmission information, within its Reliability Coordinator Area and adjacent Reliability Coordinator Areas, as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit	The Reliability Coordinator failed to monitor Bulk Electric System facilities, which may include sub-transmission information, within adjacent Reliability Coordinator Areas, as necessary to ensure that, at any time, regardless of prior planned or unplanned events, the Reliability Coordinator is able to determine any potential System Operating Limit and Interconnection

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					and Interconnection Reliability Operating Limit violations within its Reliability Coordinator Area.	Reliability Operating Limit violations within its Reliability Coordinator Area.
IRO-003-2	R2.	Each Reliability Coordinator shall know the current status of all critical facilities whose failure, degradation or disconnection could result in an SOL or IROL violation. Reliability Coordinators shall also know the status of any facilities that may be required to assist area restoration objectives.	N/A	N/A	The Reliability Coordinator failed to know either the current status of all critical facilities whose failure, degradation or disconnection could result in an SOL or IROL violation or the status of any facilities that may be required to assist area restoration objectives.	The Reliability Coordinator failed to know the current status of all critical facilities whose failure, degradation or disconnection could result in an SOL or IROL violation and the status of any facilities that may be required to assist area restoration objectives.
IRO-004-1	R1.	Each Reliability Coordinator shall conduct next-day reliability analyses for its Reliability Coordinator Area to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. The Reliability Coordinator shall conduct Contingency analysis studies to identify potential interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc.	N/A	N/A	The Reliability Coordinator failed to conduct next-day reliability analyses to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. OR The Reliability Coordinator failed to conduct Contingency analysis studies to identify potential	The Reliability Coordinator failed to conduct next-day reliability analyses to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. AND The Reliability Coordinator failed to conduct Contingency analysis studies to identify potential

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					interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc. for its Reliability Coordinator Area.	interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc. for its Reliability Coordinator Area.
IRO-004-1	R2.	Each Reliability Coordinator shall pay particular attention to parallel flows to ensure one Reliability Coordinator Area does not place an unacceptable or undue Burden on an adjacent Reliability Coordinator Area.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor parallel flows to ensure one Reliability Coordinator Area did not place an unacceptable or undue Burden on an adjacent Reliability Coordinator Area.
IRO-004-1	R3.	Each Reliability Coordinator shall, in conjunction with its Transmission Operators and Balancing Authorities, develop action plans that may be required, including reconfiguration of the transmission system, re-dispatching of generation, reduction or curtailment of Interchange Transactions, or reducing load to return transmission loading to within acceptable SOLs or IROLs.	N/A	N/A	N/A	The Reliability Coordinator, in conjunction with its Transmission Operators and Balancing Authorities, failed to develop action plans that may have been required, including reconfiguration of the transmission system, re-dispatching of generation, reduction or curtailment of

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						Interchange Transactions, or reducing load to return transmission loading to within acceptable SOLs or IROLs.
IRO-004-1	R4.	Each Transmission Operator, Balancing Authority, Transmission Owner, Generator Owner, Generator Operator, and Load-Serving Entity in the Reliability Coordinator Area shall provide information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions. This information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	The responsible entity in the Reliability Coordinator Area provided the information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions, but said information was provided up to (and including) one hour after the required time.	The responsible entity in the Reliability Coordinator Area provided the information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions, but said information was provided more than one hour up to (and including) two hours after the required time.	The responsible entity in the Reliability Coordinator Area provided the information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions, but said information was provided more than two hours up to (and including) three hours after the required time.	The responsible entity in the Reliability Coordinator Area provided the information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions, but said information was provided more than three hours after the required time. OR The responsible entity in the Reliability Coordinator Area did not provide the information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions.

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IRO-004-1	R5.	Each Reliability Coordinator shall share the results of its system studies, when conditions warrant or upon request, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area. The Reliability Coordinator shall make study results available no later than 1500 Central Standard Time for the Eastern Interconnection and 1500 Pacific Standard Time for the Western Interconnection, unless circumstances warrant otherwise.	The Reliability Coordinator shared the results of its system studies, when conditions warranted or when they were requested, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area, but said results were provided up to (and including) one hour after the required time.	The Reliability Coordinator shared the results of its system studies, when conditions warranted or when they were requested, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area, but said results were provided more than one hour up to (and including) two hours after the required time.	The Reliability Coordinator shared the results of its system studies, when conditions warranted or when they were requested, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area, but said results were provided more than two hours up to (and including) three hours after the required time.	Transactions. The Reliability Coordinator shared the results of its system studies, when conditions warranted or when they were requested, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area, but said results were provided more than three hours after the required time. OR The Reliability Coordinator failed to share the results of its system studies, when conditions warranted or when they were requested, with other Reliability Coordinators, Transmission Operators, Balancing Authorities, or Transmission Service Providers within its Reliability

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						Coordinator Area.
IRO-004-1	R6.	If the results of these studies indicate potential SOL or IROL violations, the Reliability Coordinator shall direct its Transmission Operators, Balancing Authorities and Transmission Service Providers to take any necessary action the Reliability Coordinator deems appropriate to address the potential SOL or IROL violation.	N/A	N/A	N/A	The Reliability Coordinator failed to direct action to address a potential SOL or IROL violation when the results of its studies indicated a potential SOL or IROL violation.
IRO-004-1	R7.	Each Transmission Operator, Balancing Authority, and Transmission Service Provider shall comply with the directives of its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events.	N/A	N/A	N/A	The responsible entity failed to comply with the directive from its Reliability Coordinator based on the next day assessments in the same manner in which it would comply during real time operating events.
IRO-005-2a	R1.	Each Reliability Coordinator shall monitor its Reliability Coordinator Area parameters, including but not limited to the following:	The Reliability Coordinator failed to monitor one (1) of the elements listed in IRO-005-2 R1.1 through R1.10.	The Reliability Coordinator failed to monitor two (2) of the elements listed in IRO-005-2 R1.1 through R1.10.	The Reliability Coordinator failed to monitor three (3) of the elements listed in IRO-005-2 R1.1 through R1.10.	The Reliability Coordinator failed to monitor more than three (3) of the elements listed in IRO-005-2 R1.1 through R1.10.
IRO-005-2a	R1.1.	Current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators and Special Protection Systems) and system loading.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor the current status of Bulk Electric System elements (transmission or generation including critical auxiliaries such as Automatic

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						Voltage Regulators and Special Protection Systems) and system loading.
IRO-005-2a	R1.2.	Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor current pre-contingency element conditions (voltage, thermal, or stability); including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
IRO-005-2a	R1.3.	Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor current post-contingency element conditions (voltage, thermal, or stability); including any applicable mitigation plans to alleviate SOL or IROL violations, including the plan's viability and scope.
IRO-005-2a	R1.4.	System real and reactive reserves (actual versus required).	N/A	N/A	N/A	The Reliability Coordinator failed to monitor system real and reactive reserves (actual versus required).
IRO-005-2a	R1.5.	Capacity and energy adequacy conditions.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor capacity and

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						energy adequacy conditions.
IRO-005-2a	R1.6.	Current ACE for all its Balancing Authorities.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor current ACE for all its Balancing Authorities.
IRO-005-2a	R1.7.	Current local or Transmission Loading Relief procedures in effect.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor current local or Transmission Loading Relief procedures in effect.
IRO-005-2a	R1.8.	Planned generation dispatches.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor planned generation dispatches.
IRO-005-2a	R1.9.	Planned transmission or generation outages.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor planned transmission or generation outages.
IRO-005-2a	R1.10.	Contingency events.	N/A	N/A	N/A	The Reliability Coordinator failed to monitor contingency events.
IRO-005-2a	R2.	Each Reliability Coordinator shall be aware of all Interchange Transactions that wheel through, source, or sink in its Reliability Coordinator Area, and make that Interchange Transaction information available to all Reliability Coordinators in the Interconnection.	N/A	N/A	The Reliability Coordinator was aware of all Interchange Transactions that wheeled through, sourced, or sunk in its Reliability Coordinator Area, but failed to make that Interchange Transaction information	The Reliability Coordinator failed to be aware of all Interchange Transactions that wheeled through, sourced, or sunk in its Reliability Coordinator Area, and failed to make that

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					available to all Reliability Coordinators in the Interconnection.	Interchange Transaction information available to all Reliability Coordinators in the Interconnection.
IRO-005-2a	R3.	As portions of the transmission system approach or exceed SOLs or IROLs, the Reliability Coordinator shall work with its Transmission Operators and Balancing Authorities to evaluate and assess any additional Interchange Schedules that would violate those limits. If a potential or actual IROL violation cannot be avoided through proactive intervention, the Reliability Coordinator shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall ensure all resources, including load shedding, are available to address a potential or actual IROL violation.	N/A	The Reliability Coordinator worked with its Transmission Operators and Balancing Authorities, as portions of the transmission system approached or exceeded SOLs or IROLs, to evaluate and assess any additional Interchange Schedules that would violate those limits and initiated control actions or emergency procedures to relieve the violation within 30 minutes, but failed to ensure all resources, including load shedding, were available to address a potential or actual IROL violation.	The Reliability Coordinator worked with its Transmission Operators and Balancing Authorities, as portions of the transmission system approached or exceeded SOLs or IROLs, to evaluate and assess any additional Interchange Schedules that would violate those limits and ensured all resources, including load shedding, were available to address a potential or actual IROL violation, but failed to initiate control actions or emergency procedures to relieve the violation within 30 minutes.	The Reliability Coordinator failed to work with its Transmission Operators and Balancing Authorities, as portions of the transmission system approached or exceeded SOLs or IROLs, to evaluate and assess any additional Interchange Schedules that would violate those limits and failed to initiate control actions or emergency procedures to relieve the violation within 30 minutes.
IRO-005-2a	R4.	Each Reliability Coordinator shall monitor its Balancing Authorities' parameters to	N/A	The Reliability Coordinator failed	The Reliability Coordinator failed to	The Reliability Coordinator failed to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		ensure that the required amount of operating reserves is provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements. If necessary, the Reliability Coordinator shall direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities. The Reliability Coordinator shall issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.		to direct the Balancing Authorities in the Reliability Coordinator Area to arrange for assistance from neighboring Balancing Authorities.	issue Energy Emergency Alerts as needed and at the request of its Balancing Authorities and Load-Serving Entities.	monitor its Balancing Authorities' parameters to ensure that the required amount of operating reserves was provided and available as required to meet the Control Performance Standard and Disturbance Control Standard requirements.
IRO-005-2a	R5.	Each Reliability Coordinator shall identify the cause of any potential or actual SOL or IROL violations. The Reliability Coordinator shall initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall be able to utilize all resources, including load shedding, to address an IROL violation.	N/A	N/A	The Reliability Coordinator identified the cause of a potential or actual SOL or IROL violation, but failed to initiate a control action or emergency procedure to relieve the potential or actual IROL violation within 30 minutes.	The Reliability Coordinator failed to identify the cause of a potential or actual SOL or IROL violation and failed to initiate a control action or emergency procedure to relieve the potential or actual IROL violation.
IRO-005-2a	R6.	Each Reliability Coordinator shall ensure its Transmission Operators and Balancing Authorities are aware of Geo-Magnetic Disturbance (GMD) forecast information and assist as needed in the development of any required response plans.	N/A	N/A	The Reliability Coordinator ensured its Transmission Operators and Balancing Authorities were aware of Geo-Magnetic Disturbance (GMD) forecast information, but failed to assist, when needed, in the development of any required response plans.	The Reliability Coordinator failed to ensure its Transmission Operators and Balancing Authorities were aware of Geo-Magnetic Disturbance (GMD) forecast information.
IRO-005-	R7.	The Reliability Coordinator shall disseminate	N/A	N/A	N/A	The Reliability

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
2a		information within its Reliability Coordinator Area, as required.				Coordinator failed to disseminate information within its Reliability Coordinator Area, when required.
IRO-005-2a	R8.	Each Reliability Coordinator shall monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance. The Transmission Operators and Balancing Authorities shall utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.	N/A	N/A	The Reliability Coordinator monitored system frequency and its Balancing Authorities' performance but failed to direct any necessary rebalancing to return to CPS and DCS compliance.	The Reliability Coordinator failed to monitor system frequency and its Balancing Authorities' performance and direct any necessary rebalancing to return to CPS and DCS compliance or the responsible entity failed to utilize all resources, including firm load shedding, as directed by its Reliability Coordinator to relieve the emergent condition.
IRO-005-2a	R9.	The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real-time and next-day reliability analysis timeframes.	N/A	The Reliability Coordinator coordinated with Transmission Operators, Balancing Authorities, and Generator Operators, as needed, to develop action plans to mitigate potential or actual SOL, IROL,	The Reliability Coordinator failed to coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations, or the	The Reliability Coordinator failed to coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations and

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				CPS, or DCS violations but failed to implement said plans, or the Reliability Coordinator coordinated pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in the real-time reliability analysis timeframe but failed to coordinate pending generation and transmission maintenance outages in the next-day reliability analysis timeframe.	Reliability Coordinator failed to coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real-time and next-day reliability analysis timeframes.	the Reliability Coordinator failed to coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real-time and next-day reliability analysis timeframes.
IRO-005-2a	R10.	As necessary, the Reliability Coordinator shall assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities.	N/A	N/A	N/A	The Reliability Coordinator failed to assist the Balancing Authorities in its Reliability Coordinator Area in arranging for assistance from neighboring Reliability Coordinator Areas or Balancing Authorities,

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						when necessary.
IRO-005-2a	R11.	The Reliability Coordinator shall identify sources of large Area Control Errors that may be contributing to Frequency Error, Time Error, or Inadvertent Interchange and shall discuss corrective actions with the appropriate Balancing Authority. The Reliability Coordinator shall direct its Balancing Authority to comply with CPS and DCS.	N/A	The Reliability Coordinator identified sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange and discussed corrective actions with the appropriate Balancing Authority but failed to direct the Balancing Authority to comply with CPS and DCS.	The Reliability Coordinator identified sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange but failed to discuss corrective actions with the appropriate Balancing Authority.	The Reliability Coordinator failed to identify sources of large Area Control Errors that were contributing to Frequency Error, Time Error, or Inadvertent Interchange.
IRO-005-2a	R12.	Whenever a Special Protection System that may have an inter-Balancing Authority, or inter-Transmission Operator impact (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation) is armed, the Reliability Coordinators shall be aware of the impact of the operation of that Special Protection System on inter-area flows. The Transmission Operator shall immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.	N/A	N/A	N/A	The Reliability Coordinator failed to be aware of the impact on inter-area flows of an inter-Balancing Authority or inter-Transmission Operator, following the operation of a Special Protection System that was armed (e.g., could potentially affect transmission flows resulting in a SOL or IROL violation). OR The Transmission

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						Operator failed to immediately inform the Reliability Coordinator of the status of the Special Protection System including any degradation or potential failure to operate as expected.
IRO-005-2a	R13.	Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or non-action in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the Interconnection. In instances where there is a difference in derived limits, the Reliability Coordinator and its Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.	N/A	N/A	N/A	The Reliability Coordinator failed to ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operated to prevent the likelihood that a disturbance, action, or non-action in its Reliability Coordinator Area could result in a SOL or IROL violation in another area of the Interconnection. OR The responsible entity failed to operate the Bulk Electric System to the most limiting parameter in instances where there was a

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						difference in derived limits.
IRO-005-2a	R14.	Each Reliability Coordinator shall make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view. The Transmission Service Providers shall respect these SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.	N/A	N/A	N/A	The Reliability Coordinator failed to make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view. OR The Transmission Service Providers failed to respect these SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.
IRO-005-2a	R15.	Each Reliability Coordinator who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area shall issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area without delay. The receiving Reliability Coordinator shall disseminate this information to its impacted Transmission Operators and Balancing Authorities. The Reliability Coordinator shall notify all impacted Transmission Operators, Balancing Authorities, when the transmission problem has been mitigated.	N/A	The Reliability Coordinator failed to notify all impacted Transmission Operators and Balancing Authorities, when the transmission problem had been mitigated.	N/A	The Reliability Coordinator who foresaw a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) within its Reliability Coordinator Area failed to issue an alert to all impacted Transmission Operators and Balancing Authorities in its Reliability

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						Coordinator Area. OR The receiving Reliability Coordinator failed to disseminate this information to its impacted Transmission Operators and Balancing Authorities.
IRO-005-2a	R16.	Each Reliability Coordinator shall confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. The Reliability Coordinator shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.	N/A	N/A	The Reliability Coordinator confirmed the reliability assessment results and determined the effects within its own and adjacent Reliability Coordinator Areas and discussed options to mitigate potential or actual SOL or IROL violations, but failed to take actions as necessary to always act in the best interests of the Interconnection at all times.	The Reliability Coordinator failed to confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. OR The Reliability Coordinator failed to discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.
IRO-005-2a	R17.	When an IROL or SOL is exceeded, the Reliability Coordinator shall evaluate the local and wide-area impacts, both real-time and post-contingency, and determine if the actions being taken are appropriate and sufficient to return the system to within	N/A	N/A	N/A	The Reliability Coordinator either failed to evaluate the local and wide-area impacts of an IROL or SOL that was

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		IROL in thirty minutes. If the actions being taken are not appropriate or sufficient, the Reliability Coordinator shall direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.				exceeded, in either real-time or post-contingency. OR The Reliability Coordinator evaluated the local and wide-area impacts of an IROL or SOL that was exceeded, both real-time and post-contingency, and determined that the actions being taken were not appropriate and sufficient to return the system to within IROL in thirty (30) minutes, but failed to direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.
IRO-006-5	R1.	Each Reliability Coordinator and Balancing Authority that receives a request pursuant to an Interconnection-wide transmission loading relief procedure (such as Eastern Interconnection TLR, WECC Unscheduled Flow Mitigation, or congestion management procedures from the ERCOT Protocols) from any Reliability Coordinator, Balancing Authority, or Transmission Operator in another Interconnection to curtail an Interchange Transaction that crosses an	N/A	N/A	N/A	The responsible entity received a request to curtail an Interchange Transaction crossing an Interconnection boundary pursuant to an Interconnection-wide transmission loading relief procedure from a Reliability

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		Interconnection boundary shall comply with the request, unless it provides a reliability reason to the requestor why it cannot comply with the request.				Coordinator, Balancing Authority, or Transmission Operator, but the entity neither complied with the request, nor provided a reliability reason why it could not comply with the request.
IRO-006-EAST-1	R1.	<p>When acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's TV, each Reliability Coordinator shall initiate, prior to or concurrently with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated), one or more of the following actions:</p> <ul style="list-style-type: none"> • Inter-area redispatch of generation • Intra-area redispatch of generation • Reconfiguration of the transmission system • Voluntary load reductions (e.g., Demand-side Management) • Controlled load reductions (e.g., load shedding) 	N/A	N/A	N/A	When acting or instructing others to act to mitigate the magnitude and duration of the instance of exceeding an IROL within that IROL's Tv, the Reliability Coordinator did not initiate one or more of the actions listed under R1 prior to or in conjunction with the initiation of the Eastern Interconnection TLR procedure (or continuing management of this procedure if already initiated).
IRO-006-EAST-1	R2.	To ensure operating entities are provided with information needed to maintain an awareness of changes to the Transmission System, when initiating the Eastern Interconnection TLR procedure to prevent or mitigate an SOL or IROL exceedance, and at	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR	The Reliability Coordinator initiating the Eastern Interconnection TLR procedure missed identifying the TLR

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		<p>least every clock hour (with the exception of TLR-1, where an hourly update is not required) after initiation up to and including the hour when the TLR level has been identified as TLR Level 0, the Reliability Coordinator shall identify:</p> <p>2.1. A list of congestion management actions to be implemented, and</p> <p>2.2. One of the following TLR levels: TLR-1, TLR-2, TLR-3A, TLR-3B, TLR-4, TLR-5A, TLR-5B, TLR-6, TLR-0</p>	Level and/or a list of congestion management actions to take as specified by the requirement for one clock hour during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	the TLR Level and/or a list of congestion management actions to take as specified by the requirement for two clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	Level and/or a list of congestion management actions to take as specified by the requirement for three clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.	Level and/or a list of congestion management actions to take as specified by the requirement for four or more clock hours during the period from initiation up to the hour when the TLR level was identified as TLR Level 0.
IRO-006-EAST-1	R3.	<p>Upon the identification of the TLR level and a list of congestion management actions to be implemented, the Reliability Coordinator initiating this TLR procedure shall:</p> <ul style="list-style-type: none"> ○ Notify all Reliability Coordinators in the Eastern Interconnection of the identified TLR level ○ Communicate the list of congestion management actions to be implemented to 1.) all Reliability Coordinators in the Eastern Interconnection, and 2.) those Reliability Coordinators in other Interconnections responsible for curtailing Interchange Transactions crossing Interconnection boundaries identified in the list of congestion management actions. ○ Request that the congestion management actions identified in Requirement R2, Part 2.1 be implemented by: <ul style="list-style-type: none"> 1.) Each Reliability Coordinator associated with a Sink Balancing Authority for which Interchange 	The initiating Reliability Coordinator did not notify one or more Reliability Coordinators in the Eastern Interconnection of the TLR Level (3.1).	N/A	<p>The initiating Reliability Coordinator did not communicate the list of congestion management actions to one or more of the Reliability Coordinators listed in Requirement R3, Part 3.2.</p> <p>OR</p> <p>The initiating Reliability Coordinator requested some, but not all, of the Reliability Coordinators identified in Requirement R3, Part 3.3 to implement the identified congestion management actions.</p>	The initiating Reliability Coordinator requested none of the Reliability Coordinators identified in Requirement R3, Part 3.3 to implement the identified congestion management actions.

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		<p>Transactions are to be curtailed,</p> <p>2.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which Network Integration Transmission Service or Native Load is to be curtailed, and</p> <p>3.) Each Reliability Coordinator associated with a Balancing Authority in the Eastern Interconnection for which its Market Flow is to be curtailed.</p>				
IRO-006-EAST-1	R4.	<p>Each Reliability Coordinator that receives a request as described in Requirement R3, Part 3.3. shall, within 15 minutes of receiving the request, implement the congestion management actions requested by the issuing Reliability Coordinator as follows:</p> <ul style="list-style-type: none"> • Instruct its Balancing Authorities to implement the Interchange Transaction schedule change requests. • Instruct its Balancing Authorities to implement the Network Integration Transmission Service and Native Load schedule changes for which the Balancing Authorities are responsible. • Instruct its Balancing Authorities to implement the Market Flow schedule changes for which the Balancing Authorities are responsible. • If an assessment determines shows that one or more of the congestion management actions communicated in Requirement R3, Part 3.3 will result in a reliability concern or will be 	N/A	N/A	N/A	<p>The responding Reliability Coordinator did not, within 15 minutes of receiving a request, either 1.) implement all the requested congestion management actions, or 2.) implement none or some of the requested congestion management actions and replace the remainder with alternate congestion management actions, provided that: assessment showed that the actions replaced would have resulted in a reliability concern or would have been ineffective, the alternate congestion</p>

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		<p>ineffective, the Reliability Coordinator may replace those specific actions with alternate congestion management actions, provided that:</p> <ul style="list-style-type: none"> ○ The alternate congestion management actions have been agreed to by the initiating Reliability Coordinator, and ○ The assessment shows that the alternate congestion management actions will not adversely affect reliability. 				management actions were agreed to by the initiating Reliability Coordinator, and assessment determined that the alternate congestion management actions would not adversely affect reliability.
IRO-006-WECC-1	R1.	Upon receiving a request of Step 4 or greater (see Attachment 1-IRO-006-WECC-1) from the Transmission Operator of a Qualified Transfer Path, the Reliability Coordinator shall approve (actively or passively) or deny that request within five minutes.	There shall be a Lower Level of non-compliance if there is one instance during a calendar month in which the Reliability Coordinator approved (actively or passively) or denied a Step 4 or greater request greater than five minutes after receipt of notification from the Transmission Operator of a Qualified Transfer Path.	N/A	N/A	N/A
IRO-006-WECC-1	R2.	The Balancing Authorities shall approve curtailment requests to the schedules as submitted, implement alternative actions, or a combination there of that collectively meets the Relief Requirement.	There shall be a Lower Level of non-compliance if there is less than 100% Relief Requirement provided but greater than or equal to 90% Relief Requirement provided or the Relief	There shall be a Moderate Level of non-compliance if there is less than 90% Relief Requirement provided but greater than or equal to 75% Relief Requirement	There shall be a High Level of non-compliance if there is less than 75% Relief Requirement provided but greater than or equal to 60% Relief Requirement provided and the Relief	There shall be a Severe Level of non-compliance if there is less than 60% Relief Requirement provided and the Relief Requirement was greater than 5 MW

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			Requirement was less than 5 MW and was not provided.	provided and the Relief Requirement was greater than 5 MW and was not provided.	Requirement was greater than 5 MW and was not provided.	and was not provided.
IRO-014-1	R1.	The Reliability Coordinator shall have Operating Procedures, Processes, or Plans in place for activities that require notification, exchange of information or coordination of actions with one or more other Reliability Coordinators to support Interconnection reliability. These Operating Procedures, Processes, or Plans shall address Scenarios that affect other Reliability Coordinator Areas as well as those developed in coordination with other Reliability Coordinators.	N/A	N/A	The Reliability Coordinator has Operating Procedures, Processes, or Plans in place for activities that require notification, exchange of information or coordination of actions with one or more other Reliability Coordinators to support Interconnection reliability, but failed to address Scenarios that affect other Reliability Coordinator Areas.	The Reliability Coordinator failed to have Operating Procedures, Processes, or Plans in place for activities that require notification, exchange of information or coordination of actions with one or more other Reliability Coordinators to support Interconnection reliability.
IRO-014-1	R1.1.	These Operating Procedures, Processes, or Plans shall collectively address, as a minimum, the following:	N/A	The Reliability Coordinator failed to include one of the elements listed in IRO-014-1 R1.1.1 through R1.1.6 in its Operating Procedures, Processes, or Plans.	The Reliability Coordinator failed to include two of the elements listed in IRO-014-1 R1.1.1 through R1.1.6 in its Operating Procedures, Processes, or Plans.	The Reliability Coordinator failed to include more than two of the elements listed in IRO-014-1 R1.1.1 through R1.1.6 in its Operating Procedures, Processes, or Plans.
IRO-014-1	R1.1.1.	Communications and notifications, including the conditions under which one Reliability Coordinator notifies other Reliability Coordinators; the process to follow in making those notifications; and the data and information to be exchanged with other	N/A	N/A	N/A	N/A

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		Reliability Coordinators.				
IRO-014-1	R1.1.2.	Energy and capacity shortages.	N/A	N/A	N/A	N/A
IRO-014-1	R1.1.3.	Planned or unplanned outage information.	N/A	N/A	N/A	N/A
IRO-014-1	R1.1.4.	Voltage control, including the coordination of reactive resources for voltage control.	N/A	N/A	N/A	N/A
IRO-014-1	R1.1.5.	Coordination of information exchange to support reliability assessments.	N/A	N/A	N/A	N/A
IRO-014-1	R1.1.6.	Authority to act to prevent and mitigate instances of causing Adverse Reliability Impacts to other Reliability Coordinator Areas.	N/A	N/A	N/A	N/A
IRO-014-1	R2.	Each Reliability Coordinator's Operating Procedure, Process, or Plan that requires one or more other Reliability Coordinators to take action (e.g., make notifications, exchange information, or coordinate actions) shall be:	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan failed to comply with either IRO-014-1 R2.1 or R2.2.
IRO-014-1	R2.1.	Agreed to by all the Reliability Coordinators required to take the indicated action(s).	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan was not agreed to by all the Reliability Coordinators required to take the indicated action(s).
IRO-014-1	R2.2.	Distributed to all Reliability Coordinators that are required to take the indicated action(s).	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan was not distributed to all Reliability Coordinators that are required to take the

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						indicated action(s).
IRO-014-1	R3.	A Reliability Coordinator's Operating Procedures, Processes, or Plans developed to support a Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan shall include:	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan failed to comply with either IRO-014-1 R3.1 or R3.2.
IRO-014-1	R3.1.	A reference to the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan failed to reference the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.
IRO-014-1	R3.2.	The agreed-upon actions from the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.	N/A	N/A	N/A	The Reliability Coordinator's Operating Procedure, Process, or Plan failed to include the agreed-upon actions from the associated Reliability Coordinator-to-Reliability Coordinator Operating Procedure, Process, or Plan.
IRO-014-1	R4.	Each of the Operating Procedures, Processes, and Plans addressed in Reliability Standard IRO-014 Requirement 1 and Requirement 3 shall:	N/A	The Operating Procedures, Processes and Plans did not include one of the elements listed in IRO-014-1	The Operating Procedures, Processes and Plans did not include two of the elements listed in IRO-014-1 R4.1 through	The Operating Procedures, Processes and Plans did not include any of the elements listed in IRO-014-1 R4.1

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				R4.1 through R4.3.	R4.3.	through R4.3.
IRO-014-1	R4.1.	Include version control number or date	N/A	N/A	N/A	N/A
IRO-014-1	R4.2.	Include a distribution list.	N/A	N/A	N/A	N/A
IRO-014-1	R4.3.	Be reviewed, at least once every three years, and updated if needed.	N/A	N/A	N/A	N/A
IRO-015-1	R1.	The Reliability Coordinator shall follow its Operating Procedures, Processes, or Plans for making notifications and exchanging reliability-related information with other Reliability Coordinators.	N/A	The Reliability Coordinator failed to follow its Operating Procedures, Processes, or Plans for making notifications and exchanging reliability-related information with other Reliability Coordinators but no adverse reliability impacts resulted from the incident.	N/A	The Reliability Coordinator failed to follow its Operating Procedures, Processes, or Plans for making notifications and exchanging reliability-related information with other Reliability Coordinators and adverse reliability impacts resulted from the incident.
IRO-015-1	R1.1.	The Reliability Coordinator shall make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas.	N/A	The Reliability Coordinator failed to make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas but no adverse reliability impacts resulted from the	N/A	The Reliability Coordinator failed to make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas and adverse reliability impacts resulted from the incident.

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				incident.		
IRO-015-1	R2.	The Reliability Coordinator shall participate in agreed upon conference calls and other communication forums with adjacent Reliability Coordinators.	N/A	N/A	N/A	The Reliability Coordinator failed to participate in agreed upon conference calls and other communication forums with adjacent Reliability Coordinators.
IRO-015-1	R2.1.	The frequency of these conference calls shall be agreed upon by all involved Reliability Coordinators and shall be at least weekly.	N/A	N/A	N/A	The Reliability Operator failed to participate in the assessment of the need and frequency of conference calls with other Reliability Operators.
IRO-015-1	R3.	The Reliability Coordinator shall provide reliability-related information as requested by other Reliability Coordinators.				The Reliability Coordinator failed to provide reliability-related information as requested by other Reliability Coordinators.
IRO-016-1	R1.	The Reliability Coordinator that identifies a potential, expected, or actual problem that requires the actions of one or more other Reliability Coordinators shall contact the other Reliability Coordinator(s) to confirm that there is a problem and then discuss options and decide upon a solution to prevent or resolve the identified problem.	The Reliability Coordinator that identified a potential, expected, or actual problem that required the actions of one or more other Reliability Coordinators, contacted the other Reliability Coordinator(s) to confirm that there was	N/A	N/A	The Reliability Coordinator that identified a potential, expected, or actual problem that required the actions of one or more other Reliability Coordinators failed to contact the other Reliability Coordinator(s) to confirm that there was

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			a problem, discussed options and decided upon a solution to prevent or resolve the identified problem, but failed to have evidence that it coordinated with other Reliability Coordinators.			a problem, discuss options and decide upon a solution to prevent or resolve the identified problem.
IRO-016-1	R1.1.	If the involved Reliability Coordinators agree on the problem and the actions to take to prevent or mitigate the system condition, each involved Reliability Coordinator shall implement the agreed-upon solution, and notify the involved Reliability Coordinators of the action(s) taken.	The responsible entity agreed on the problem and the actions to take to prevent or mitigate the system condition, implemented the agreed-upon solution, but failed to notify the involved Reliability Coordinators of the action(s) taken.	N/A	N/A	The responsible entity agreed on the problem and the actions to take to prevent or mitigate the system condition, but failed to implement the agreed-upon solution.
IRO-016-1	R1.2.	If the involved Reliability Coordinators cannot agree on the problem(s) each Reliability Coordinator shall re-evaluate the causes of the disagreement (bad data, status, study results, tools, etc.).	N/A	N/A	N/A	The involved Reliability Coordinators could not agree on the problem(s), but a Reliability Coordinator failed to re-evaluate the causes of the disagreement (bad data, status, study results, tools, etc.).
IRO-016-1	R1.2.1.	If time permits, this re-evaluation shall be done before taking corrective actions.	N/A	N/A	N/A	The Reliability Coordinator failed to re-evaluate the problem prior to taking corrective actions, during periods

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						when time was not an issue.
IRO-016-1	R1.2.2.	If time does not permit, then each Reliability Coordinator shall operate as though the problem(s) exist(s) until the conflicting system status is resolved.	N/A	N/A	N/A	The Reliability Coordinator failed to operate as though the problem(s) exist(s) until the conflicting system status was resolved, during periods when time was an issue.
IRO-016-1	R1.3.	If the involved Reliability Coordinators cannot agree on the solution, the more conservative solution shall be implemented.	N/A	N/A	N/A	The Reliability Coordinator implemented a solution other than the most conservative solution, when agreement on the solution could not be reached.
IRO-016-1	R2.	The Reliability Coordinator shall document (via operator logs or other data sources) its actions taken for either the event or for the disagreement on the problem(s) or for both.	N/A	N/A	N/A	The Reliability Coordinator failed to document (via operator logs or other data sources) its actions taken for either the event or for the disagreement on the problem(s) or for both.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
MOD-010-0	R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R 1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide less than or equal to 25% of the appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R 1	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 25% but less than or equal to 50% of the appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 50% but less than or equal to 75% of the appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 75% of the appropriate equipment characteristics, system data, and existing and future Interchange Schedules in compliance with its respective Interconnection Regional steady-state modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-011-0_R1.
MOD-010-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-011-0_R1) shall provide this steady-state modeling and simulation data to the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. If no schedule exists, then	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide less than or equal to 25% of the steady-state modeling and simulation data to	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 25% but less than or equal to	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 50% but less than or equal to 75% of the steady-state modeling	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 75% of the steady-state modeling and simulation data to the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		these entities shall provide the data on request (30 calendar days).	the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners provided data more than 30 but less than or equal to 35 calendar days following the request.	50% of the steady-state modeling and simulation data to the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners provided data more than 35 but less than or equal to 40 calendar days following the request.	and simulation data to the Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners provided data more than 40 but less than or equal to 45 calendar days following the request.	Regional Reliability Organizations, NERC, and those entities specified within Reliability Standard MOD-011-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide data more than 45 calendar days following the request.
MOD-012-0	R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R1) shall provide appropriate equipment characteristics and system data in compliance with the respective Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide less than or equal to 25% of the appropriate equipment characteristics and system data in compliance with the respective	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 25% but less than 50% of the appropriate equipment characteristics and	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 50% but less than 75% of the appropriate equipment characteristics and system data in compliance with the	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 75% of the appropriate equipment characteristics and system data in compliance with the respective

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1	system data in compliance with the respective Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1.	respective Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1.	Interconnection-wide Regional dynamics system modeling and simulation data requirements and reporting procedures as defined in Reliability Standard MOD-013-0_R1.
MOD-012-0	R2.	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners (specified in the data requirements and reporting procedures of MOD-013-0_R4) shall provide dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. If no schedule exists, then these entities shall provide data on request (30 calendar days).	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide less than or equal to 25% of the dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1 OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 25% but less than 50% of the dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. OR If no schedule exists, The	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 50% but less than 75% of the dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners provided data	The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to provide greater than 75% of the dynamics system modeling and simulation data to its Regional Reliability Organization(s), NERC, and those entities specified within the applicable reporting procedures identified in Reliability Standard MOD-013-0_R 1. OR If no schedule exists, The Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners failed to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			Planners provided data more than 30 but less than or equal to 35 calendar days following the request.	Transmission Owners, Transmission Planners, Generator Owners, and Resource Planners provided data more than 35 but less than or equal to 40 calendar days following the request.	more than 40 but less than or equal to 45 calendar days following the request.	provide data more than 45 calendar days following the request.
MOD-016-1.1	R1.	The Planning Authority and Regional Reliability Organization shall have documentation identifying the scope and details of the actual and forecast (a) Demand data, (b) Net Energy for Load data, and (c) controllable DSM data to be reported for system modeling and reliability analyses.	N/A	The responsible entity did not have documentation identifying the scope and details of the actual and forecast data for one (1) of the following types of data to be reported for system modeling and reliability analyses: <ul style="list-style-type: none"> • Demand data • Net Energy for Load data • Controllable DSM data 	The responsible entity did not have documentation identifying the scope and details of the actual and forecast data for two (2) of the following to be reported for system modeling and reliability analyses: <ul style="list-style-type: none"> • Demand data • Net Energy for Load data • Controllable DSM data 	The responsible entity did not have documentation identifying the scope and details of the actual and forecast data to be reported for system modeling and reliability analyses.
MOD-016-1.1	R1.1.	The aggregated and dispersed data submittal requirements shall ensure that consistent data is supplied for Reliability Standards TPL-005, TPL-006, MOD-010, MOD-011, MOD-012, MOD-013, MOD-014, MOD-015, MOD-016, MOD-017, MOD-018, MOD-019, MOD-020, and MOD-021. The data submittal requirements shall stipulate that	The responsible entity failed to ensure that consistent data is supplied for one of the Reliability Standards as specified in R1.1.	The responsible entity failed to ensure that consistent data is supplied for two of the Reliability Standards as specified in R1.1.	The responsible entity failed to ensure that consistent data is supplied for three of the Reliability Standards as specified in R1.1.	The responsible entity failed to ensure that consistent data is supplied for four or more of the Reliability Standards as specified in R1.1.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		each Load-Serving Entity count its customer Demand once and only once, on an aggregated and dispersed basis, in developing its actual and forecast customer Demand values.				OR The responsible entity failed to stipulate that each Load-Serving Entity count its customer Demand once and only once, on an aggregated and dispersed basis, in developing its actual and forecast customer Demand values.
MOD-016-1.1	R2.	The Regional Reliability Organization shall distribute its documentation required in Requirement 1 and any changes to that documentation, to all Planning Authorities that work within its Region.	N/A	N/A	The Regional Reliability Organization distributed its documentation as specified in R1 but failed to distribute any changes to that documentation, to all Planning Authorities that work within its Region.	The Regional Reliability Organization failed to distribute its documentation as specified in R1 to all Planning Authorities that work within its Region.
MOD-016-1.1	R2.1.	The Regional Reliability Organization shall make this distribution within 30 calendar days of approval.	The Regional Reliability Organization distributed the documentation more than 30 but less than or equal to 37 calendar days following approval.	The Regional Reliability Organization made the distribution more than 37 but less than or equal to 51 calendar days following approval.	The Regional Reliability Organization made the distribution more than 51 but less than or equal to 58 calendar days following approval.	The Regional Reliability Organization failed to make the distribution more than 58 calendar days following approval.
MOD-016-1.1	R3.	The Planning Authority shall distribute its documentation required in R1 for reporting customer data and any changes to that documentation, to its Transmission Planners and	The responsible entity failed to distribute its documentation required in Requirement R1 and	The responsible entity failed to distribute its documentation required in	The responsible entity failed to distribute its documentation required in Requirement R1 and any changes to that	The responsible entity failed to distribute its documentation as specified in Requirement R1 to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Load-Serving Entities that work within its Planning Authority Area.	any changes to that documentation to 5% or less of all Transmission Planners and Load-Serving Entities that work within its Region. OR The responsible entity distributed the documentation more than 30 calendar days but less than or equal to 40 calendar days following approval.	Requirement R1 and any changes to that documentation to more than 5% up to (and including) 10% of all Transmission Planners and Load-Serving Entities that work within its Region. OR The responsible entity made the distribution more than 40 calendar days but less than or equal to 50 calendar days following approval.	documentation to more than 10% up to (and including) 15% of all Transmission Planners and Load-Serving Entities that work within its Region. OR The responsible entity made the distribution more than 50 calendar days but less than or equal to 60 calendar days following approval.	more than 15% of all Transmission Planners and Load-Serving Entities that work within its Region. OR The responsible entity failed to make the distribution more than 60 calendar days following approval.
MOD-016-1.1	R3.1.	The Planning Authority shall make this distribution within 30 calendar days of approval.	N/A	N/A	N/A	N/A
MOD-017-0.1	R1.	The Load-Serving Entity, Planning Authority, and Resource Planner shall each provide the following information annually on an aggregated Regional, subregional, Power Pool, individual system, or Load-Serving Entity basis to NERC, the Regional Reliability Organizations, and any other entities specified by the documentation in Standard MOD-016-1_R 1.	The responsible entity failed to provide one (1) of the elements of information as specified in R1.1, R1.2, R1.3 or R1.4 on an annual basis.	The responsible entity failed to provide two (2) of the elements of information as specified in R1.1, R1.2, R1.3 or R1.4 on an annual basis.	The responsible entity failed to provide three (3) of the elements of information as specified in R1.1, R1.2, R1.3 or R1.4 on an annual basis.	The responsible entity failed to provide all of the elements of information as specified in R1.1, R1.2, R1.3 and R1.4 on an annual basis.
MOD-017-0.1	R1.1.	Integrated hourly demands in megawatts (MW) for the prior year.	N/A	N/A	N/A	N/A
MOD-017-0.1	R1.2.	Monthly and annual peak hour actual demands in MW and Net Energy for Load in gigawatthours (GWh) for the prior year.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
MOD-017-0.1	R1.3.	Monthly peak hour forecast demands in MW and Net Energy for Load in GWh for the next two years.	N/A	N/A	N/A	N/A
MOD-017-0.1	R1.4.	Annual Peak hour forecast demands (summer and winter) in MW and annual Net Energy for load in GWh for at least five years and up to ten years into the future, as requested.	N/A	N/A	N/A	N/A
MOD-018-0	R1.	The Load-Serving Entity, Planning Authority, Transmission Planner and Resource Planner's report of actual and forecast demand data (reported on either an aggregated or dispersed basis) shall:	N/A	The responsible entity's report failed to include one (1) of the items as specified in R1.1, R1.2, or R1.3.	The responsible entity's report failed to include two (2) of the items as specified in R1.1, R1.2, or R1.3.	The responsible entity's report failed to include any of the items as specified in R1.1, R1.2, and R1.3.
MOD-018-0	R1.1.	Indicate whether the demand data of nonmember entities within an area or Regional Reliability Organization are included, and	N/A	N/A	N/A	N/A
MOD-018-0	R1.2.	Address assumptions, methods, and the manner in which uncertainties are treated in the forecasts of aggregated peak demands and Net Energy for Load.	N/A	N/A	N/A	N/A
MOD-018-0	R1.3.	Items (MOD-018-0_R 1.1) and (MOD-018-0_R 1.2) shall be addressed as described in the reporting procedures developed for Standard MOD-016-1_R 1.	N/A	N/A	N/A	N/A
MOD-018-0	R2.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner shall each report data associated with Reliability Standard MOD-018-0_R1 to NERC, the Regional Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner on request (within 30 calendar days).	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner reported the data associated with Reliability Standard MOD-018-0_R1 to NERC, the Regional	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner reported the data associated with Reliability Standard MOD-018-0_R1 to	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner reported the data associated with Reliability Standard MOD-018-0_R1 to NERC, the Regional	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to report the data associated with Reliability Standard MOD-018-0_R1 to NERC, the Regional

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner more than 30 but less than or equal to 45 calendar days following the request.	NERC, the Regional Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner more than 45 but less than or equal to 60 calendar days following the request.	Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner more than 60 but less than or equal to 75 calendar days following the request.	Reliability Organization, Load-Serving Entity, Planning Authority, and Resource Planner more than 75 calendar days following the request.
MOD-019-0.1	R1.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner shall each provide annually its forecasts of interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard MOD-016-0_R 1.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to provide annually less than or equal to 25% of the interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to provide annually greater than 25% but less than or equal to 50% of the interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to provide annually greater than 50% but less than or equal to 75% of the interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to provide annually greater than 75% of the interruptible demands and Direct Control Load Management (DCLM) data for at least five years and up to ten years into the future, as requested, for summer and winter peak system conditions to NERC, the Regional Reliability Organizations, and other entities (Load-Serving Entities, Planning Authorities, and Resource Planners) as specified by the documentation in Reliability Standard

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			MOD-016-0_R 1.	Authorities, and Resource Planners) as specified by the documentation in Reliability Standard MOD-016-0_R1.	MOD-016-0_R1.	MOD-016-0_R1.
MOD-020-0	R1.	The Load-Serving Entity, Transmission Planner, and Resource Planner shall each make known its amount of interruptible demands and Direct Control Load Management (DCLM) to Transmission Operators, Balancing Authorities, and Reliability Coordinators on request within 30 calendar days.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner made known its amount of interruptible demands and Direct Control Load Management (DCLM) more than 30 but less than 45 calendar days following the request from Transmission Operators, Balancing Authorities, and Reliability Coordinators.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner made known its amount of interruptible demands and Direct Control Load Management (DCLM) more than 45 but less than 60 calendar days following the request from Transmission Operators, Balancing Authorities, and Reliability Coordinators.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner made known its amount of interruptible demands and Direct Control Load Management (DCLM) more than 60 but less than 75 calendar days following the request from Transmission Operators, Balancing Authorities, and Reliability Coordinators.	The Load-Serving Entity, Planning Authority, Transmission Planner, and Resource Planner failed to make known its amount of interruptible demands and Direct Control Load Management (DCLM) more than 75 calendar days following the request from Transmission Operators, Balancing Authorities, and Reliability Coordinators.
MOD-021-1	R1.	The Load-Serving Entity, Transmission Planner and Resource Planner's forecasts shall each clearly document how the Demand and energy effects of DSM programs (such as conservation, time-of-use rates, interruptible Demands, and Direct Control Load Management) are addressed.	Load-Serving Entity, Transmission Planner, and Resource Planner's forecasts document how the Demand and energy effects of DSM programs but failed to document how one (1)	Load-Serving Entity, Transmission Planner, and Resource Planner's forecasts document how the Demand and energy effects of DSM programs but failed to	Load-Serving Entity, Transmission Planner, and Resource Planner's forecasts document how the Demand and energy effects of DSM programs but failed to document how three (3) of the following	Load-Serving Entity, Transmission Planner, and Resource Planner's forecasts failed to document how the Demand and energy effects of DSM programs are addressed.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			of the following elements of the Demand and energy effects of DSM programs are addressed: conservation, time-of-use rates, interruptible Demands or Direct Control Load Management.	document how two (2) of the following elements of the Demand and energy effects of DSM programs are addressed: conservation, time-of-use rates, interruptible Demands or Direct Control Load Management.	elements of the Demand and energy effects of DSM programs are addressed: conservation, time-of-use rates, interruptible Demands or Direct Control Load Management.	
MOD-021-1	R2.	The Load-Serving Entity, Transmission Planner and Resource Planner shall each include information detailing how Demand-Side Management measures are addressed in the forecasts of its Peak Demand and annual Net Energy for Load in the data reporting procedures of Standard MOD-016-0_R1.	N/A	N/A	N/A	The Load-Serving Entity, Transmission Planner, and Resource Planner failed to include information detailing how Demand-Side Management measures are addressed in the forecasts of its Peak Demand and annual Net Energy for Load in the data reporting procedures of Standard MOD-016-0_R 1.
MOD-021-1	R3.	The Load-Serving Entity, Transmission Planner and Resource Planner shall each make documentation on the treatment of its DSM programs available to NERC on request (within 30 calendar days).	The Load-Serving Entity, Transmission Planner, and Resource Planner provided documentation on the treatment of its DSM programs more than 30 but less than 45 calendar days	The Load-Serving Entity, Transmission Planner, and Resource Planner provided documentation on the treatment of its DSM programs more than 45 but	The Load-Serving Entity, Transmission Planner, and Resource Planner provided documentation on the treatment of its DSM programs more than 60 but less than 75 calendar days following	The Load-Serving Entity, Transmission Planner, and Resource Planner failed to provide documentation on the treatment of its DSM programs more than 75 calendar days following the request

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			following the request from NERC.	less than 60 calendar days following the request from NERC.	the request from NERC.	from NERC.

**Complete Violation Severity Level Matrix (NUC)
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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
NUC-001-2	R1.	The Nuclear Plant Generator Operator shall provide the proposed NPIRs in writing to the applicable Transmission Entities and shall verify receipt.	The Nuclear Plant Generator Operator provided the NPIR's to the applicable entities but did not verify receipt.	The Nuclear Plant Generator Operator did not provide the proposed NPIR to one of the applicable entities.	The Nuclear Plant Generator Operator did not provide the proposed NPIR's to two of the applicable entities.	The Nuclear Plant Generator Operator did not provide the proposed NPIR's to more than two of applicable entities.
NUC-001-2	R2.	The Nuclear Plant Generator Operator and the applicable Transmission Entities shall have in effect one or more Agreements that include mutually agreed to NPIRs and document how the Nuclear Plant Generator Operator and the applicable Transmission Entities shall address and implement these NPIRs.	N/A	N/A	N/A	The Nuclear Plant Generator Operator or the applicable Transmission Entity does not have in effect one or more agreements that include mutually agreed to NPIRs and document the implementation of the NPIRs.
NUC-001-2	R3.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall incorporate the NPIRs into their planning analyses of the electric system and shall communicate the results of these analyses to the Nuclear Plant Generator Operator.	N/A	The responsible entity incorporated the NPIRs into its planning analyses but did not communicate the results to the Nuclear Plant Generator Operator.	N/A	The responsible entity did not incorporate the NPIRs into its planning analyses of the electric system.
NUC-001-2	R4.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall:	The applicable Transmission Entity failed to incorporate one or more applicable NPIRs into their operating analyses.	The applicable Transmission Entity failed to incorporate any NPIRs into their operating analyses OR did not inform NPG operator when their ability of	The applicable Transmission Entity failed to operate the system to meet the NPIRs	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				assess the operation of the electric system affecting the NPIRs was lost.		
NUC-001-2	R4.1	Incorporate the NPIRs into their operating analyses of the electric system.	N/A	N/A	N/A	N/A
NUC-001-2	R4.2	Operate the electric system to meet the NPIRs.	N/A	N/A	N/A	N/A
NUC-001-2	R4.3	Inform the Nuclear Plant Generator Operator when the ability to assess the operation of the electric system affecting NPIRs is lost.	N/A	N/A	N/A	N/A
NUC-001-2	R5.	The Nuclear Plant Generator Operator shall operate per the Agreements developed in accordance with this standard.	N/A	N/A	N/A	The Nuclear Plant Generator Operator failed to operate per the Agreements developed in accordance with this standard.
NUC-001-2	R6.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities and the Nuclear Plant Generator Operator shall coordinate outages and maintenance activities which affect the NPIRs.	The Nuclear Operator or Transmission Entity failed to coordinate outages or maintenance activities in accordance with one or more of the <u>administrative</u> elements within the agreements.	The Nuclear Operator or Transmission Entity failed to provide outage or maintenance <u>schedules</u> to the appropriate parties as described in the agreement or on a time period consistent with the agreements.	The Nuclear Operator or Transmission Entity failed to coordinate one or more outages or maintenance activities in accordance the requirements of the agreements.	N/A
NUC-001-2	R7.	Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design,	The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities	The Nuclear Plant Generator Operator did not inform the applicable Transmission	The Nuclear Plant Generator Operator did not inform the applicable Transmission Entities	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	of <u>proposed</u> changes to nuclear plant design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	Entities of <u>actual</u> changes to nuclear plant design, configuration, operations, limits, protection systems, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs.	of <u>actual</u> changes to nuclear plant design, configuration, operations, limits, protection systems, or capabilities that <u>directly impact</u> the ability of the electric system to meet the NPIRs.	
NUC-001-2	R8.	Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	The applicable Transmission Entities did not inform the Nuclear Plant Generator Operator of <u>proposed</u> changes to transmission system design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs.	The applicable Transmission Entities did not inform the Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design, configuration, operations, limits, protection systems, or capabilities that <u>may</u> impact the ability of the electric system to meet the NPIRs.	The applicable Transmission Entities did not inform the Nuclear Plant Generator Operator of <u>actual</u> changes to transmission system design, configuration, operations, limits, protection systems, or capabilities that <u>directly impacts</u> the ability of the electric system to meet the NPIRs.	N/A
NUC-001-2	R9.	The Nuclear Plant Generator Operator and the applicable Transmission Entities shall include, as a minimum, the following elements within the agreement(s) identified in R2:	The agreement identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entities is missing one or more sub-components of R9.1.	The agreement identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entities is missing from one to five of the combined sub-	The agreement identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entities is missing from six to ten of the combined sub-components in R9.2,	The agreement identified in R2. between the Nuclear Plant Generator Operator and the applicable Transmission Entities is missing eleven or more of the combined sub-components in

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				components in R9.2, R9.3 and R9.4.	R9.3 and R9.4.	R9.2, R9.3 and R9.4.
NUC-001-2	R9.1	Administrative elements:	N/A	N/A	N/A	N/A
NUC-001-2	R9.1.1	Definitions of key terms used in the agreement.	N/A	N/A	N/A	N/A
NUC-001-2	R9.1.2	Names of the responsible entities, organizational relationships, and responsibilities related to the NPIRs.	N/A	N/A	N/A	N/A
NUC-001-2	R9.1.3	A requirement to review the agreement(s) at least every three years.	N/A	N/A	N/A	N/A
NUC-001-2	R9.1.4	A dispute resolution mechanism.	N/A	N/A	N/A	N/A
NUC-001-2	R9.2	Technical requirements and analysis:	N/A	N/A	N/A	N/A
NUC-001-2	R9.2.1	Identification of parameters, limits, configurations, and operating scenarios included in the NPIRs and, as applicable, procedures for providing any specific data not provided within the agreement.	N/A	N/A	N/A	N/A
NUC-001-2	R9.2.2	Identification of facilities, components, and configuration restrictions that are essential for meeting the NPIRs.	N/A	N/A	N/A	N/A
NUC-001-2	R9.2.3	Types of planning and operational analyses performed specifically to support the NPIRs, including the frequency of studies and types of Contingencies and scenarios required.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3	Operations and maintenance coordination:	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.1	Designation of ownership of electrical facilities at the interface between the electric system and the nuclear plant and responsibilities for operational control	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		coordination and maintenance of these facilities.				
NUC-001-2	R9.3.2	Identification of any maintenance requirements for equipment not owned or controlled by the Nuclear Plant Generator Operator that are necessary to meet the NPIRs.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.3	Coordination of testing, calibration and maintenance of on-site and off-site power supply systems and related components.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.4	Provisions to address mitigating actions needed to avoid violating NPIRs and to address periods when responsible Transmission Entity loses the ability to assess the capability of the electric system to meet the NPIRs. These provisions shall include responsibility to notify the Nuclear Plant Generator Operator within a specified time frame.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.5	Provision for considering, within the restoration process, the requirements and urgency of a nuclear plant that has lost all off-site and on-site AC power.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.6	Coordination of physical and cyber security protection of the Bulk Electric System at the nuclear plant interface to ensure each asset is covered under at least one entity's plan.	N/A	N/A	N/A	N/A
NUC-001-2	R9.3.7	Coordination of the NPIRs with transmission system Special Protection Systems and underfrequency and undervoltage load shedding programs.	N/A	N/A	N/A	N/A
NUC-001-2	R9.4	Communications and training:	N/A	N/A	N/A	N/A
NUC-001-	R9.4.1	Provisions for communications between the Nuclear Plant Generator Operator and	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
2		Transmission Entities, including communications protocols, notification time requirements, and definitions of terms.				
NUC-001-2	R9.4.2	Provisions for coordination during an off-normal or emergency event affecting the NPIRs, including the need to provide timely information explaining the event, an estimate of when the system will be returned to a normal state, and the actual time the system is returned to normal.	N/A	N/A	N/A	N/A
NUC-001-2	R9.4.3	Provisions for coordinating investigations of causes of unplanned events affecting the NPIRs and developing solutions to minimize future risk of such events.	N/A	N/A	N/A	N/A
NUC-001-2	R9.4.4	Provisions for supplying information necessary to report to government agencies, as related to NPIRs.	N/A	N/A	N/A	N/A
NUC-001-2	R9.4.5	Provisions for personnel training, as related to NPIRs.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PER-001-0.1	R1.	Each Transmission Operator and Balancing Authority shall provide operating personnel with the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.	N/A	N/A	The Transmission Operator or Balancing Authority failed to demonstrate that it communicated to its operating personnel their responsibility or their authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.	The Transmission Operator or Balancing Authority failed to demonstrate that it communicated to its operating personnel their responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System.
PER-002-0	R1.	Each Transmission Operator and Balancing Authority shall be staffed with adequately trained operating personnel.	The responsible entity failed to staff 5% or less with adequately trained operating personnel.	The responsible entity failed to staff more than 5% up to (and including) 10% with adequately trained operating personnel.	The responsible entity failed to staff more than 10% up to (and including) 15% with adequately trained operating personnel.	The responsible entity failed to staff more than 15% with adequately trained operating personnel.
PER-002-0	R2.	Each Transmission Operator and Balancing Authority shall have a training program for all operating personnel that are in:	The responsible entity did not train operating personnel for positions described in R2.1 or R2.2, affecting 5% or less of its operating personnel.	The responsible entity did not train operating personnel for positions described in R2.1 or R2.2, affecting more than 5% up to (and including) 10% of its operating personnel.	The responsible entity did not train operating personnel for positions described in R2.1 or R2.2, affecting more than 10% up to (and including) 15% of its operating personnel.	The responsible entity did not train operating personnel for positions described in R2.1 or R2.2, affecting more than 15% of its operating personnel.
PER-002-0	R2.1.	Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.	N/A	N/A	N/A	N/A
PER-002-0	R2.2.	Positions directly responsible for complying with NERC standards.	N/A	N/A	N/A	N/A

Complete Violation Severity Level Matrix (PER) Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PER-002-0	R3.	For personnel identified in Requirement R2, the Transmission Operator and Balancing Authority shall provide a training program meeting the following criteria:	The applicable entity did not comply with one of the four required elements.	The applicable entity did not comply with two of the four required elements.	The applicable entity did not comply with three of the four required elements.	The applicable entity did not comply with any of the four required elements.
PER-002-0	R3.1.	A set of training program objectives must be defined, based on NERC and Regional Reliability Organization standards, entity operating procedures, and applicable regulatory requirements. These objectives shall reference the knowledge and competencies needed to apply those standards, procedures, and requirements to normal, emergency, and restoration conditions for the Transmission Operator and Balancing Authority operating positions.	The responsible entity's training program objectives were incomplete (e.g. The responsible entity failed to define training program objectives for less than 25% of the applicable BA and TOP NERC and Regional Reliability Organizations standards, entity operating procedures, and regulatory requirements.)	The responsible entity's training program objectives were incomplete (e.g. The responsible entity failed to define training program objectives for 25% or more but less than 50% of the applicable BA & TOP NERC and Regional Reliability Organizations standards, entity operating procedures, and regulatory requirements.)	The responsible entity's training program objectives were incomplete (e.g. The responsible entity failed to define training program objectives for 50% or more but less than 75% of the applicable BA & TOP NERC and Regional Reliability Organizations standards, entity operating procedures, and regulatory requirements.)	The responsible entity's training program objectives were incomplete (e.g. The responsible entity failed to define training program objectives for 75% or more of the applicable BA & TOP NERC and Regional Reliability Organizations standards, entity operating procedures, and regulatory requirements.)
PER-002-0	R3.2.	The training program must include a plan for the initial and continuing training of Transmission Operator and Balancing Authority operating personnel. That plan shall address knowledge and competencies required for reliable system operations.	The responsible entity does not have a plan for continuing training of operating personnel. OR The responsible entity does not have a plan for initial training of operating personnel. OR The responsible entity's plan does not address the	The responsible entity does not have a plan for continuing training of operating personnel. OR The responsible entity does not have a plan for initial training of operating personnel. AND The responsible entity's plan does not address the	The responsible entity does not have a plan for continuing training of operating personnel. AND The responsible entity does not have a plan for initial training of operating personnel. OR The responsible entity's plan does not address the knowledge and competencies required for reliable system operations.	The responsible entity does not have a plan for continuing training of operating personnel. AND The responsible entity does not have a plan for initial training of operating personnel. AND The responsible entity's plan does not address the knowledge and competencies required for reliable system operations.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			knowledge and competencies required for reliable system operations.	knowledge and competencies required for reliable system operations.		
PER-002-0	R3.3.	The training program must include training time for all Transmission Operator and Balancing Authority operating personnel to ensure their operating proficiency.	The responsible entity has produced the training program with more than 75% but less than 100% of operating personnel provided with training time.	The responsible entity has produced the training program with more than 50% but less than or equal to 75% of operating personnel provided with training time.	The responsible entity has produced the training program with more than 25% but less than or equal to 50% of operating personnel provided with training time.	The responsible entity has produced the training program with more than or equal to 0% but less than or equal to 25% of operating personnel provided with training time.
PER-002-0	R3.4.	Training staff must be identified, and the staff must be competent in both knowledge of system operations and instructional capabilities.	N/A	The responsible entity has produced the training program with training staff identified that lacks knowledge of system operations. OR The responsible entity has produced the training program with training staff identified that lacks instructional capabilities.	The responsible entity has produced the training program with training staff identified that lacks knowledge of system operations. AND The responsible entity has produced the training program with training staff identified that lacks instructional capabilities.	The responsible entity has produced the training program with no training staff identified.
PER-003-0	R1.	Each Transmission Operator, Balancing Authority, and Reliability Coordinator shall staff all operating positions that meet both of the following criteria with personnel that are NERC-certified for the applicable functions:	N/A	N/A	N/A	The responsible entity did not staff all of its operating positions with personnel that are NERC-certified as required by the criteria described in R1.1 and R1.2.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PER-003-0	R1.1.	Positions that have the primary responsibility, either directly or through communications with others, for the real-time operation of the interconnected Bulk Electric System.	N/A	N/A	N/A	N/A
PER-003-0	R1.2.	Positions directly responsible for complying with NERC standards.	N/A	N/A	N/A	N/A
PER-004-1	R3.	Reliability Coordinator operating personnel shall have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.	5% or less of the Reliability Coordinator operating personnel did not have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.	More than 5% up to (and including) 10% of the Reliability Coordinator operating personnel did not have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.	More than 10% up to (and including) 15% of the Reliability Coordinator operating personnel did not have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.	More than 15% of the Reliability Coordinator operating personnel did not have a comprehensive understanding of the Reliability Coordinator Area and interactions with neighboring Reliability Coordinator Areas.
PER-004-1	R4.	Reliability Coordinator operating personnel shall have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the operating staff, operating practices and procedures, restoration priorities and objectives, outage plans, equipment capabilities, and operational restrictions.	5% or less of the Reliability Coordinator operating personnel did not have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the operating staff,	More than 5% up to (and including) 10% of the Reliability Coordinator operating personnel did not have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the	More than 10% up to (and including) 15% of the Reliability Coordinator operating personnel did not have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the operating staff, operating practices and procedures, restoration priorities and	More than 15% of the Reliability Coordinator operating personnel did not have an extensive understanding of the Balancing Authorities, Transmission Operators, and Generation Operators within the Reliability Coordinator Area, including the operating staff, operating practices and procedures,

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			operating practices and procedures, restoration priorities and objectives, outage plans, equipment capabilities, and operational restrictions.	operating staff, operating practices and procedures, restoration priorities and objectives, outage plans, equipment capabilities, and operational restrictions.	objectives, outage plans, equipment capabilities, and operational restrictions.	restoration priorities and objectives, outage plans, equipment capabilities, and operational restrictions.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-001-1	R1.	Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of protection system schemes applied in its area.	N/A	N/A	The responsible entity failed to be familiar with the limitations of protection system schemes applied in its area.	The responsible entity failed to be familiar with the purpose of protection system schemes applied in its area.
PRC-001-1	R2.	Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:	N/A	N/A	N/A	The responsible entity failed to notify any reliability entity of relay or equipment failures.
PRC-001-1	R2.1.	If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.	N/A	Notification of relay or equipment failure was not made to the Transmission Operator and Host Balancing Authority, but corrective action was taken.	Notification of relay or equipment failure was made to the Transmission Operator and Host Balancing Authority, but corrective action was not taken.	Notification of relay or equipment failure was not made to the Transmission Operator and Host Balancing Authority, and corrective action was not taken.
PRC-001-1	R2.2.	If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.	N/A	Notification of relay or equipment failure was not made to the Reliability Coordinator and affected Transmission Operators and Balancing Authorities, but corrective action was taken.	Notification of relay or equipment failure was made to the Reliability Coordinator and affected Transmission Operators and Balancing Authorities, but corrective action was not taken.	Notification of relay or equipment failure was not made to the Reliability Coordinator and affected Transmission Operators and Balancing Authorities, and corrective action was not taken.
PRC-001-1	R3.	A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-001-1	R3.1.	Each Generator Operator shall coordinate all new protective systems and all protective system changes with its Transmission Operator and Host Balancing Authority.	The Generator Operator failed to coordinate one new protective system or protective system change with either its Transmission Operator or its Host Balancing Authority or both.	The Generator Operator failed to coordinate two new protective systems or protective system changes with either its Transmission Operator or its Host Balancing Authority, or both.	The Generator Operator failed to coordinate three new protective systems or protective system changes with either its Transmission Operator or its Host Balancing Authority, or both.	The Generator Operator failed to coordinate more than three new protective systems or protective system changes with its Transmission Operator or its Host Balancing Authority, or both.
PRC-001-1	R3.2.	Each Transmission Operator shall coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.	The Transmission Operator failed to coordinate one new protective system or protective system change with neighboring Transmission Operators or Balancing Authorities or both.	The Transmission Operator failed to coordinate two new protective systems or protective system changes with neighboring Transmission Operators or Balancing Authorities or both.	The Transmission Operator failed to coordinate three new protective systems or protective system changes with neighboring Transmission Operators or Balancing Authorities or both.	The Transmission Operator failed to coordinate more than three new protective systems or protective system changes with neighboring Transmission Operators or Balancing Authorities or both.
PRC-001-1	R4.	Each Transmission Operator shall coordinate protection systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.	The Transmission Operator failed to coordinate protection systems on major transmission lines and interconnections with one of its neighboring Generator Operators, Transmission Operators, or Balancing Authorities.	The Transmission Operator failed to coordinate protection systems on major transmission lines and interconnections with two of its neighboring Generator Operators, Transmission Operators, or Balancing Authorities.	The Transmission Operator failed to coordinate protection systems on major transmission lines and interconnections with three of its neighboring Generator Operators, Transmission Operators, or Balancing Authorities.	The Transmission Operator failed to coordinate protection systems on major transmission lines and interconnections with three or more of its neighboring Generator Operators, Transmission Operators, and Balancing Authorities.
PRC-001-1	R5.	A Generator Operator or Transmission Operator shall coordinate changes in	N/A	N/A	The Generator Operator failed to notify its	The Generator Operator failed to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		generation, transmission, load or operating conditions that could require changes in the protection systems of others:			Transmission Operator at all of changes in generation or operating conditions that could require changes in the Transmission Operator's protection systems. (R5.1) OR The Transmission Operator failed to notify neighboring Transmission Operators at all of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems. (R5.2)	notify its Transmission Operator at all of changes in generation or operating conditions that could require changes in the Transmission Operator's protection systems. (R5.1) AND The Transmission Operator failed to notify neighboring Transmission Operators at all of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems. (R5.2)
PRC-001-1	R5.1.	Each Generator Operator shall notify its Transmission Operator in advance of changes in generation or operating conditions that could require changes in the Transmission Operator's protection systems.	N/A	N/A	N/A	N/A
PRC-001-1	R5.2.	Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators' protection systems.	N/A	N/A	N/A	N/A
PRC-001-1	R6.	Each Transmission Operator and Balancing Authority shall monitor the status of each	N/A	N/A	The responsible entity monitored the status of	The responsible entity failed to monitor the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Special Protection System in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status.			each Special Protection System in its area but notification of a change in status of a Special Protection System was not made to the affected Transmission Operators and Balancing Authorities.	status of each Special Protection System in its area, and did not notify affected Transmission Operators and Balancing Authorities of each change in status.
PRC-004-1	R1.	The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Reliability Organization's procedures developed for Reliability Standard PRC-003 Requirement 1.	N/A	The responsible entity provided evidence of analyzing a Misoperation but the documentation and implementation of the associated Corrective Action Plan was not provided.	N/A	The responsible entity did not perform an analysis of a Misoperation.
PRC-004-1	R2.	The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Reliability Organization's procedures developed for PRC-003 R1.	N/A	The Generator Owner provided evidence of analyzing a Misoperation but the documentation and implementation of the associated Corrective Action Plan was not provided.	N/A	The Generator Owner did not perform an analysis of a Misoperation.
PRC-004-1	R3.	The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Reliability Organization, documentation of its Misoperations analyses and Corrective	The responsible entity provided its Regional Reliability Organization with documentation of its Misoperations	N/A	The responsible entity provided its Regional Reliability Organization with documentation of its Misoperations analyses but did not	The responsible entity did not provide its Regional Reliability Organization with documentation of its Misoperations

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Action Plans according to the Regional Reliability Organization's procedures developed for PRC-003 R1.	analyses and its Corrective Action Plans, but did not provide these according to the Regional Reliability Organization's procedures.		provide its Corrective Action Plans.	analyses and did not provide its Corrective Action Plans.
PRC-004-2	R1.	The Transmission Owner and any Distribution Provider that owns a transmission Protection System shall each analyze its transmission Protection System Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.	Documentation of Misoperations is complete, but documentation of Corrective Action Plans is incomplete.	Documentation of Misoperations is incomplete, and documentation of Corrective Action Plans is incomplete.	Documentation of Misoperations is incomplete, and there are no associated Corrective Action Plans.	Misoperations have not been analyzed
PRC-004-2	R2.	The Generator Owner shall analyze its generator Protection System Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature according to the Regional Entity's procedures.	Documentation of Misoperations is complete, but documentation of Corrective Action Plans is incomplete.	Documentation of Misoperations is incomplete, and documentation of Corrective Action Plans is incomplete.	Documentation of Misoperations is incomplete, and there are no associated Corrective Action Plans.	Misoperations have not been analyzed
PRC-004-2	R3.	The Transmission Owner, any Distribution Provider that owns a transmission Protection System, and the Generator Owner shall each provide to its Regional Entity, documentation of its Misoperations analyses and Corrective Action Plans according to the Regional Entity's procedures.	The responsible entity provided its Regional Reliability Organization with documentation of its Misoperations analyses and its Corrective Action Plans, but did not provide these according to the Regional Reliability Organization's procedures.	N/A	The responsible entity provided its Regional Reliability Organization with documentation of its Misoperations analyses but did not provide its Corrective Action Plans.	The responsible entity did not provide its Regional Reliability Organization with documentation of its Misoperations analyses and did not provide its Corrective Action Plans.

Complete Violation Severity Level Matrix (PRC) Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-004-WECC-1	R1.	System Operators and System Protection personnel of the Transmission Owners and Generator Owners shall analyze all Protection System and RAS operations.	System Operating personnel of the Transmission Owner or Generator Owner did not review the Protection System Operation or RAS operation within 24 hours but did review the Protection System Operation or RAS operation within six business days.	System Operating personnel of the Transmission Owner or Generator Owner did not review the Protection System operation or RAS operation within six business days.	System Protection personnel of the Transmission Owner and Generator Owner did not analyze the Protection System operation or RAS operation within 20 business days but did analyze the Protection System operation or RAS operation within 25 business days.	System Protection personnel of the Transmission Owner or Generator Owner did not analyze the Protection System operation or RAS operation within 25 business days.
PRC-004-WECC-1	R1.1.	System Operators shall review all tripping of transmission elements and RAS operations to identify apparent Misoperations within 24 hours.				
PRC-004-WECC-1	R1.2.	System Protection personnel shall analyze all operations of Protection Systems and RAS within 20 business days for correctness to characterize whether a Misoperation has occurred that may not have been identified by System Operators.				
PRC-004-WECC-1	R2.	Transmission Owners and Generator Owners shall perform the following actions for each Misoperation of the Protection System or RAS. It is not intended that Requirements R2.1 through R2.4 apply to Protection System and/or RAS actions that appear to be entirely reasonable and correct at the time of occurrence and associated system performance is fully compliant with NERC Reliability Standards. If the Transmission Owner or Generator Owner later finds the Protection System or RAS operation to be incorrect through System Protection personnel analysis, the requirements of R2.1				

Complete Violation Severity Level Matrix (PRC) Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		through R2.4 become applicable at the time the Transmission Owner or Generator Owner identifies the Misoperation:				
PRC-004-WECC-1	R2.1.	If the Protection System or RAS has a Security-Based Misoperation and two or more Functionally Equivalent Protection Systems (FEPS) or Functionally Equivalent RAS (FERAS) remain in service to ensure Bulk Electric System (BES) reliability, the Transmission Owners or Generator Owners shall remove from service the Protection System or RAS that misoperated within 22 hours following identification of the Misoperation. Repair or replacement of the failed Protection System or RAS is at the Transmission Owners' and Generator Owners' discretion.	The Transmission Owner and Generator Owner did not remove from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required within 22 hours but did perform the requirements within 24 hours.	The Transmission Owner and Generator Owner did not remove from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 24 hours but did perform the requirements within 28 hours.	The Transmission Owner and Generator Owner did not perform the removal from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 28 hours but did perform the requirements within 32 hours.	The Transmission Owner and Generator Owner did not perform the removal from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required within 32 hours.
PRC-004-WECC-1	R2.2.	If the Protection System or RAS has a Security-Based Misoperation and only one FEPS or FERAS remains in service to ensure BES reliability, the Transmission Owner or Generator Owner shall perform the following.				
PRC-004-WECC-1	R2.2.1.	Following identification of the Protection System or RAS Misoperation, Transmission Owners and Generator Owners shall remove from service within 22 hours for repair or modification the Protection System or RAS that misoperated.	The Transmission Owner and Generator Owner did not remove from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required within 22 hours but did perform the requirements within 24 hours.	The Transmission Owner and Generator Owner did not remove from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 24 hours but did perform the	The Transmission Owner and Generator Owner did not perform the removal from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 28 hours but did perform the requirements within 32 hours.	The Transmission Owner and Generator Owner did not perform the removal from service, repair, or implement other compliance measures for the Protection System or RAS that misoperated as required within 32 hours.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				requirements within 28 hours.		
PRC-004-WECC-1	R2.2.2.	The Transmission Owner or Generator Owner shall repair or replace any Protection System or RAS that misoperated with a FEPS or FERAS within 20 business days of the date of removal. The Transmission Owner or Generator Owner shall remove the Element from service or disable the RAS if repair or replacement is not completed within 20 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustments to comply with the requirements within 20 business days but did perform the required activities within 25 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustment to comply with the requirements within 25 business days but did perform the required activities within 28 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustment to comply with the requirements within 28 business days but did perform the required activities within 30 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustments to comply with the requirements within 30 business days.
PRC-004-WECC-1	R2.3.	If the Protection System or RAS has a Security-Based or Dependability-Based Misoperation and a FEPS and FERAS is not in service to ensure BES reliability, Transmission Owners or Generator Owners shall repair and place back in service within 22 hours the Protection System or RAS that misoperated. If this cannot be done, then Transmission Owners and Generator Owners shall perform the following.	The Transmission Operator and Generator Owner did not adjust generation to a reliable operating level, adjust the SOL and operate the facilities within established limits or implement other compliance measures for the Protection System or RAS that misoperated as required within 22 hours but did perform the requirements within 24 hours.	The Transmission Operator and Generator Owner did not adjust generation to a reliable operating level, adjust the SOL and operate the facilities within established limits or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 24 hours but did perform the requirements within 28 hours.	The Transmission Operator and Generator Owner did not adjust generation to a reliable operating level, adjust the SOL and operate the facilities within established limits or implement other compliance measures for the Protection System or RAS that misoperated as required in less than 28 hours but did perform the requirements within 32 hours.	The Transmission Operator and Generator Owner did not adjust generation to a reliable operating level, adjust the SOL and operate the facilities within established limits or implement other compliance measures for the Protection System or RAS that misoperated as required within 32 hours.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-004-WECC-1	R2.3.1.	When a FEPS is not available, the Transmission Owners shall remove the associated Element from service.				
PRC-004-WECC-1	R2.3.2.	When FERAS is not available, then				
PRC-004-WECC-1	R2.3.2.1.	The Generator Owners shall adjust generation to a reliable operating level, or				
PRC-004-WECC-1	R2.3.2.2.	Transmission Operators shall adjust the SOL and operate the facilities within established limits.				
PRC-004-WECC-1	R2.4.	If the Protection System or RAS has a Dependability-Based Misoperation but has one or more FEPS or FERAS that operated correctly, the associated Element or transmission path may remain in service without removing from service the Protection System or RAS that failed, provided one of the following is performed.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustments to comply with the requirements within 20 business days but did perform the required activities within 25 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustment to comply with the requirements within 25 business days but did perform the required activities within 28 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustment to comply with the requirements within 28 business days but did perform the required activities within 30 business days.	The Transmission Owner and Generator Owner did not perform the required repairs, replacement, or system operation adjustments to comply with the requirements within 30 business days.
PRC-004-WECC-1	R2.4.1.	Transmission Owners or Generator Owners shall repair or replace any Protection System or RAS that misoperated with FEPS and FERAS within 20 business days of the date of the Misoperation identification, or				
PRC-004-WECC-1	R2.4.2.	Transmission Owners or Generator Owners shall remove from service the associated Element or RAS.				
PRC-004-WECC-1	R3.	Transmission Owners and Generation Owners shall submit Misoperation incident				

Complete Violation Severity Level Matrix (PRC) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		reports to WECC within 10 business days for the following.				
PRC-004-WECC-1	R3.1.	Identification of a Misoperation of a Protection System and/or RAS,	The Transmission Owner and Generator Owner did not report the Misoperation and corrective actions taken or planned to comply with the requirements within 10 business days but did perform the required activities within 15 business days.	The Transmission Owner and Generator Owner did not report the Misoperation and corrective actions taken or planned to comply with the requirements within 15 business days but did perform the required activities within 20 business days.	The Transmission Owner and Generator Owner did not report the Misoperation and corrective actions taken or planned to comply with the requirements within 20 business days but did perform the required activities within 25 business days.	The Transmission Owner and Generator Owner did not report the Misoperation and corrective actions taken or planned to comply with the requirements within 25 business days.
PRC-004-WECC-1	R3.2.	Completion of repairs or the replacement of Protection System and/or RAS that misoperated.	The Transmission Owner and Generator Owner did not report the completion of repair or replacement of Protection System and/or RAS that misoperated to comply with the requirements within 10 business days of the completion but did perform the required activities within 15 business days.	The Transmission Owner and Generator Owner did not report the completion of repair or replacement of Protection System and/or RAS that misoperated to comply with the requirements within 15 business days of the completion but did perform the required activities within 20 business days.	The Transmission Owner and Generator Owner did not report the completion of repair or replacement of Protection System and/or RAS that misoperated to comply with the requirements within 20 business days of the completion but did perform the required activities within 25 business days.	The Transmission Owner and Generator Owner did not report the completion of repair or replacement of Protection System and/or RAS that misoperated to comply with the requirements within 25 business days of the completion.
PRC-005-1	R1.	Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation	N/A	The responsible entity-had a Protection System maintenance and	The responsible entity had a Protection System maintenance and testing program for Protection	The responsible entity failed to have Protection System maintenance and

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Protection System shall have a Protection System maintenance and testing program for Protection Systems that affect the reliability of the BES. The program shall include:		testing program for Protection Systems that affect the reliability of the BES, but the summary of maintenance and testing procedures was missing or incomplete. (R1.2)	Systems that affect the reliability of the BES, but the maintenance and testing intervals and their basis were missing or incomplete. (R1.1)	testing program for Protection Systems that affect the reliability of the BES.
PRC-005-1	R1.1.	Maintenance and testing intervals and their basis.	N/A	N/A	N/A	N/A
PRC-005-1	R1.2.	Summary of maintenance and testing procedures.	N/A	N/A	N/A	N/A
PRC-005-1	R2.	Each Transmission Owner and any Distribution Provider that owns a transmission Protection System and each Generator Owner that owns a generation Protection System shall provide documentation of its Protection System maintenance and testing program and the implementation of that program to its Regional Reliability Organization on request (within 30 calendar days). The documentation of the program implementation shall include:	The responsible entity provided documentation of its Protection System maintenance and testing program more than 30 calendar days following a request from its Regional Reliability Organization and/or NERC. OR Evidence Protection System devices were maintained and tested within the defined intervals (R2.1 and R2.2) was missing 5% or less of the applicable devices.	Evidence Protection System devices were maintained and tested within the defined intervals (R2.1 and R2.2) was missing more than 5% up to (and including) 10% of the applicable devices.	Evidence Protection System devices were maintained and tested within the defined intervals (R2.1 and R2.2) was missing more than 10% up to (and including) 15% of the applicable devices.	Evidence Protection System devices were maintained and tested within the defined intervals (R2.1 and R2.2) was missing more than 15% of the applicable devices.
PRC-005-1	R2.1.	Evidence Protection System devices were	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		maintained and tested within the defined intervals.				
PRC-005-1	R2.2.	Date each Protection System device was last tested/maintained.	N/A	N/A	N/A	N/A
PRC-007-0	R1.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall ensure that its UFLS program is consistent with its Regional Reliability Organization's UFLS program requirements.	The evaluation of the entity's UFLS program for consistency with its Regional Reliability Organization's UFLS program is incomplete or inconsistent in one or more of the Regional Reliability Organization program requirements, but is consistent with the required amount of load shedding.	The amount of load shedding is less than 95 percent of the Regional requirement in any of the load steps.	The amount of load shedding is less than 90 percent of the Regional requirement in any of the load steps.	The amount of load shedding is less than 85 percent of the Regional requirement in any of the load steps.
PRC-007-0	R2.	The Transmission Owner, Transmission Operator, Distribution Provider, and Load-Serving Entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall provide, and annually update, its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database.	The responsible entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) provided its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database but its annual update was late by 30 calendar days or less.	The responsible entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) provided its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database but its annual update was late by more than 30 calendar days but	The responsible entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) provided its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database but its annual update was late by more than 40 calendar days but less than or equal to 50 calendar days.	The responsible entity that owns or operates a UFLS program (as required by its Regional Reliability Organization) did not provide its underfrequency data as necessary for its Regional Reliability Organization to maintain and update a UFLS program database, OR The responsible entity's annual update was late by more than

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				less than or equal to 40 calendar days		50 calendar days.
PRC-007-0	R3.	The Transmission Owner and Distribution Provider that owns a UFLS program (as required by its Regional Reliability Organization) shall provide its documentation of that UFLS program to its Regional Reliability Organization on request (30 calendar days).	The responsible entity has provided the documentation in more than 30 calendar days but less than or equal to 40 calendar days.	The responsible entity has provided the documentation in more than 40 calendar days but less than or equal to 50 calendar days.	The responsible entity has provided the documentation in more than 50 calendar days but less than or equal to 60 calendar days.	The responsible entity has not provided the documentation for more than 60 calendar days.
PRC-008-0	R1.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall have a UFLS equipment maintenance and testing program in place. This UFLS equipment maintenance and testing program shall include UFLS equipment identification, the schedule for UFLS equipment testing, and the schedule for UFLS equipment maintenance.	The UFLS equipment identification, testing schedule or maintenance schedule for the responsible entity's UFLS equipment maintenance and testing program was missing 5% or less of the applicable equipment.	The UFLS equipment identification, testing schedule, or maintenance schedule for the responsible entity's UFLS equipment maintenance and testing program was missing for more than 5% up to (and including) 10% of the applicable equipment.	The UFLS equipment identification, testing schedule, or maintenance schedule for the responsible entity's UFLS equipment maintenance and testing program was missing more than 10% up to (and including) 15% of the applicable equipment.	The UFLS equipment identification, testing schedule or maintenance schedule for the responsible entity's UFLS equipment maintenance and testing program was missing 5% or less of the applicable equipment.
PRC-008-0	R2.	The Transmission Owner and Distribution Provider with a UFLS program (as required by its Regional Reliability Organization) shall implement its UFLS equipment maintenance and testing program and shall provide UFLS maintenance and testing program results to its Regional Reliability Organization and NERC on request (within 30 calendar days).	The responsible entity provided documentation of its UFLS equipment maintenance and testing program more than 30 calendar days following a request from its Regional Reliability Organization and/or NERC. OR	Evidence UFLS equipment was maintained and tested within the defined intervals was missing for more than 5% up to (and including) 10% of the applicable devices.	Evidence UFLS equipment was maintained and tested within the defined intervals was missing for more than 10% up to (and including) 15% of the applicable devices.	The responsible entity provided documentation of its UFLS equipment maintenance and testing program more than 30 calendar days following a request from its Regional Reliability Organization and/or NERC. OR

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			Evidence UFLS equipment was maintained and tested within the defined intervals was missing for 5% or less of the applicable devices.			Evidence UFLS equipment was maintained and tested within the defined intervals was missing for 5% or less of the applicable devices.
PRC-009-0	R1.	The Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall analyze and document its UFLS program performance in accordance with its Regional Reliability Organization's UFLS program. The analysis shall address the performance of UFLS equipment and program effectiveness following system events resulting in system frequency excursions below the initializing set points of the UFLS program. The analysis shall include, but not be limited to:	The responsible entity that owns or operates a UFLS program failed to include one of the elements listed in PRC-009-0 R1.1 through R1.4 in the analysis of the performance of UFLS equipment and Program effectiveness, as described in PRC-009-0 R1, following system events resulting in system frequency excursions below the initializing set points of the UFLS program.	The responsible entity that owns or operates a UFLS program failed to include two of the elements listed in PRC-009-0 R1.1 through R1.4 in the analysis of the performance of UFLS equipment and Program effectiveness, as described in PRC-009-0 R1, following system events resulting in system frequency excursions below the initializing set points of the UFLS program.	The responsible entity that owns or operates a UFLS program failed to include three of the elements listed in PRC-009-0 R1.1 through R1.4 in the analysis of the performance of UFLS equipment and Program effectiveness, as described in PRC-009-0 R1, following system events resulting in system frequency excursions below the initializing set points of the UFLS program.	The responsible entity that owns or operates a UFLS program failed to conduct an analysis of the performance of UFLS equipment and Program effectiveness, as described in PRC-009-0 R1, following system events resulting in system frequency excursions below the initializing set points of the UFLS program.
PRC-009-0	R1.1.	A description of the event including initiating conditions.	N/A	N/A	N/A	N/A
PRC-009-0	R1.2.	A review of the UFLS set points and tripping times.	N/A	N/A	N/A	N/A
PRC-009-0	R1.3.	A simulation of the event.	N/A	N/A	N/A	N/A
PRC-009-0	R1.4.	A summary of the findings.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-009-0	R2.	The Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UFLS program (as required by its Regional Reliability Organization) shall provide documentation of the analysis of the UFLS program to its Regional Reliability Organization and NERC on request 90 calendar days after the system event.	The responsible entity has provided the documentation in more than 90 calendar days but less than 105 calendar days.	The responsible entity has provided the documentation in more than 105 calendar days but less than 129 calendar days.	The responsible entity has provided the documentation in more than 129 calendar days but less than 145 calendar days.	The responsible entity has provided the documentation in 145 calendar days or more.
PRC-010-0	R1.	The Load-Serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates a UVLS program shall periodically (at least every five years or as required by changes in system conditions) conduct and document an assessment of the effectiveness of the UVLS program. This assessment shall be conducted with the associated Transmission Planner(s) and Planning Authority(ies).	The responsible entity conducted an assessment of the effectiveness of its UVLS system within 5 years or as required by changes in system conditions but did not include the associated Transmission Planner(s) and Planning Authority(ies).	The responsible entity did not conduct an assessment of the effectiveness of its UVLS system for more than 5 years but did in less than or equal to 6 years. OR The assessment of the effectiveness of the responsible entity's UVLS system did not address one of the elements in R1 (R1.1.1 through R1.1.3).	The responsible entity did not conduct an assessment of the effectiveness of its UVLS system for more than 6 years but did in less than or equal to 7years. OR The assessment of the effectiveness of the responsible entity's UVLS system did not address two of the elements in R1 (R1.1.1 through R1.1.3).	The responsible entity did not conduct an assessment of the effectiveness of its UVLS system for more than 7 years. OR The assessment of the effectiveness of the responsible entity's UVLS system did not address any of the elements in R1 (R1.1.1 through R1.1.3).
PRC-010-0	R1.1.	This assessment shall include, but is not limited to:	N/A	N/A	N/A	N/A
PRC-010-0	R1.1.1.	Coordination of the UVLS programs with other protection and control systems in the Region and with other Regional Reliability Organizations, as appropriate.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-010-0	R1.1.2.	Simulations that demonstrate that the UVLS programs performance is consistent with Reliability Standards TPL-001-0, TPL-002-0, TPL-003-0 and TPL-004-0.	N/A	N/A	N/A	N/A
PRC-010-0	R1.1.3.	A review of the voltage set points and timing.	N/A	N/A	N/A	N/A
PRC-010-0	R2.	The Load-Serving Entity, Transmission Owner, Transmission Operator, and Distribution Provider that owns or operates a UVLS program shall provide documentation of its current UVLS program assessment to its Regional Reliability Organization and NERC on request (30 calendar days).	The responsible entity provided documentation of its current UVLS program assessment more than 30 calendar but less than or equal to 40 calendar days following a request from its Regional Reliability Organization or NERC.	The responsible entity provided documentation of its current UVLS program assessment more than 40 calendar days but less than or equal to 50 calendar days following a request from its Regional Reliability Organization or NERC.	The responsible entity provided documentation of its current UVLS program assessment more than 50 calendar days but less than or equal to 60 calendar days following a request from its Regional Reliability Organization or NERC.	The responsible entity did not provide documentation of its current UVLS program assessment for more than 60 calendar days following a request from its Regional Reliability Organization or NERC.
PRC-011-0	R1.	The Transmission Owner and Distribution Provider that owns a UVLS system shall have a UVLS equipment maintenance and testing program in place. This program shall include:	The responsible entity's UVLS equipment maintenance and testing program did not address one of the subrequirements in R1.2 through R1.6. OR The responsible entity's UVLS program did not address one of the equipment classes as specified in R1.1.1 through R1.1.4.	The responsible entity's UVLS equipment maintenance and testing program did not address two of the subrequirements in R1.2 through R1.6. OR The responsible entity's UVLS program did not address two of the equipment classes as specified in R1.1.1	The responsible entity's UVLS equipment maintenance and testing program did not address three of the subrequirements in R1.1 through R1.6. OR The responsible entity's UVLS program did not address three of the equipment classes as specified in R1.1.1 through R1.1.4.	The responsible entity's UVLS equipment maintenance and testing program did not address four or more of the subrequirements in R1.2 through R1.6. OR The responsible entity's UVLS program did not address any of the equipment classes as specified in R1.1.1

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				through R1.1.4.		through R1.1.4.
PRC-011-0	R1.1.	The UVLS system identification which shall include but is not limited to:	N/A	N/A	N/A	N/A
PRC-011-0	R1.1.1.	Relays.	N/A	N/A	N/A	N/A
PRC-011-0	R1.1.2.	Instrument transformers.	N/A	N/A	N/A	N/A
PRC-011-0	R1.1.3.	Communications systems, where appropriate.	N/A	N/A	N/A	N/A
PRC-011-0	R1.1.4.	Batteries.	N/A	N/A	N/A	N/A
PRC-011-0	R1.2.	Documentation of maintenance and testing intervals and their basis.	N/A	N/A	N/A	N/A
PRC-011-0	R1.3.	Summary of testing procedure.	N/A	N/A	N/A	N/A
PRC-011-0	R1.4.	Schedule for system testing.	N/A	N/A	N/A	N/A
PRC-011-0	R1.5.	Schedule for system maintenance.	N/A	N/A	N/A	N/A
PRC-011-0	R1.6.	Date last tested/maintained.	N/A	N/A	N/A	N/A
PRC-011-0	R2.	The Transmission Owner and Distribution Provider that owns a UVLS system shall provide documentation of its UVLS equipment maintenance and testing program and the implementation of that UVLS equipment maintenance and testing program to its Regional Reliability Organization and NERC on request (within 30 calendar days).	The responsible entity provided documentation of its UVLS equipment maintenance and testing program more than 30 but less than or equal to 40 days following a request from its Regional Reliability Organization and/or NERC. OR Evidence UVLS equipment was maintained and tested within the defined intervals was missing	The responsible entity provided documentation of its UVLS equipment maintenance and testing program more than 40 but less than or equal to 50 days following a request from its Regional Reliability Organization and/or NERC. OR Evidence UVLS equipment was maintained and tested within the defined intervals was	The responsible entity provided documentation of its UVLS equipment maintenance and testing program more than 50 but less than or equal to 60 days following a request from its Regional Reliability Organization and/or NERC. OR Evidence UVLS equipment was maintained and tested within the defined intervals was missing for more than 10% up to (and including) 15% of the applicable devices.	The responsible entity did not provide documentation of its UVLS equipment maintenance and testing program for more than 60 days following a request from its Regional Reliability Organization and/or NERC. OR Evidence UVLS equipment was maintained and tested within the defined intervals was missing for more than 15% of

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			for 5% or less of the applicable devices.	missing for more than 5% up to (and including) 10% of the applicable devices.		the applicable devices.
PRC-015-0	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall maintain a list of and provide data for existing and proposed SPSs as specified in Reliability Standard PRC-013-0_R 1.	N/A	The responsible entity's list of existing or proposed SPSs did not address one of the subrequirements in R1.1 through R1.3 as specified in Reliability Standard PRC-013-0_R1.	The responsible entity's list of existing or proposed SPSs did not address two of the subrequirements in R1.1 through R1.3 as specified in Reliability Standard PRC-013-0_R1.	The responsible entity's list of existing or proposed SPSs did not address any of the subrequirements in R1.1 through R1.3 as specified in Reliability Standard PRC-013-0_R1.
PRC-015-0	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have evidence it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures as defined in Reliability Standard PRC-012-0_R1 prior to being placed in service.	The responsible entity was not compliant in that evidence that it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures did not address one of the subrequirements in R1.1 through R1.9 as specified in Reliability Standard PRC-012-0_R1 prior to being placed in service.	The responsible entity was not compliant in that evidence that it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures did not address two of the subrequirements in R1.1 through R1.9 as specified in Reliability Standard PRC-012-0_R1 prior to being placed in service.	The responsible entity was not compliant in that evidence that it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures did not address three of the subrequirements in R1.1 through R1.9 as specified in Reliability Standard PRC-012-0_R1 prior to being placed in service.	The responsible entity was not compliant in that evidence that it reviewed new or functionally modified SPSs in accordance with the Regional Reliability Organization's procedures did not address four or more of the subrequirements in R1.1 through R1.9 as specified in Reliability Standard PRC-012-0_R1 prior to being placed in service.
PRC-015-0	R3.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of SPS data and	The responsible entity provided documentation of its	The responsible entity provided documentation of its	The responsible entity provided documentation of its SPS data and the	The responsible entity provided documentation of its

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		the results of studies that show compliance of new or functionally modified SPSs with NERC Reliability Standards and Regional Reliability Organization criteria to affected Regional Reliability Organizations and NERC on request (within 30 calendar days).	SPS data and the results of the studies that show compliance of new or functionally modified SPSs more than 30 calendar days but less than or equal to 40 calendar days following a request from its Regional Reliability Organization or NERC.	SPS data and the results of the studies that show compliance of new or functionally modified SPSs more than 40 calendar days but less than or equal to 50 calendar days following a request from its Regional Reliability Organization or NERC.	results of the studies that show compliance of new or functionally modified SPSs more than 50 calendar days but less than or equal to 60 calendar days following a request from its Regional Reliability Organization or NERC.	SPS data and the results of the studies that show compliance of new or functionally modified SPSs more than 60 calendar days following a request from its Regional Reliability Organization or NERC.
PRC-016-0.1	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall analyze its SPS operations and maintain a record of all misoperations in accordance with the Regional SPS review procedure specified in Reliability Standard PRC-012-0_R 1.	N/A	N/A	N/A	The responsible entity that owns an SPS did not analyze its SPS operations and maintain a record of all Misoperations in accordance with the Regional SPS review procedure specified in Reliability Standard PRC-012-0_R 1.
PRC-016-0.1	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall take corrective actions to avoid future misoperations.	For each Misoperation, the responsible entity that owns an SPS did not take 5% or less of the corrective actions designed to avoid future SPS Misoperations.	For each Misoperation, the responsible entity that owns an SPS did not take more than 5% up to (and including) 10% of the corrective actions designed to avoid future SPS Misoperations.	For each Misoperation, the responsible entity that owns an SPS did not take more than 10% up to (and including) 15% of the corrective actions designed to avoid future SPS Misoperations.	For each Misoperation, the responsible entity that owns an SPS did not take more than 15% of the corrective actions designed to avoid future SPS Misoperations.
PRC-016-	R3.	The Transmission Owner, Generator Owner,	The responsible entity	The responsible	The responsible entity	The responsible entity

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
0.1		and Distribution Provider that owns an SPS shall provide documentation of the misoperation analyses and the corrective action plans to its Regional Reliability Organization and NERC on request (within 90 calendar days).	provided documentation of its SPS Misoperation analyses and the corrective action plans more than 90 calendar days but less than or equal to 120 calendar days following a request from its Regional Reliability Organization or NERC.	entity provided documentation of its SPS Misoperation analyses and the corrective action plans more than 120 calendar days but less than or equal to 130 calendar days following a request from its Regional Reliability Organization or NERC.	provided documentation of its SPS Misoperation analyses and the corrective action plans more than 130 calendar days but less than or equal to 140 calendar days following a request from its Regional Reliability Organization or NERC.	provided documentation of its SPS Misoperation analyses and the corrective action plans more than 140 calendar days following a request from its Regional Reliability Organization or NERC. OR Did not provide the documentation.
PRC-017-0	R1.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall have a system maintenance and testing program(s) in place. The program(s) shall include:	The responsible entity's SPS equipment maintenance and testing program did not address one of the subrequirements in R1.2 through R1.6. OR The responsible entity's SPS program did not address one of the equipment classes as specified in R1.1.1 through R1.1.4.	The responsible entity's SPS equipment maintenance and testing program did not address two of the subrequirements in R1.2 through R1.6. OR The responsible entity's SPS program did not address two of the equipment classes as specified in R1.1.1 through R1.1.4.	The responsible entity's SPS equipment maintenance and testing program did not address three of the subrequirements in R1.2 through R1.6. OR The responsible entity's SPS program did not address three of the equipment classes as specified in R1.1.1 through R1.1.4.	The responsible entity's SPS equipment maintenance and testing program did not address four or more of the subrequirements in R1.2 through R1.6. OR The responsible entity's SPS program did not address any of the equipment classes as specified in R1.1.1 through R1.1.4.
PRC-017-0	R1.1.	SPS identification shall include but is not limited to:	N/A	N/A	N/A	N/A
PRC-017-0	R1.1.1.	Relays.	N/A	N/A	N/A	N/A
PRC-017-0	R1.1.2.	Instrument transformers.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-017-0	R1.1.3.	Communications systems, where appropriate.	N/A	N/A	N/A	N/A
PRC-017-0	R1.1.4.	Batteries.	N/A	N/A	N/A	N/A
PRC-017-0	R1.2.	Documentation of maintenance and testing intervals and their basis.	N/A	N/A	N/A	N/A
PRC-017-0	R1.3.	Summary of testing procedure.	N/A	N/A	N/A	N/A
PRC-017-0	R1.4.	Schedule for system testing.	N/A	N/A	N/A	N/A
PRC-017-0	R1.5.	Schedule for system maintenance.	N/A	N/A	N/A	N/A
PRC-017-0	R1.6.	Date last tested/maintained.	N/A	N/A	N/A	N/A
PRC-017-0	R2.	The Transmission Owner, Generator Owner, and Distribution Provider that owns an SPS shall provide documentation of the program and its implementation to the appropriate Regional Reliability Organizations and NERC on request (within 30 calendar days).	The responsible entity provided documentation of its SPS maintenance and testing program more than 30 but less than or equal to 40 days following a request from its Regional Reliability Organization and/or NERC.	The responsible entity provided documentation of its SPS maintenance and testing program more than 40 but less than or equal to 50 days following a request from its Regional Reliability Organization and/or NERC.	The responsible entity provided documentation of its SPS maintenance and testing program more than 50 but less than or equal to 60 days following a request from its Regional Reliability Organization and/or NERC.	The responsible entity did not provide documentation of its SPS maintenance and testing program for more than 60 days following a request from its Regional Reliability Organization and/or NERC.
PRC-018-1	R1.	Each Transmission Owner and Generator Owner required to install DMEs by its Regional Reliability Organization (reliability standard PRC-002 Requirements 1-3) shall have DMEs installed that meet the following requirements:	N/A	N/A	The installation of DMEs does not include one of the subrequirements in R1.1 and R1.2.	The installation of DMEs does not include any of the subrequirements in R1.1 and R1.2.
PRC-018-1	R1.1.	Internal Clocks in DME devices shall be synchronized to within 2 milliseconds or less of Universal Coordinated Time scale (UTC)	N/A	N/A	N/A	N/A
PRC-018-1	R1.2.	Recorded data from each Disturbance shall be retrievable for ten calendar days.	N/A	N/A	N/A	N/A
PRC-018-1	R2.	The Transmission Owner and Generator Owner shall each install DMEs in	The responsible entity failed to install 5% or	The responsible entity failed to	The responsible entity failed to install more	The responsible entity failed to install more

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		accordance with its Regional Reliability Organization's installation requirements (reliability standard PRC-002 Requirements 1 through 3).	less of the DME devices in accordance with its Regional Reliability Organization's installation requirements as defined in PRC-002 R1 through R3.	install more than 5% up to (and including) 10% of the DME devices in accordance with its Regional Reliability Organization's installation requirements as defined in PRC-002 R1 through R3.	than 10% up to (and including) 15% of the DME devices in accordance with its Regional Reliability Organization's installation requirements as defined in PRC-002 R1 through R3.	than 15% of the DME devices in accordance with its Regional Reliability Organization's installation requirements as defined in PRC-002 R1 through R3.
PRC-018-1	R3.	The Transmission Owner and Generator Owner shall each maintain, and report to its Regional Reliability Organization on request, the following data on the DMEs installed to meet that region's installation requirements (reliability standard PRC-002 Requirements 1.1, 2.1 and 3.1):	Evidence that the responsible entity maintained data on the DMEs installed to meet that region's installation requirements was missing or not reported for one of the subrequirements in R3.1 through R3.8.	Evidence that the responsible entity maintained data on the DMEs installed to meet that region's installation requirements was missing or not reported for two of the subrequirements in R3.1 through R3.8.	Evidence that the responsible entity maintained data on the DMEs installed to meet that region's installation requirements was missing or not reported for three of the subrequirements in R3.1 through R3.8.	Evidence that the responsible entity maintained data on the DMEs installed to meet that region's installation requirements was missing or not reported for four or more of the subrequirements in R3.1 through R3.8.
PRC-018-1	R3.1.	Type of DME (sequence of event recorder, fault recorder, or dynamic disturbance recorder).	N/A	N/A	N/A	N/A
PRC-018-1	R3.2.	Make and model of equipment.	N/A	N/A	N/A	N/A
PRC-018-1	R3.3.	Installation location.	N/A	N/A	N/A	N/A
PRC-018-1	R3.4.	Operational status.	N/A	N/A	N/A	N/A
PRC-018-1	R3.5.	Date last tested.	N/A	N/A	N/A	N/A
PRC-018-1	R3.6.	Monitored elements, such as transmission circuit, bus section, etc.	N/A	N/A	N/A	N/A
PRC-018-1	R3.7.	Monitored devices, such as circuit breaker, disconnect status, alarms, etc.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-018-1	R3.8.	Monitored electrical quantities, such as voltage, current, etc.	N/A	N/A	N/A	N/A
PRC-018-1	R4.	The Transmission Owner and Generator Owner shall each provide Disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements (reliability standard PRC-002 Requirement 4).	The responsible entity did not provide 5% or less of the disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements.	The responsible entity did not provide more than 5% up to (and including) 10% of the disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements.	The responsible entity did not provide more than 10% up to (and including) 15% of the disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements.	The responsible entity did not provide more than 15% of the disturbance data (recorded by DMEs) in accordance with its Regional Reliability Organization's requirements.
PRC-018-1	R5.	The Transmission Owner and Generator Owner shall each archive all data recorded by DMEs for Regional Reliability Organization-identified events for at least three years.	5% or less of the responsible entity's data recorded by DMEs for Regional Reliability Organization-identified events was not archived for at least three years.	More than 5% up to (and including) 10% of the responsible entity's data recorded by DMEs for Regional Reliability Organization-identified events was not archived for at least three years.	More than 10% up to (and including) 15% of the responsible entity's data recorded by DMEs for Regional Reliability Organization-identified events was not archived for at least three years.	More than 15% of the responsible entity's data recorded by DMEs for Regional Reliability Organization-identified events was not archived for at least three years.
PRC-018-1	R6.	Each Transmission Owner and Generator Owner that is required by its Regional Reliability Organization to have DMEs shall have a maintenance and testing program for those DMEs that includes:	N/A	N/A	The responsible entity is not compliant in that the maintenance and testing program for DMEs does not include one of the elements in R6.1 and 6.2.	The responsible entity is not compliant in that the maintenance and testing program for DMEs does not include any of the elements in R6.1 and 6.2.
PRC-018-1	R6.1.	Maintenance and testing intervals and their basis.	The responsible entity's DME maintenance and testing program was	The responsible entity's DME maintenance and testing program was	The responsible entity's DME maintenance and testing program was non-compliant in that	The responsible entity's DME maintenance and testing program was

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			non-compliant in that documentation of maintenance and testing intervals and their basis was missing for no more than 25% of the DME equipment.	non-compliant in that documentation of maintenance and testing intervals and their basis was missing for more than 25% but less than or equal to 50% of the DME equipment.	documentation of maintenance and testing intervals and their basis was missing for more than 50% but less than or equal to 75% of the DME equipment.	non-compliant in that documentation of maintenance and testing intervals and their basis was missing for more than 75% of the DME equipment.
PRC-018-1	R6.2.	Summary of maintenance and testing procedures.	The responsible entity's DME maintenance and testing program was non-compliant in that the summary of maintenance and testing procedures documentation was missing for no more than 25% of the DME equipment.	The responsible entity's DME maintenance and testing program was non-compliant in that the summary of maintenance and testing procedures documentation was missing for more than 25% but less than or equal to 50% of the DME equipment.	The responsible entity's DME maintenance and testing program was non-compliant in that the summary of maintenance and testing procedures documentation was missing for more than 50% but less than or equal to 75% of the DME equipment.	The responsible entity's DME maintenance and testing program was non-compliant in that the summary of maintenance and testing procedures documentation was missing for more than 75% of the DME equipment.
PRC-021-1	R1.	Each Transmission Owner and Distribution Provider that owns a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall annually update its UVLS data to support the Regional UVLS program database. The following data shall be provided to the Regional Reliability Organization for each installed UVLS system:	UVLS data was provided but did not address one of the subrequirements in R1.1 through R1.5.	UVLS data was provided but did not address two of the subrequirements in R1.1 through R1.5.	UVLS data was provided but did not address three of the subrequirements in R1.1 through R1.5.	No annual UVLS data was provided. OR UVLS data was provided but did not address four or more of the subrequirements in R1.1 through R1.5.
PRC-021-1	R1.1.	Size and location of customer load, or percent of connected load, to be interrupted.	N/A	N/A	N/A	N/A
PRC-021-1	R1.2.	Corresponding voltage set points and overall	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		scheme clearing times.				
PRC-021-1	R1.3.	Time delay from initiation to trip signal.	N/A	N/A	N/A	N/A
PRC-021-1	R1.4.	Breaker operating times.	N/A	N/A	N/A	N/A
PRC-021-1	R1.5.	Any other schemes that are part of or impact the UVLS programs such as related generation protection, islanding schemes, automatic load restoration schemes, UFLS and Special Protection Systems.	N/A	N/A	N/A	N/A
PRC-021-1	R2.	Each Transmission Owner and Distribution Provider that owns a UVLS program shall provide its UVLS program data to the Regional Reliability Organization within 30 calendar days of a request.	The responsible entity updated its UVLS data more than 30 calendar days but less than or equal to 40 calendar days following a request from its Regional Reliability Organization.	The responsible entity updated its UVLS data more than 40 calendar days but less than or equal to 50 calendar days following a request from its Regional Reliability Organization.	The responsible entity updated its UVLS data more than 50 calendar days but less than or equal to 60 calendar days following a request from its Regional Reliability Organization.	The responsible entity did not update its UVLS data for more than 60 calendar days following a request from its Regional Reliability Organization.
PRC-022-1	R1.	Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall analyze and document all UVLS operations and Misoperations. The analysis shall include:	The overall analysis program did not address one of the subrequirements in R1.1 through R1.5.	The overall analysis program did not address two of the subrequirements in R1.1 through R1.5.	The overall analysis program did not address three of the subrequirements in R1.1 through R1.5.	The responsible entity failed to analyze and document a UVLS operation and Misoperation. OR The overall analysis program did not address four or more of the subrequirements in R1.1 through R1.5.
PRC-022-1	R1.1.	A description of the event including initiating conditions.	N/A	N/A	N/A	N/A
PRC-022-1	R1.2.	A review of the UVLS set points and tripping times.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
PRC-022-1	R1.3.	A simulation of the event, if deemed appropriate by the Regional Reliability Organization. For most events, analysis of sequence of events may be sufficient and dynamic simulations may not be needed.	N/A	N/A	N/A	N/A
PRC-022-1	R1.4.	A summary of the findings.	N/A	N/A	N/A	N/A
PRC-022-1	R1.5.	For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature.	N/A	N/A	N/A	N/A
PRC-022-1	R2.	Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall provide documentation of its analysis of UVLS program performance to its Regional Reliability Organization within 90 calendar days of a request.	The responsible entity provided documentation of the analysis of UVLS program performance more than 90 calendar days but less than or equal to 120 calendar days following a request from its Regional Reliability Organization.	The responsible entity provided documentation of the analysis of UVLS program performance more than 120 calendar days but less than or equal to 130 calendar days following a request from its Regional Reliability Organization.	The responsible entity provided documentation of the analysis of UVLS program performance more than 130 calendar days but less than or equal to 140 calendar days following a request from its Regional Reliability Organization.	The responsible entity did not provide documentation of the analysis of UVLS program performance for more than 140 calendar days following a request from its Regional Reliability Organization.
PRC-023-1	R1.	Each Transmission Owner, Generator Owner, and Distribution Provider shall use any one of the following criteria (R1.1 through R1.13) for any specific circuit relay terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Bulk Electric System for all fault conditions. Each Transmission Owner, Generator Owner, and Distribution Provider shall evaluate relay loadability at 0.85 per unit voltage and a power factor angle of 30 degrees: [Mitigation Time Horizon: Long		Evidence that relay settings comply with criteria in R1.1 through 1.13 exists, but evidence is incomplete or incorrect for one or more of the subrequirements.		Relay settings do not comply with any of the sub requirements R1.1 through R1.13 OR Evidence does not exist to support that relay settings comply with one of the criteria in subrequirements R1.1 through R1.13.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Term Planning].				
PRC-023-1	R2.	The Transmission Owner, Generator Owner, or Distribution Provider that uses a circuit capability with the practical limitations described in R1.6, R1.7, R1.8, R1.9, R1.12, or R1.13 shall use the calculated circuit capability as the Facility Rating of the circuit and shall obtain the agreement of the Planning Coordinator, Transmission Operator, and Reliability Coordinator with the calculated circuit capability. [Time Horizon: Long Term Planning]	Criteria described in R1.6, R1.7, R1.8, R1.9, R1.12, or R1.13 was used but evidence does not exist that agreement was obtained in accordance with R2.			
PRC-023-1	R3.	The Planning Coordinator shall determine which of the facilities (transmission lines operated at 100 kV to 200 kV and transformers with low voltage terminals connected at 100 kV to 200 kV) in its Planning Coordinator Area are critical to the reliability of the Bulk Electric System to identify the facilities from 100 kV to 200 kV that must meet Requirement 1 to prevent potential cascade tripping that may occur when protective relay settings limit transmission loadability. [Time Horizon: Long Term Planning]		Provided the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers between 31 days and 45 days after the list was established or updated.	Provided the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers between 46 days and 60 days after list was established or updated.	Does not have a process in place to determine facilities that are critical to the reliability of the Bulk Electric System. OR Does not maintain a current list of facilities critical to the reliability of the Bulk Electric System, OR Did not provide the list of facilities critical to the reliability of the Bulk Electric System to the appropriate Reliability Coordinators, Transmission Owners, Generator Owners, and Distribution Providers, or provided the list more than 60

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						days after the list was established or updated.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
TOP-001-1	R1.	Each Transmission Operator shall have the responsibility and clear decision-making authority to take whatever actions are needed to ensure the reliability of its area and shall exercise specific authority to alleviate operating emergencies.	N/A	N/A	N/A	The Transmission Operator has no evidence that clear decision-making authority exists to assure reliability in its area or has failed to exercise this authority to alleviate operating emergencies.
TOP-001-1	R2.	Each Transmission Operator shall take immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc.	N/A	N/A	N/A	The Transmission Operator failed to have evidence that it took immediate actions to alleviate operating emergencies including curtailing transmission service or energy schedules, operating equipment (e.g., generators, phase shifters, breakers), shedding firm load, etc.
TOP-001-1	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall comply with reliability directives issued by the Reliability Coordinator, and each Balancing Authority and Generator Operator shall comply with reliability directives issued by the Transmission Operator, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances the Transmission Operator, Balancing Authority, or Generator Operator shall immediately inform the	N/A	N/A	N/A	The responsible entity failed to comply with reliability directives issued by the Reliability Coordinator or the Transmission Operator (when applicable), when said directives would not have resulted in actions that would violate safety,

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		Reliability Coordinator or Transmission Operator of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator can implement alternate remedial actions.				equipment, regulatory or statutory requirements, or under circumstances that said directives would have resulted in actions that would violate safety, equipment, regulatory or statutory requirements the responsible entity failed to inform the Reliability Coordinator or Transmission Operator (when applicable) of the inability to perform the directive so that the Reliability Coordinator or Transmission Operator could implement alternate remedial actions.
TOP-001-1	R4.	Each Distribution Provider and Load-Serving Entity shall comply with all reliability directives issued by the Transmission Operator, including shedding firm load, unless such actions would violate safety, equipment, regulatory or statutory requirements. Under these circumstances, the Distribution Provider or Load-Serving Entity shall immediately inform the Transmission Operator of the inability to perform the directive so that the Transmission Operator can implement alternate remedial actions.	N/A	N/A	N/A	The responsible entity failed to comply with all reliability directives issued by the Transmission Operator, including shedding firm load, when said directives would not have resulted in actions that would violate safety, equipment, regulatory or statutory requirements, or under

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						circumstances when said directives would have violated safety, equipment, regulatory or statutory requirements, the responsible entity failed to immediately inform the Transmission Operator of the inability to perform the directive so that the Transmission Operator could implement alternate remedial actions.
TOP-001-1	R5.	Each Transmission Operator shall inform its Reliability Coordinator and any other potentially affected Transmission Operators of real-time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency.	N/A	The Transmission Operator failed to inform its Reliability Coordinator and any other potentially affected Transmission Operators of real-time or anticipated emergency conditions, but did take actions to avoid, when possible, or mitigate the emergency.	N/A	The Transmission Operator failed to inform its Reliability Coordinator and any other potentially affected Transmission Operators of real-time or anticipated emergency conditions, and failed to take actions to avoid, when possible, or mitigate the emergency.
TOP-001-1	R6.	Each Transmission Operator, Balancing Authority, and Generator Operator shall render all available emergency assistance to others as requested, provided that the requesting entity has implemented its comparable emergency procedures, unless such actions would violate safety, equipment, or regulatory or statutory requirements.	N/A	N/A	N/A	The responsible entity failed to render all available emergency assistance to others as requested, after the requesting entity had implemented its comparable

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						emergency procedures, when said assistance would not have resulted in actions that would violate safety, equipment, or regulatory or statutory requirements.
TOP-001-1	R7.	Each Transmission Operator and Generator Operator shall not remove Bulk Electric System facilities from service if removing those facilities would burden neighboring systems unless:	N/A	N/A	N/A	The responsible entity removed Bulk Electric System facilities from service and removal of said facilities burdened a neighboring system, without complying with the applicable requirements listed in R7.1 through R7.3.
TOP-001-1	R7.1.	For a generator outage, the Generator Operator shall notify and coordinate with the Transmission Operator. The Transmission Operator shall notify the Reliability Coordinator and other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.	N/A	N/A	N/A	N/A
TOP-001-1	R7.2.	For a transmission facility, the Transmission Operator shall notify and coordinate with its Reliability Coordinator. The Transmission Operator shall notify other affected Transmission Operators, and coordinate the impact of removing the Bulk Electric System facility.	N/A	N/A	N/A	N/A
TOP-001-1	R7.3.	When time does not permit such notifications and coordination, or when immediate action is required to prevent a hazard to the public,	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		lengthy customer service interruption, or damage to facilities, the Generator Operator shall notify the Transmission Operator, and the Transmission Operator shall notify its Reliability Coordinator and adjacent Transmission Operators, at the earliest possible time.				
TOP-001-1	R8.	During a system emergency, the Balancing Authority and Transmission Operator shall immediately take action to restore the Real and Reactive Power Balance. If the Balancing Authority or Transmission Operator is unable to restore Real and Reactive Power Balance it shall request emergency assistance from the Reliability Coordinator. If corrective action or emergency assistance is not adequate to mitigate the Real and Reactive Power Balance, then the Reliability Coordinator, Balancing Authority, and Transmission Operator shall implement firm load shedding.	N/A	N/A	N/A	The responsible entity failed to take immediate actions to restore the Real and Reactive Power Balance during a system emergency. OR The responsible entity failed to request emergency assistance from the Reliability Coordinator during a period when it was unable to restore the Real and Reactive Power Balance, OR During a period when corrective actions or emergency assistance was not adequate to mitigate the Real and Reactive Power Balance, the responsible entity failed to implement firm load shedding.
TOP-002-2a	R1.	Each Balancing Authority and Transmission Operator shall maintain a set of current plans	N/A	N/A	The responsible entity maintained a set of	The responsible entity failed to maintain a set

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.			current plans that were designed to evaluate options and set procedures for reliable operation through a reasonable future time period, but failed to utilize available personnel and system equipment to implement these plans to ensure that interconnected system reliability would be maintained.	of current plans that were designed to evaluate options and set procedures for reliable operation through a reasonable future time period.
TOP-002-2a	R2.	Each Balancing Authority and Transmission Operator shall ensure its operating personnel participate in the system planning and design study processes, so that these studies contain the operating personnel perspective and system operating personnel are aware of the planning purpose.	N/A	N/A	N/A	The responsible entity failed to ensure its operating personnel participated in the system planning and design study processes.
TOP-002-2a	R3.	Each Load-Serving Entity and Generator Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal operations with its Host Balancing Authority and Transmission Service Provider. Each Balancing Authority and Transmission Service Provider shall coordinate its current-day, next-day, and seasonal operations with its Transmission Operator.	N/A	The Load-Serving Entity or Generator Operator failed to coordinate (where confidentiality agreements allow) its seasonal operations with its Host Balancing Authority and Transmission Service Provider, or the Balancing Authority or Transmission Service Provider failed to coordinate its seasonal	N/A	The Load-Serving Entity or Generator Operator failed to coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal operations with its Host Balancing Authority and Transmission Service Provider, or the Balancing Authority or Transmission Service Provider failed

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				operations with its Transmission Operator.		to coordinate its current-day, next-day, and seasonal operations with its Transmission Operator.
TOP-002-2a	R4.	Each Balancing Authority and Transmission Operator shall coordinate (where confidentiality agreements allow) its current-day, next-day, and seasonal planning and operations with neighboring Balancing Authorities and Transmission Operators and with its Reliability Coordinator, so that normal Interconnection operation will proceed in an orderly and consistent manner.		The responsible entity failed to coordinate (where confidentiality agreements allow) one of the following three categories of operations (current-day, next-day or seasonal) with the applicable entity(ies)	The responsible entity failed to coordinate (where confidentiality agreements allow) two of the following three categories of operations (current-day, next-day or seasonal) with the applicable entity(ies)	The responsible entity failed to coordinate (where confidentiality agreements allow) all three of the following categories of operations (current-day, next-day or seasonal) with the applicable entity(ies)
TOP-002-2a	R5.	Each Balancing Authority and Transmission Operator shall plan to meet scheduled system configuration, generation dispatch, interchange scheduling and demand patterns.	N/A	N/A	N/A	The responsible entity failed to plan to meet scheduled system configuration, generation dispatch, interchange scheduling and demand patterns.
TOP-002-2a	R6.	Each Balancing Authority and Transmission Operator shall plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, subregional, and local reliability requirements.	N/A	N/A	N/A	The responsible entity failed to plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, subregional and local reliability

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						requirements.
TOP-002-2a	R7.	Each Balancing Authority shall plan to meet capacity and energy reserve requirements, including the deliverability/capability for any single Contingency.	N/A	N/A	N/A	The Balancing Authority failed to plan to meet capacity and energy reserve requirements, including the deliverability/capability for any single Contingency.
TOP-002-2a	R8.	Each Balancing Authority shall plan to meet voltage and/or reactive limits, including the deliverability/capability for any single contingency.	N/A	N/A	N/A	The Balancing Authority failed to plan to meet voltage and/or reactive limits, including the deliverability/capability for any single contingency.
TOP-002-2a	R9.	Each Balancing Authority shall plan to meet Interchange Schedules and Ramps.	N/A	N/A	N/A	The Balancing Authority failed to plan to meet Interchange Schedules and Ramps.
TOP-002-2a	R10.	Each Balancing Authority and Transmission Operator shall plan to meet all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs).	N/A	N/A	N/A	The responsible entity failed to plan to meet all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs).
TOP-002-2a	R11.	The Transmission Operator shall perform seasonal, next-day, and current-day Bulk Electric System studies to determine SOLs. Neighboring Transmission Operators shall utilize identical SOLs for common facilities. The Transmission Operator shall update	N/A	N/A	The Transmission Operator performed seasonal, next-day, and current-day Bulk Electric System studies, reflecting	The Transmission Operator failed to perform seasonal, next-day, or current-day Bulk Electric System studies,

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		these Bulk Electric System studies as necessary to reflect current system conditions; and shall make the results of Bulk Electric System studies available to the Transmission Operators, Balancing Authorities (subject confidentiality requirements), and to its Reliability Coordinator.			current system conditions, to determine SOLs, but failed to make the results of Bulk Electric System studies available to all of the Transmission Operators, Balancing Authorities (subject confidentiality requirements), or to its Reliability Coordinator.	reflecting current system conditions, to determine SOLs.
TOP-002-2a	R12.	The Transmission Service Provider shall include known SOLs or IROLs within its area and neighboring areas in the determination of transfer capabilities, in accordance with filed tariffs and/or regional Total Transfer Capability and Available Transfer Capability calculation processes.	N/A	N/A	N/A	The Transmission Service Provider failed to include known SOLs or IROLs within its area and neighboring areas in the determination of transfer capabilities, in accordance with filed tariffs and/or regional Total Transfer Capability and Available Transfer Capability calculation processes.
TOP-002-2a	R13.	At the request of the Balancing Authority or Transmission Operator, a Generator Operator shall perform generating real and reactive capability verification that shall include, among other variables, weather, ambient air and water conditions, and fuel quality and quantity, and provide the results to the Balancing Authority or Transmission Operator operating personnel as requested.	N/A	N/A	N/A	The Generator Operator failed to perform generating real and reactive capability verification that included, among other variables, weather, ambient air and water conditions,

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						and fuel quality and quantity, or failed to provide the results of generating real and reactive verifications Balancing Authority or Transmission Operator operating personnel, when requested.
TOP-002-2a	R14.	Generator Operators shall, without any intentional time delay, notify their Balancing Authority and Transmission Operator of changes in capabilities and characteristics including but not limited to:	N/A	N/A	N/A	The Generator Operator failed to notify its Balancing Authority or Transmission Operator of changes in capabilities and characteristics including real output capabilities.
TOP-002-2a	R14.1.	Changes in real output capabilities.	N/A	N/A	N/A	N/A
TOP-002-2a	R14.2.	Automatic Voltage Regulator status and mode setting. (Retired August 1, 2007)	N/A	N/A	N/A	N/A
TOP-002-2a	R15.	Generation Operators shall, at the request of the Balancing Authority or Transmission Operator, provide a forecast of expected real power output to assist in operations planning (e.g., a seven-day forecast of real output).	N/A	N/A	N/A	The Generator Operator failed to provide, at the request of the Balancing Authority or Transmission Operator, a forecast of expected real power output to assist in operations planning (e.g., a seven-day forecast of real output).

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TOP-002-2a	R16.	Subject to standards of conduct and confidentiality agreements, Transmission Operators shall, without any intentional time delay, notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics including but not limited to:	N/A	N/A	N/A	The Transmission Operator failed to notify their Reliability Coordinator and Balancing Authority of changes in capabilities and characteristics, within the terms and conditions of standards of conduct and confidentiality agreements.
TOP-002-2a	R16.1.	Changes in transmission facility status.	N/A	N/A	N/A	The Transmission Operator failed to notify their Reliability Coordinator and Balancing Authority of changes in transmission facility status, within the terms and conditions of standards of conduct and confidentiality agreements.
TOP-002-2a	R16.2.	Changes in transmission facility rating.	N/A	N/A	N/A	The Transmission Operator failed to notify their Reliability Coordinator and Balancing Authority of changes in transmission facility rating, within the terms and conditions of standards of conduct and confidentiality

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						agreements.
TOP-002-2a	R17.	Balancing Authorities and Transmission Operators shall, without any intentional time delay, communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator.	N/A	N/A	N/A	The responsible entity failed to communicate the information described in the requirements R1 to R16 above to their Reliability Coordinator.
TOP-002-2a	R18.	Neighboring Balancing Authorities, Transmission Operators, Generator Operators, Transmission Service Providers, and Load-Serving Entities shall use uniform line identifiers when referring to transmission facilities of an interconnected network.	N/A	N/A	N/A	The responsible entity failed to use uniform line identifiers when referring to transmission facilities of an interconnected network.
TOP-002-2a	R19.	Each Balancing Authority and Transmission Operator shall maintain accurate computer models utilized for analyzing and planning system operations.	N/A	N/A	N/A	The responsible entity failed to maintain accurate computer models utilized for analyzing and planning system operations.
TOP-003-0	R1.	Generator Operators and Transmission Operators shall provide planned outage information.	N/A	N/A	N/A	N/A
TOP-003-0	R1.1.	Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.	N/A	N/A	N/A	The Generator Operator failed to provide outage information, in accordance with its Transmission Operator's established outage reporting requirements, to its Transmission Operator

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						<p>for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). OR The Transmission Operator failed to establish the outage reporting requirements.</p>
TOP-003-0	R1.2.	<p>Each Transmission Operator shall provide outage information daily to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. The Reliability Coordinator shall establish the outage reporting requirements.</p>	N/A	N/A	N/A	<p>The Transmission Operator failed to provide outage information, in accordance with its Reliability Coordinators established outage reporting requirement, to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or</p>

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						contribute to an SOL or IROL violation or a regional operating area limitation. OR The Reliability Coordinator failed to establish the outage reporting requirements.
TOP-003-0	R1.3.	Such information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.	The responsible entity failed to provide the information by 1200 Central Standard Time for the Eastern Interconnection or 1200 Pacific Standard Time for the Western Interconnection but did provide the information by 1230 for the applicable interconnection.	The responsible entity failed to provide the information by 1230 Central Standard Time for the Eastern Interconnection or 1230 Pacific Standard Time for the Western Interconnection but did provide the information by 1300 for the applicable interconnection.	The responsible entity failed to provide the information by 1300 Central Standard Time for the Eastern Interconnection or 1300 Pacific Standard Time for the Western Interconnection but did provide the information by 1330 for the applicable interconnection.	The responsible entity failed to provide the information by 1330 Central Standard Time for the Eastern Interconnection or 1330 Pacific Standard Time for the Western Interconnection.
TOP-003-0	R2.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors, reactors, etc., among affected Balancing Authorities and Transmission Operators as required.	N/A	N/A	N/A	The responsible entity failed to plan or coordinate scheduled outages of system voltage regulating equipment, such as automatic voltage regulators on generators, supplementary excitation control, synchronous condensers, shunt and series capacitors,

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						reactors, etc., among affected Balancing Authorities and Transmission Operators when required.
TOP-003-0	R3.	Each Transmission Operator, Balancing Authority, and Generator Operator shall plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.	N/A	N/A	The responsible entity planned scheduled outages of telemetering and control equipment and associated communication channels but failed to coordinate between the affected areas.	The responsible entity failed to plan and coordinate scheduled outages of telemetering and control equipment and associated communication channels between the affected areas.
TOP-003-0	R4.	Each Reliability Coordinator shall resolve any scheduling of potential reliability conflicts.	N/A	N/A	N/A	The Reliability Coordinator failed to resolve any scheduling of potential reliability conflicts.
TOP-004-2	R1.	Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs).	N/A	N/A	N/A	The Transmission Operator failed to operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs).
TOP-004-2	R2.	Each Transmission Operator shall operate so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single contingency.	N/A	N/A	N/A	The Transmission Operator failed to operate so that instability, uncontrolled separation, or cascading outages would not occur as a

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						result of the most severe single contingency.
TOP-004-2	R3.	Each Transmission Operator shall operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by its Reliability Coordinator.	N/A	N/A	N/A	The Transmission Operator failed to operate to protect against instability, uncontrolled separation, or cascading outages resulting from multiple outages, as specified by Reliability Coordinator policy.
TOP-004-2	R4.	If a Transmission Operator enters an unknown operating state (i.e., any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.	N/A	N/A	N/A	The Transmission Operator entered an unknown operating state (i.e., any state for which valid operating limits have not been determined), and failed to restore operations to respect proven reliable power system limits for more than 30 minutes.
TOP-004-2	R5.	Each Transmission Operator shall make every effort to remain connected to the Interconnection. If the Transmission Operator determines that by remaining interconnected, it is in imminent danger of violating an IROL or SOL, the Transmission Operator may take such actions, as it deems necessary, to protect its area.	N/A	N/A	N/A	The Transmission Operator did not make every effort to remain connected to the Interconnection except when the Transmission Operator determined that by remaining interconnected, it was

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						in imminent danger of violating an IROL or SOL.
TOP-004-2	R6.	Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability, including:	The Transmission Operator, individually and jointly with other Transmission Operators, developed, maintained, and implemented formal policies and procedures to provide for transmission reliability, addressing the execution and coordination of activities that impact inter- and intra-Regional reliability, but failed to include information required by one of the subrequirements R6.1 thru R6.4	The Transmission Operator, individually and jointly with other Transmission Operators, developed, maintained, and implemented formal policies and procedures to provide for transmission reliability, addressing the execution and coordination of activities that impact inter- and intra-Regional reliability, but failed to include information required by 2 of the subrequirements R6.1 thru R6.4.	The Transmission Operator, individually and jointly with other Transmission Operators, developed, maintained, and implemented formal policies and procedures to provide for transmission reliability, addressing the execution and coordination of activities that impact inter- and intra-Regional reliability, but failed to include information required by 3 of the subrequirements R6.1 thru R6.4.	The Transmission Operator, failed to develop, maintain, and implemented formal policies and procedures to provide for transmission reliability, addressing the execution and coordination of activities that impact inter- and intra-Regional reliability. If formal policies and procedures were developed, such policies and procedures failed to include any of the information required in subrequirements R6.1 thru R6.4.
TOP-004-2	R6.1.	Monitoring and controlling voltage levels and real and reactive power flows.	N/A	N/A	N/A	N/A
TOP-004-2	R6.2.	Switching transmission elements.	N/A	N/A	N/A	N/A
TOP-004-2	R6.3.	Planned outages of transmission elements.	N/A	N/A	N/A	N/A
TOP-004-2	R6.4.	Responding to IROL and SOL violations.	N/A	N/A	N/A	N/A
TOP-005-1.1a	R1.	Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the	The responsible entity failed to provide all of the data requested by its Reliability Coordinator.	N/A	N/A	The responsible entity failed to provide all of the data requested by its Reliability Coordinator.

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		Reliability Coordinator Area.				
TOP-005-1.1a	R1.1.	Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1-TOP-005-0 “Electric System Reliability Data” and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area.	N/A	N/A	N/A	The Reliability Coordinator failed to identify the data necessary to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area.
TOP-005-1.1a	R2.	As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for “Electric System Reliability Data.”	N/A	N/A	N/A	The ISN data recipient failed to sign the NERC Confidentiality Agreement for “Electric System Reliability Data”.
TOP-005-1.1a	R3.	Upon request, each Balancing Authority and Transmission Operator shall provide to other Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability, the operating data that are necessary to allow these Balancing Authorities and Transmission Operators to perform operational reliability assessments and to coordinate reliable operations. Balancing Authorities and Transmission Operators shall provide the types of data as listed in Attachment 1-TOP-005-0 “Electric System Reliability Data,” unless otherwise agreed to by the Balancing Authorities and Transmission Operators with immediate responsibility for operational reliability.	The responsible entity failed to provide any of the data requested by other Balancing Authorities or Transmission Operators.	N/A	N/A	The responsible entity failed to provide all of the data requested by its host Balancing Authority or Transmission Operator.
TOP-005-1.1a	R4.	Each Purchasing-Selling Entity shall provide information as requested by its Host Balancing Authorities and Transmission Operators to enable them to conduct	The responsible entity failed to provide any of the data requested by other Balancing	N/A	N/A	The responsible entity failed to provide all of the data requested by its host Balancing

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		operational reliability assessments and coordinate reliable operations.	Authorities or Transmission Operators.			Authority or Transmission Operator.
TOP-006-1	R1.	Each Transmission Operator and Balancing Authority shall know the status of all generation and transmission resources available for use.	N/A	N/A	N/A	The responsible entity failed to know the status of all generation and transmission resources available for use, even though said information was reported by the Generator Operator, Transmission Operator, or Balancing Authority.
TOP-006-1	R1.1.	Each Generator Operator shall inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.	N/A	N/A	N/A	The Generator Operator failed to inform its Host Balancing Authority and the Transmission Operator of all generation resources available for use.
TOP-006-1	R1.2.	Each Transmission Operator and Balancing Authority shall inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.	N/A	N/A	N/A	The responsible entity failed to inform the Reliability Coordinator and other affected Balancing Authorities and Transmission Operators of all generation and transmission resources available for use.
TOP-006-1	R2.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor applicable transmission line status,	N/A	The responsible entity monitors the applicable	The responsible entity fails to monitor all of the applicable	The responsible entity fails to monitor any of the applicable

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		real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.		transmission line status, real and reactive power flows, voltage, load-tap-changer settings, but is not aware of the status of rotating and static reactive resources.	transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of all rotating and static reactive resources.	transmission line status, real and reactive power flows, voltage, load-tap-changer settings, and status of rotating and static reactive resources.
TOP-006-1	R3.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.	The responsible entity failed to provide 5% or less of the appropriate technical information concerning protective relays to its operating personnel.	The responsible entity failed to provide more than 5% up to (and including) 10% of the appropriate technical information concerning protective relays to its operating personnel.	The responsible entity failed to provide more than 10% up to (and including) 15% of the appropriate technical information concerning protective relays to its operating personnel.	The responsible entity failed to provide more than 15% of the appropriate technical information concerning protective relays to its operating personnel.
TOP-006-1	R4.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.	N/A	N/A	The responsible entity has either weather forecasts or past load patterns, available to predict the system's near-term load pattern, but not both.	The responsible entity failed to have both weather forecasts and past load patterns, available to predict the system's near-term load pattern.
TOP-006-1	R5.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions and to indicate, if appropriate, the need for corrective action.	N/A	N/A	The responsible entity used monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions, but does not have indication of the need for corrective action.	The responsible entity failed to use monitoring equipment to bring to the attention of operating personnel important deviations in operating conditions.
TOP-006-1	R6.	Each Balancing Authority and Transmission Operator shall use sufficient metering of suitable range, accuracy and sampling rate (if	N/A	N/A	N/A	The responsible entity failed to use sufficient metering of suitable

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		applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.				range, accuracy and sampling rate (if applicable) to ensure accurate and timely monitoring of operating conditions under both normal and emergency situations.
TOP-006-1	R7.	Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall monitor system frequency.	N/A	N/A	N/A	The responsible entity failed to monitor system frequency.
TOP-007-0	R1.	A Transmission Operator shall inform its Reliability Coordinator when an IROL or SOL has been exceeded and the actions being taken to return the system to within limits.	N/A	N/A	The Transmission Operator informed its Reliability Coordinator when an IROL or SOL had been exceeded but failed to provide the actions being taken to return the system to within limits.	The Transmission Operator failed to inform its Reliability Coordinator when an IROL or SOL had been exceeded.
TOP-007-0	R2.	Following a Contingency or other event that results in an IROL violation, the Transmission Operator shall return its transmission system to within IROL as soon as possible, but not longer than 30 minutes.	Following a Contingency or other event that resulted in an IROL violation of a magnitude of 5% or less, the Transmission Operator failed to return its transmission system to within the IROL in less than or equal to 35 minutes.	Following a Contingency or other event that resulted in an IROL violation, the Transmission Operator failed to return its transmission system to within the IROL in accordance with the following: (a) an IROL with a magnitude of 5% or less for a period of time greater than 35 minutes but less than or equal to 45 minutes, or	Following a Contingency or other event that resulted in an IROL violation, the Transmission Operator failed to return its transmission system to within the IROL in accordance with the following: (a) an IROL with a magnitude of 5% or less for a period of time greater than 45 minutes, or (b) an IROL with a magnitude of more	Following a Contingency or other event that resulted in an IROL violation, the Transmission Operator failed to return its transmission system to within the IROL in accordance with the following: (a) an IROL with a magnitude of more than 10% up to (and including) 15% for a period of time greater than 45 minutes, or (b) an IROL with a

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				(b) an IROL with a magnitude of more than 5% up to (and including) 10% for a period of time less than or equal to 40 minutes, or (c) an IROL with a magnitude of more than 10% up to (and including) 15% for a period of time less than or equal to 35 minutes.	than 5% up to (and including) 10% for a period of time greater than 40 minutes, or (c) an IROL with a magnitude of more than 10% up to (and including) 15% for a period of time greater than 35 minutes but less than or equal to 45 minutes, or (d) an IROL with a magnitude of more than 15% up to (and including) 20% for a period of time less than or equal to 40 minutes, or (e) an IROL with a magnitude of more than 20% up to (and including) 25% for a period of time less than or equal to 35 minutes.	magnitude of more than 15% up to (and including) 20% for a period of time greater than 40 minutes, or (c) an IROL with a magnitude of more than 20% up to (and including) 25% for a period of time greater than 35 minutes, or (d) an IROL with a magnitude of more than 25% for a period of greater than 30 minutes.
TOP-007-0	R3.	A Transmission Operator shall take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to comply with Requirement R 2.	N/A	N/A	N/A	The Transmission Operator failed to take all appropriate actions up to and including shedding firm load, or directing the shedding of firm load, in order to return the transmission system to IROL within 30 minutes.
TOP-007-0	R4.	The Reliability Coordinator shall evaluate	N/A	N/A	N/A	The Reliability

Complete Violation Severity Level Matrix (TOP)
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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		actions taken to address an IROL or SOL violation and, if the actions taken are not appropriate or sufficient, direct actions required to return the system to within limits.				Coordinator failed to evaluate actions taken to address an IROL or SOL violation and, if the actions taken were not appropriate or sufficient, direct actions required to return the system to within limits.
TOP-008-1	R1.	The Transmission Operator experiencing or contributing to an IROL or SOL violation shall take immediate steps to relieve the condition, which may include shedding firm load.	N/A	N/A	N/A	The Transmission Operator experiencing or contributing to an IROL or SOL violation failed to take immediate steps to relieve the condition, which may have included shedding firm load.
TOP-008-1	R2.	Each Transmission Operator shall operate to prevent the likelihood that a disturbance, action, or inaction will result in an IROL or SOL violation in its area or another area of the Interconnection. In instances where there is a difference in derived operating limits, the Transmission Operator shall always operate the Bulk Electric System to the most limiting parameter.	N/A	N/A	The Transmission Operator operated to prevent the likelihood that a disturbance, action, or inaction would result in an IROL or SOL violation in its area or another area of the Interconnection but failed to operate the Bulk Electric System to the most limiting parameter in instances where there was a difference in derived operating limits.	The Transmission Operator failed to operate to prevent the likelihood that a disturbance, action, or inaction would result in an IROL or SOL violation in its area or another area of the Interconnection.

Complete Violation Severity Level Matrix (TOP)
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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
TOP-008-1	R3.	The Transmission Operator shall disconnect the affected facility if the overload on a transmission facility or abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Operator shall notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection prior to switching, if time permits, otherwise, immediately thereafter.	N/A	N/A	The Transmission Operator disconnected the affected facility when the overload on a transmission facility or abnormal voltage or reactive condition persisted and equipment was endangered but failed to notify its Reliability Coordinator and all neighboring Transmission Operators impacted by the disconnection either prior to switching, if time permitted, otherwise, immediately thereafter.	The Transmission Operator failed to disconnect the affected facility when the overload on a transmission facility or abnormal voltage or reactive condition persisted and equipment was endangered.
TOP-008-1	R4.	The Transmission Operator shall have sufficient information and analysis tools to determine the cause(s) of SOL violations. This analysis shall be conducted in all operating timeframes. The Transmission Operator shall use the results of these analyses to immediately mitigate the SOL violation.	N/A	N/A	The Transmission Operator had sufficient information and analysis tools to determine the cause(s) of SOL violations and used the results of these analyses to immediately mitigate the SOL violation(s), but failed to conduct these analyses in all operating timeframes.	The Transmission Operator failed to have sufficient information and analysis tools to determine the cause(s) of SOL violations or failed to use the results of analyses to immediately mitigate the SOL violation.

Complete Violation Severity Level Matrix (TPL)
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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
TPL-001-0.1	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that, with all transmission facilities in service and with normal (pre-contingency) operating procedures in effect, the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services at all Demand levels over the range of forecast system demands, under the conditions defined in Category A of Table I. To be considered valid, the Planning Authority and Transmission Planner assessments shall:	The responsible entity is non-compliant with 25% or less of the sub-components.	The responsible entity is non-compliant with more than 25% but less than 50% of the sub-components.	The responsible entity is non-compliant with 50% or more but less than 75% of the sub-components.	The responsible entity is non-compliant with 75% or more of the sub-components.
TPL-001-0.1	R1.1.	Be made annually.	N/A	N/A	N/A	The assessments were not made on an annual basis.
TPL-001-0.1	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	The responsible entity has failed to demonstrate a valid assessment for the long-term period, but a valid assessment for the near-term period exists.	The responsible entity has failed to demonstrate a valid assessment for the near-term period, but a valid assessment for the long-term period exists.	N/A	The responsible entity has failed to demonstrate a valid assessment for the near-term period AND long-term planning period.
TPL-001-0.1	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category A of Table 1 (no contingencies). The specific elements selected (from each of the following categories) shall be acceptable to the associated Regional Reliability	The responsible entity is non-compliant with 25% or less of the sub-components.	The responsible entity is non-compliant with more than 25% but less than 50% of the sub-components.	The responsible entity is non-compliant with 50% or more but less than 75% of the sub-components.	The responsible entity is non-compliant with 75% or more of the sub-components.

Complete Violation Severity Level Matrix (TPL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Organization(s).				
TPL-001-0.1	R1.3.1.	Cover critical system conditions and study years as deemed appropriate by the entity performing the study.	N/A	N/A	N/A	The responsible entity has failed to cover critical system conditions and study years as deemed appropriate.
TPL-001-0.1	R1.3.2.	Be conducted annually unless changes to system conditions do not warrant such analyses.	The responsible entity's most recent long-term studies (and/or system simulation testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.	The responsible entity's most recent near-term studies (and/or system simulation testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.	N/A	The responsible entity's most recent near-term studies (and/or system testing) AND most recent long-term studies (and/or system simulation testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.
TPL-001-0.1	R1.3.3.	Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.	N/A	N/A	N/A	The responsible entity failed to produce evidence of a past or current year long-term study and/or system simulation testing (beyond 5-year planning horizon) when past or current year near-term studies and/or system simulation testing

Complete Violation Severity Level Matrix (TPL) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						show marginal conditions that may require longer lead-time solutions.
TPL-001-0.1	R1.3.4.	Have established normal (pre-contingency) operating procedures in place.	N/A	N/A	N/A	No precontingency operating procedures are in place for existing facilities.
TPL-001-0.1	R1.3.5.	Have all projected firm transfers modeled.	The system model(s) used for current or past analysis did not properly represent up to (but less than) 25% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 25% or more but less than 50% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 50% or more but less than 75% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 75% or more of the firm transfers to/from the responsible entity's service territory.
TPL-001-0.1	R1.3.6.	Be performed for selected demand levels over the range of forecast system demands.	N/A	N/A	N/A	The responsible entity has failed to produce evidence of a valid current or past study and/or system simulation testing reflecting analysis over a range of forecast system demands.
TPL-001-0.1	R1.3.7.	Demonstrate that system performance meets Table 1 for Category A (no contingencies).	N/A	N/A	N/A	No past or current study results exist showing pre-contingency system analysis.
TPL-001-0.1	R1.3.8.	Include existing and planned facilities.	The responsible entity's transmission model used for past or current studies and/or	The responsible entity's transmission model used for past or current studies and/or	N/A	The responsible entity's transmission model used for past or current studies and/or

Complete Violation Severity Level Matrix (TPL) Encompassing All Commission-Approved Reliability Standards

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			system simulation testing properly reflects existing facilities, but is deficient in reflecting planned facilities.	system simulation testing properly reflects planned facilities, but is deficient in reflecting existing facilities.		system simulation testing is deficient in reflecting existing AND planned facilities.
TPL-001-0.1	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	N/A	N/A	N/A	The responsible entity has failed to ensure in a past or current study and/or system simulation testing that sufficient reactive power resources are available to meet required system performance.
TPL-001-0.1	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category A.	N/A	N/A	N/A	The responsible entity has failed to demonstrate that a corrective action plan exists in order to satisfy Category A planning requirements.
TPL-001-0.1	R2.	When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-001-0_R1, the Planning Authority and Transmission Planner shall each:	N/A	The responsible entity has failed to review the continuing need for previously identified facility additions through subsequent annual assessments. (R2.2)	The responsible entity provided documented evidence of corrective action plans in order to satisfy Category A planning requirements, but failed to include an implementation schedule with in-service dates (R2.1.1 and R2.1.2) OR The responsible entity	The responsible entity has failed to provide documented evidence of corrective action plans in order to satisfy Category A planning requirements. (R2.1)

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					failed to consider necessary lead times to implement its corrective action plan. (R2.1.3)	
TPL-001-0.1	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon.	N/A	N/A	N/A	N/A
TPL-001-0.1	R2.1.1.	Including a schedule for implementation.	N/A	N/A	N/A	N/A
TPL-001-0.1	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	N/A	N/A	N/A	N/A
TPL-001-0.1	R2.1.3.	Consider lead times necessary to implement plans.	N/A	N/A	N/A	N/A
TPL-001-0.1	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.	N/A	N/A	N/A	N/A
TPL-001-0.1	R3.	The Planning Authority and Transmission Planner shall each document the results of these reliability assessments and corrective plans and shall annually provide these to its respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	N/A	The responsible entity documented the results of its reliability assessments and corrective plans but did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization	N/A	The responsible entity DID NOT document the results of its annual reliability assessments and corrective plans AND did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization
TPL-002-0a	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a	The responsible entity is non-compliant with	The responsible entity is non-compliant with	The responsible entity is non-compliant with	The responsible entity is non-compliant with

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		valid assessment that its portion of the interconnected transmission system is planned such that the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category B of Table I. To be valid, the Planning Authority and Transmission Planner assessments shall:	25% or less of the sub-components.	more than 25% but less than 50% of the sub-components.	50% or more but less than 75% of the sub-components.	75% or more of the sub-components.
TPL-002-0a	R1.1.	Be made annually.	N/A	N/A	N/A	The assessments were not made on an annual basis.
TPL-002-0a	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	The responsible entity has failed to demonstrate a valid assessment for the long-term period, but a valid assessment for the near-term period exists.	The responsible entity has failed to demonstrate a valid assessment for the near-term period, but a valid assessment for the long-term period exists.	N/A	The responsible entity has failed to demonstrate a valid assessment for the near-term period AND long-term planning period.
TPL-002-0a	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category B of Table 1 (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	The responsible entity is non-compliant with 25% or less of the sub-components.	The responsible entity is non-compliant with more than 25% but less than 50% of the sub-components.	The responsible entity is non-compliant with 50% or more but less than 75% of the sub-components.	The responsible entity is non-compliant with 75% or more of the sub-components.
TPL-002-0a	R1.3.1.	Be performed and evaluated only for those Category B contingencies that would produce the more severe System results or impacts. The rationale for the contingencies	N/A	The responsible entity provided evidence through current or past studies and/or	N/A	The responsible entity did not provided evidence through current or past studies

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.		system simulation testing that selected NERC Category B contingencies were evaluated, however, no rationale was provided to indicate why the remaining Category B contingencies for their system were not evaluated.		and/or system simulation testing to indicate that any NERC Category B contingencies were evaluated.
TPL-002-0a	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	N/A	N/A	N/A	The responsible entity has failed to cover critical system conditions and study years as deemed appropriate.
TPL-002-0a	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	The responsible entity's most recent long-term studies (and/or system simulation testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.	The responsible entity's most recent near-term studies (and/or system simulation testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.	N/A	The responsible entity's most recent near-term studies (and/or system simulation testing) AND most recent long-term studies (and/or system testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system simulation testing) are no longer valid.
TPL-002-0a	R1.3.4.	Be conducted beyond the five-year horizon	N/A	N/A	N/A	The responsible entity

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		only as needed to address identified marginal conditions that may have longer lead-time solutions.				failed to produce evidence of a past or current year long-term study and/or system simulation testing (beyond 5-year planning horizon) when past or current year near-term studies and/or system simulation testing show marginal conditions that may require longer lead-time solutions.
TPL-002-0a	R1.3.5.	Have all projected firm transfers modeled.	The system model(s) used for current or past analysis did not properly represent up to (but less than) 25% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 25% or more but less than 50% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 50% or more but less than 75% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 75% or more of the firm transfers to/from the responsible entity's service territory.
TPL-002-0a	R1.3.6.	Be performed and evaluated for selected demand levels over the range of forecast system Demands.	N/A	N/A	N/A	The responsible entity has failed to produce evidence of a valid current or past study and/or system simulation testing reflecting analysis over a range of forecast system demands.
TPL-002-0a	R1.3.7.	Demonstrate that system performance meets Category B contingencies.	N/A	N/A	N/A	No past or current study results exist showing Category B

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						contingency system analysis.
TPL-002-0a	R1.3.8.	Include existing and planned facilities.	The responsible entity's transmission model used for past or current studies and/or system simulation testing properly reflects existing facilities, but is deficient in reflecting planned facilities.	The responsible entity's transmission model used for past or current studies and/or system simulation testing properly reflects planned facilities, but is deficient in reflecting existing facilities.	N/A	The responsible entity's transmission model used for past or current studies and/or system simulation testing is deficient in reflecting existing AND planned facilities.
TPL-002-0a	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	N/A	N/A	N/A	The responsible entity has failed to ensure in a past or current study and/or system simulation testing that sufficient reactive power resources are available to meet required system performance.
TPL-002-0a	R1.3.10.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	N/A	N/A	The responsible entity's transmission model used for past or current studies is deficient with respect to the effects of planned protection systems, including any backup or redundant systems.	The responsible entity's transmission model used for past or current studies is deficient with respect to the effects of existing protection systems, including any backup or redundant systems.
TPL-002-0a	R1.3.11.	Include the effects of existing and planned control devices.	N/A	N/A	The responsible entity's transmission model used for past or current studies is deficient with respect	The responsible entity's transmission model used for past or current studies is deficient with respect

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					to the effects of planned control devices.	to the effects of existing control devices.
TPL-002-0a	R1.3.12.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.	N/A	N/A	N/A	The responsible entity's transmission model used for past or current studies is deficient with respect to the inclusion of planned maintenance outages of bulk electric transmission facilities.
TPL-002-0a	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category B of Table I.	N/A	N/A	N/A	The responsible entity has failed to demonstrate that a corrective action plan exists in order to satisfy Category B planning requirements.
TPL-002-0a	R1.5.	Consider all contingencies applicable to Category B.	The responsible entity has considered the NERC Category B contingencies applicable to their system, but was deficient with respect to 25% or less of all applicable contingencies.	The responsible entity has considered the NERC Category B contingencies applicable to their system, but was deficient with respect to more than 25% but less than 50% of all applicable contingencies.	The responsible entity has considered the NERC Category B contingencies applicable to their system, but was deficient with respect to more than 50% but less than 75% of all applicable contingencies.	The responsible entity has considered the NERC Category B contingencies applicable to their system, but was deficient 75% or more of all applicable contingencies.
TPL-002-0a	R2.	When System simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-002-0_R1, the Planning Authority and Transmission Planner shall each:	N/A	The responsible entity has failed to review the continuing need for previously identified facility	The responsible entity provided documented evidence of corrective action plans in order to satisfy Category B	The responsible entity has failed to provide documented evidence of corrective action plans in order to

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				additions through subsequent annual assessments. (R2.2)	planning requirements, but failed to include a implementation schedule with in-service dates (R2.1.1 and R2.1.2) OR The responsible entity failed to consider necessary lead times to implement its corrective action plan. (R2.1.3)	satisfy Category B planning requirements. (R2.1)
TPL-002-0a	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	N/A	N/A	N/A	N/A
TPL-002-0a	R2.1.1.	Including a schedule for implementation.	N/A	N/A	N/A	N/A
TPL-002-0a	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	N/A	N/A	N/A	N/A
TPL-002-0a	R2.1.3.	Consider lead times necessary to implement plans.	N/A	N/A	N/A	N/A
TPL-002-0a	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.	N/A	N/A	N/A	N/A
TPL-002-0a	R3.	The Planning Authority and Transmission Planner shall each document the results of its Reliability Assessments and corrective plans and shall annually provide the results to its respective Regional Reliability Organization(s), as required by the Regional Reliability Organization.	N/A	The responsible entity documented the results of its reliability assessments and corrective plans but did not annually provide them to its respective NERC	N/A	The responsible entity DID NOT document the results of its annual reliability assessments and corrective plans AND did not annually provide them to its

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Regional Reliability Organization(s) as required by the Regional Reliability Organization.		respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization.
TPL-003-0a	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission systems is planned such that the network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand Levels over the range of forecast system demands, under the contingency conditions as defined in Category C of Table I (attached). The controlled interruption of customer Demand, the planned removal of generators, or the Curtailment of firm (non-recallable reserved) power transfers may be necessary to meet this standard. To be valid, the Planning Authority and Transmission Planner assessments shall:	The responsible entity is non-compliant with 25% or less of the sub-components.	The responsible entity is non-compliant with more than 25% but less than 50% of the sub-components.	The responsible entity is non-compliant with 50% or more but less than 75% of the sub-components.	The responsible entity is non-compliant with 75% or more of the sub-components.
TPL-003-0a	R1.1.	Be made annually.	N/A	N/A	N/A	The assessments were not made on an annual basis.
TPL-003-0a	R1.2.	Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.	The responsible entity has failed to demonstrate a valid assessment for the long-term period, but a valid assessment for the near-term period exists.	The responsible entity has failed to demonstrate a valid assessment for the near-term period, but a valid assessment for the long-term period exists.	N/A	The responsible entity has failed to demonstrate a valid assessment for the near-term period AND long-term planning period.
TPL-003-0a	R1.3.	Be supported by a current or past study and/or system simulation testing that	The responsible entity is non-compliant with	The responsible entity is non-compliant with	The responsible entity is non-compliant with	The responsible entity is non-compliant with

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		addresses each of the following categories, showing system performance following Category C of Table 1 (multiple contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	25% or less of the sub-components.	more than 25% but less than 50% of the sub-components.	50% or more but less than 75% of the sub-components.	75% or more of the sub-components.
TPL-003-0a	R1.3.1.	Be performed and evaluated only for those Category C contingencies that would produce the more severe system results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.	N/A	The responsible entity provided evidence through current or past studies that selected NERC Category C contingencies were evaluated, however, no rationale was provided to indicate why the remaining Category C contingencies for their system were not evaluated.	N/A	The responsible entity did not provide evidence through current or past studies to indicate that any NERC Category C contingencies were evaluated.
TPL-003-0a	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	N/A	N/A	N/A	The responsible entity has failed to cover critical system conditions and study years as deemed appropriate.
TPL-003-0a	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	The responsible entity's most recent long-term studies (and/or system simulation testing) were not performed in the most recent annual	The responsible entity's most recent near-term studies (and/or system simulation testing) were not performed in the most recent	N/A	The responsible entity's most recent near-term studies (and/or system simulation testing) AND most recent long-term studies

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.	annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system testing) are no longer valid.		(and/or system testing) were not performed in the most recent annual period AND significant system changes (actual or proposed) indicate that past studies (and/or system simulation testing) are no longer valid.
TPL-003-0a	R1.3.4.	Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.	N/A	N/A	N/A	The responsible entity failed to produce evidence of a past or current year long-term study and/or system simulation testing (beyond 5-year planning horizon) when past or current year near-term studies and/or system testing show marginal conditions that may require longer lead-time solutions.
TPL-003-0a	R1.3.5.	Have all projected firm transfers modeled.	The system model(s) used for current or past analysis did not properly represent up to (but less than) 25% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 25% or more but less than 50% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 50% or more but less than 75% of the firm transfers to/from the responsible entity's service territory.	The system model(s) used for current or past analysis did not properly represent 75% or more of the firm transfers to/from the responsible entity's service territory.
TPL-003-0a	R1.3.6.	Be performed and evaluated for selected demand levels over the range of forecast	N/A	N/A	N/A	The responsible entity has failed to produce

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		system demands.				evidence of a valid current or past study and/or system simulation testing reflecting analysis over a range of forecast system demands.
TPL-003-0a	R1.3.7.	Demonstrate that System performance meets Table 1 for Category C contingencies.	N/A	N/A	N/A	No past or current study results exists showing Category C contingency system analysis.
TPL-003-0a	R1.3.8.	Include existing and planned facilities.	The responsible entity's transmission model used for past or current studies and/or system simulation testing properly reflects existing facilities, but is deficient in reflecting planned facilities.	The responsible entity's transmission model used for past or current studies and/or system simulation testing properly reflects planned facilities, but is deficient in reflecting existing facilities.	N/A	The responsible entity's transmission model used for past or current studies and/or system simulation testing is deficient in reflecting existing AND planned facilities.
TPL-003-0a	R1.3.9.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet System performance.	N/A	N/A	N/A	The responsible entity has failed to ensure in a past or current study and/or system simulation testing that sufficient reactive power resources are available to meet required system performance.
TPL-003-0a	R1.3.10.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	N/A	N/A	The responsible entity's transmission model used for past or current studies is	The responsible entity's transmission model used for past or current studies is

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
					deficient with respect to the effects of planned protection systems, including any backup or redundant systems.	deficient with respect to the effects of existing protection systems, including any backup or redundant systems.
TPL-003-0a	R1.3.11.	Include the effects of existing and planned control devices.	N/A	N/A	The responsible entity's transmission model used for past or current studies is deficient with respect to the effects of planned control devices.	The responsible entity's transmission model used for past or current studies is deficient with respect to the effects of existing control devices.
TPL-003-0a	R1.3.12.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those Demand levels for which planned (including maintenance) outages are performed.	N/A	N/A	N/A	The responsible entity's transmission model used for past or current studies is deficient with respect to the inclusion of planned maintenance outages of bulk electric transmission facilities.
TPL-003-0a	R1.4.	Address any planned upgrades needed to meet the performance requirements of Category C.	N/A	N/A	N/A	The responsible entity has failed to demonstrate that a corrective action plan exists in order to satisfy Category C planning requirements.
TPL-003-0a	R1.5.	Consider all contingencies applicable to Category C.	The responsible entity has considered the NERC Category C contingencies applicable to their	The responsible entity has considered the NERC Category C contingencies applicable to their	The responsible entity has considered the NERC Category C contingencies applicable to their	The responsible entity has considered the NERC Category C contingencies applicable to their

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			system, but was deficient with respect to 25% or less of all applicable contingencies.	system, but was deficient with respect to more than 25% but less than 50% of all applicable contingencies.	system, but was deficient with respect to more than 50% but less than 75% of all applicable contingencies.	system, but was deficient 75% or more of all applicable contingencies.
TPL-003-0a	R2.	When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-003-0_R1, the Planning Authority and Transmission Planner shall each:	N/A	The responsible entity has failed to review the continuing need for previously identified facility additions through subsequent annual assessments. (R2.2)	The responsible entity provided documented evidence of corrective action plans in order to satisfy Category C planning requirements, but failed to include an implementation schedule with in-service dates. (R2.1.1 and R2.1.2) OR The responsible entity failed to consider necessary lead times to implement its corrective action plan. (R2.1.3)	The responsible entity has failed to provide documented evidence of corrective action plans in order to satisfy Category C planning requirements. (R2.1)
TPL-003-0a	R2.1.	Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:	N/A	N/A	N/A	N/A
TPL-003-0a	R2.1.1.	Including a schedule for implementation.	N/A	N/A	N/A	N/A
TPL-003-0a	R2.1.2.	Including a discussion of expected required in-service dates of facilities.	N/A	N/A	N/A	N/A
TPL-003-0a	R2.1.3.	Consider lead times necessary to implement plans.	N/A	N/A	N/A	N/A
TPL-003-0a	R2.2.	Review, in subsequent annual assessments, (where sufficient lead time exists), the	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		continuing need for identified system facilities. Detailed implementation plans are not needed.				
TPL-003-0a	R3.	The Planning Authority and Transmission Planner shall each document the results of these Reliability Assessments and corrective plans and shall annually provide these to its respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	N/A	The responsible entity documented the results of its reliability assessments and corrective plans but did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization.	N/A	The responsible entity DID NOT document the results of its annual reliability assessments and corrective plans AND did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization.
TPL-004-0	R1.	The Planning Authority and Transmission Planner shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is evaluated for the risks and consequences of a number of each of the extreme contingencies that are listed under Category D of Table I. To be valid, the Planning Authority's and Transmission Planner's assessment shall:	The responsible entity is non-compliant with one of the sub-components of requirement R1.3 (R1.3.1 through R1.3.9). OR The responsible entity has considered the NERC Category D contingencies applicable to their system, but was deficient with respect to 5% or less of all applicable contingencies. (R1.4)	The responsible entity is non-compliant with two of the sub-components of requirement R1.3 (R1.3.1 through 1.3.9). OR The responsible entity has considered the NERC Category D contingencies applicable to their system, but was deficient with respect to more than 5% up to (and including) 10% of all applicable contingencies. (R1.4)	The responsible entity is non-compliant with three of the sub-components of requirement R1.3 (R1.3.1 through 1.3.9). OR The responsible entity has considered the NERC Category D contingencies applicable to their system, but was deficient with respect to more than 10% up to (and including) 15% of all applicable contingencies. (R1.4)	The responsible entity did not perform the transmission assessments annually. (R1.1) OR The responsible entity has failed to demonstrate a valid assessment for the near-term planning period. (R1.2) OR The responsible entity is non-compliant with four or more of the sub-components of requirement R1.3 (R1.3.1 through 1.3.9).

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						OR The responsible entity has considered the NERC Category D contingencies applicable to its system, but was deficient with respect to more than 15% of all applicable contingencies. (R1.4)
TPL-004-0	R1.1.	Be made annually.	N/A	N/A	N/A	N/A
TPL-004-0	R1.2.	Be conducted for near-term (years one through five).	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.	Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category D contingencies of Table I. The specific elements selected (from within each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.1.	Be performed and evaluated only for those Category D contingencies that would produce the more severe system results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.2.	Cover critical system conditions and study years as deemed appropriate by the responsible entity.	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
TPL-004-0	R1.3.3.	Be conducted annually unless changes to system conditions do not warrant such analyses.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.4.	Have all projected firm transfers modeled.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.5.	Include existing and planned facilities.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.6.	Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.7.	Include the effects of existing and planned protection systems, including any backup or redundant systems.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.8.	Include the effects of existing and planned control devices.	N/A	N/A	N/A	N/A
TPL-004-0	R1.3.9.	Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.	N/A	N/A	N/A	N/A
TPL-004-0	R1.4.	Consider all contingencies applicable to Category D.	N/A	N/A	N/A	N/A
TPL-004-0	R2.	The Planning Authority and Transmission Planner shall each document the results of its reliability assessments and shall annually provide the results to its entities' respective NERC Regional Reliability Organization(s), as required by the Regional Reliability Organization.	N/A	The responsible entity documented the results of its reliability assessments but did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization.	N/A	The responsible entity DID NOT document the results of its annual reliability assessments AND did not annually provide them to its respective NERC Regional Reliability Organization(s) as required by the Regional Reliability Organization.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
VAR-001-1	R1.	Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and Mvar flows within their individual areas and with the areas of neighboring Transmission Operators.	N/A	The Transmission Operator has formal policies and procedures for monitoring and controlling voltage and MVAR flows, but they are not current.	The Transmission Operator has formal policies and procedures for monitoring and controlling voltage and MVAR flows that are current, but they have not been coordinated with one or more neighboring Transmission Operators.	The Transmission Operator has formal policies and procedures for monitoring and controlling voltage and MVAR flows, but has not implemented them. OR The Transmission Operator does not have formal policies and procedures for monitoring and controlling voltage and MVAR flows.
VAR-001-1	R2.	Each Transmission Operator shall acquire sufficient reactive resources within its area to protect the voltage levels under normal and Contingency conditions. This includes the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 95% but less than 100% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 90% but less than 95% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 85% but less than 90% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired less than 85% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.
VAR-001-1	R3.	The Transmission Operator shall specify criteria that exempts generators from	N/A	N/A	N/A	The Transmission Operator did not

Complete Violation Severity Level Matrix (VAR) **Encompassing All Commission-Approved Reliability Standards**

Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		compliance with the requirements defined in Requirement 4, and Requirement 6.1.				specify criteria that exempted generators from compliance with the requirements defined in Requirement R4, and Requirement R6.1.
VAR-001-1	R3.1.	Each Transmission Operator shall maintain a list of generators in its area that are exempt from following a voltage or Reactive Power schedule.	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing one or more entities. The missing entities shall represent less than 25% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing two or more entities. The missing entities shall represent less than 50% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing three or more entities. The missing entities shall represent less than 75% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing four or more entities. The missing entities shall represent 75% or more of those eligible for the list.
VAR-001-1	R3.2.	For each generator that is on this exemption list, the Transmission Operator shall notify the associated Generator Owner.	The Transmission Operator failed to notify up to 25% of the associated Generator Owner of each generator that are on this exemption list.	The Transmission Operator failed to notify 25% up to 50% of the associated Generator Owners of each generator that are on this exemption list.	The Transmission Operator failed to notify 50% up to 75% of the associated Generator Owner of each generator that are on this exemption list.	The Transmission Operator failed to notify 75% up to 100% of the associated Generator Owner of each generator that are on this exemption list.
VAR-001-1	R4.	Each Transmission Operator shall specify a voltage or Reactive Power schedule at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the	N/A	N/A	The Transmission Operator provide Voltage or Reactive Power schedules were for some but not all generating units as required in R4.	The Transmission Operator provide No evidence that voltage or Reactive Power schedules were provided to Generator Operators as required in R4.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).				
VAR-001-1	R5.	Each Purchasing-Selling Entity shall arrange for (self-provide or purchase) reactive resources to satisfy its reactive requirements identified by its Transmission Service Provider.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting 5% or less of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting between 5-10% of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting 10-15%, inclusive, of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting greater than 15% of its reactive requirements.
VAR-001-1	R6.	The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 5% or less of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting between 5-10% of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 10-15%, inclusive, of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 15% or greater of required resources.
VAR-001-1	R6.1.	When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.	N/A	N/A	N/A	The Transmission Operator has not provided evidence to show that directives were issued to the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule in accordance with R6.1.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
VAR-001-1	R7.	The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.	The applicable entity was not able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting 5% or less of the required devices.	The applicable entity was not able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting between 5-10% of the required devices.	The applicable entity was not able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting 10-15%, inclusive, of the required devices.	The applicable entity was not able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting greater than 15% of the required devices.
VAR-001-1	R8.	Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting 5% or less of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting between 5-10% of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting 10-15%, inclusive, of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting greater than 15% of the required resources.
VAR-001-1	R9.	Each Transmission Operator shall maintain reactive resources to support its voltage under first Contingency conditions.	The Transmission Operator maintains 95% or more of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains 85% or more but less than 95% of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains 75% or more but less than 85% of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains less than 75% of the reactive resources needed to support its voltage under first Contingency conditions.
VAR-001-1	R9.1.	Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting 5% or less of	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement,	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting 10-15%,	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting greater than

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
			the resources.	affecting between 5-10% of the resources.	inclusive, of the resources.	15% of the resources.
VAR-001-1	R10.	Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting 5% or less of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting between 5-10% of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting 10-15%, inclusive, of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting greater than 15% of the violations.
VAR-001-1	R11.	After consultation with the Generator Owner regarding necessary step-up transformer tap changes, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.	N/A	The Transmission Operator provided documentation to the Generator Owner specifying required step-up transformer tap changes and a timeframe for making these changes, but failed to provide technical justification for these changes.	The Transmission Operator provided documentation to the Generator Owner specifying required step-up transformer tap changes, but failed to provide a timeframe for making these changes and technical justification for these changes.	The Transmission Operator failed to provide documentation to the Generator Owner specifying required step-up transformer tap changes, a timeframe for making these changes, and technical justification for these changes.
VAR-001-1	R12.	The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.	N/A	N/A	N/A	The Transmission Operator has failed to direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.
VAR-001-2	R1.	Each Transmission Operator, individually and jointly with other Transmission	The applicable entity did not ensure the	The applicable entity did not ensure the	The applicable entity did not ensure the	The applicable entity did not ensure the

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and Mvar flows within their individual areas and with the areas of neighboring Transmission Operators.	development and/or maintenance and/or implementation of formal policies and procedures, as directed by the requirement, affecting 5% or less of their individual and neighboring areas voltage levels and Mvar flows.	development and/or maintenance and/or implementation of formal policies and procedures, as directed by the requirement, affecting between 5-10% of their individual and neighboring areas voltage levels and Mvar flows.	development and/or maintenance and/or implementation of formal policies and procedures, as directed by the requirement, affecting 10-15%, inclusive, of their individual and neighboring areas voltage levels and Mvar flows.	development and/or maintenance and/or implementation of formal policies and procedures, as directed by the requirement, affecting greater than 15% of their individual and neighboring areas voltage levels and Mvar flows.
VAR-001-2	R2.	Each Transmission Operator shall acquire sufficient reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load – within its area to protect the voltage levels under normal and Contingency conditions. This includes the Transmission Operator’s share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 95% but less than 100% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator’s share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 90% but less than 95% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator’s share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired 85% but less than 90% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator’s share of the reactive requirements of interconnecting transmission circuits.	The Transmission Operator acquired less than 85% of the reactive resources within its area needed to protect the voltage levels under normal and Contingency conditions including the Transmission Operator’s share of the reactive requirements of interconnecting transmission circuits.
VAR-001-2	R3.	The Transmission Operator shall specify criteria that exempts generators from compliance with the requirements defined in Requirement 4, and Requirement 6.1.	N/A	N/A	N/A	The Transmission Operator did not specify criteria that exempts generators from compliance with the requirements defined in Requirement 4, and Requirement 6.1. to all

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
						of the parties involved.
VAR-001-2	R3.1.	Each Transmission Operator shall maintain a list of generators in its area that are exempt from following a voltage or Reactive Power schedule.	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing one or more entities. The missing entities shall represent less than 25% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing two or more entities. The missing entities shall represent less than 50% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing three or more entities. The missing entities shall represent less than 75% of those eligible for the list	The Transmission Operator maintain the list of generators in its area that are exempt from following a voltage or Reactive Power schedule but is missing four or more entities. The missing entities shall represent 75% or more of those eligible for the list.
VAR-001-2	R3.2.	For each generator that is on this exemption list, the Transmission Operator shall notify the associated Generator Owner.	The Transmission Operator failed to notify up to 25% of the associated Generator Owner of each generator that are on this exemption list.	The Transmission Operator failed to notify 25% up to 50% of the associated Generator Owners of each generator that are on this exemption list.	The Transmission Operator failed to notify 50% up to 75% of the associated Generator Owner of each generator that are on this exemption list.	The Transmission Operator failed to notify 75% up to 100% of the associated Generator Owner of each generator that are on this exemption list.
VAR-001-2	R4.	Each Transmission Operator shall specify a voltage or Reactive Power schedule ⁴ at the interconnection between the generator facility and the Transmission Owner's facilities to be maintained by each generator. The Transmission Operator shall provide the voltage or Reactive Power schedule to the associated Generator Operator and direct the Generator Operator to comply with the schedule in automatic voltage control mode (AVR in service and controlling voltage).	N/A	N/A	The Transmission Operator provide Voltage or Reactive Power schedules were for some but not all generating units as required in R4.	The Transmission Operator provide No evidence that voltage or Reactive Power schedules were provided to Generator Operators as required in R4.

⁴ The voltage schedule is a target voltage to be maintained within a tolerance band during a specified period.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
VAR-001-2	R5.	Each Purchasing-Selling Entity and Load Serving Entity shall arrange for (self-provide or purchase) reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; and controllable load– to satisfy its reactive requirements identified by its Transmission Service Provider.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting 5% or less of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting between 5-10% of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting 10-15%, inclusive, of its reactive requirements.	The applicable entity did not arrange for reactive resources, as directed by the requirement, affecting greater than 15% of its reactive requirements.
VAR-001-2	R6.	The Transmission Operator shall know the status of all transmission Reactive Power resources, including the status of voltage regulators and power system stabilizers.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 5% or less of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting between 5-10% of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 10-15%, inclusive, of the required resources.	The applicable entity did not know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers, as directed by the requirement, affecting 15% or greater of required resources.
VAR-001-2	R6.1.	When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall direct the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule.	N/A	N/A	N/A	The Transmission Operator has not provided evidence to show that directives were issued to the Generator Operator to maintain or change either its voltage schedule or its Reactive Power schedule in accordance with R6.1.
VAR-001-2	R7.	The Transmission Operator shall be able to operate or direct the operation of devices	The applicable entity was not able to operate	The applicable entity was not able to	The applicable entity was not able to operate	The applicable entity was not able to operate

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		necessary to regulate transmission voltage and reactive flow.	or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting 5% or less of the required devices.	operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting between 5-10% of the required devices.	or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting 10-15%, inclusive, of the required devices.	or direct the operation of devices necessary to regulate transmission voltage and reactive flow, affecting greater than 15% of the required devices.
VAR-001-2	R8.	Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching; controllable load; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting 5% or less of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting between 5-10% of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting 10-15%, inclusive, of the required resources.	The applicable entity did operate or direct the operation of capacitive and inductive reactive resources or load shedding within its area, as directed by the requirement, affecting greater than 15% of the required resources.
VAR-001-2	R9.	Each Transmission Operator shall maintain reactive resources – which may include, but is not limited to, reactive generation scheduling; transmission line and reactive resource switching;, and controllable load– to support its voltage under first Contingency conditions.	The Transmission Operator maintains 95% or more of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains 85% or more but less than 95% of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains 75% or more but less than 85% of the reactive resources needed to support its voltage under first Contingency conditions.	The Transmission Operator maintains less than 75% of the reactive resources needed to support its voltage under first Contingency conditions.
VAR-001-2	R9.1.	Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting 5% or less of the resources.	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting between 5-10% of the resources.	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting 10-15%, inclusive, of the resources.	The applicable entity did not disperse and/or locate the reactive resources, as directed in the requirement, affecting greater than 15% of the resources.

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
VAR-001-2	R10.	Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting 5% or less of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting between 5-10% of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting 10-15%, inclusive, of the violations.	The applicable entity did not correct the IROL or SOL violations and/or complete the required IROL or SOL violation reporting, as directed by the requirement, affecting greater than 15% of the violations.
VAR-001-2	R11.	After consultation with the Generator Owner regarding necessary step-up transformer tap changes, the Transmission Operator shall provide documentation to the Generator Owner specifying the required tap changes, a timeframe for making the changes, and technical justification for these changes.	The Transmission Operator provided documentation to the Generator Owner specifying required step-up transformer tap changes and a timeframe for making these changes, but failed to provide technical justification for these changes.	The Transmission Operator provided documentation to the Generator Owner specifying required step-up transformer tap changes, but failed to provide a timeframe for making these changes and technical justification for these changes.	The Transmission Operator failed to provide documentation to the Generator Owner specifying required step-up transformer tap changes, a timeframe for making these changes, and technical justification for these changes.	N/A
VAR-001-2	R12.	The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.	N/A	N/A	N/A	The Transmission Operator has failed to direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.
VAR-002-1.1b	R1.	The Generator Operator shall operate each generator connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in	N/A	N/A	N/A	The responsible entity did not operate each

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		service and controlling voltage) unless the Generator Operator has notified the Transmission Operator.				generator in the automatic voltage control mode and failed to notify the Transmission Operator as identified in R1.
VAR-002-1.1b	R2.	Unless exempted by the Transmission Operator, each Generator Operator shall maintain the generator voltage or Reactive Power output (within applicable Facility Ratings. [1] as directed by the Transmission Operator	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by 5% or less.	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 5% up to (and including) 10% OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 10% up to (and including) 15%	When directed by the Transmission Operator to maintain the generator voltage or reactive power output the Generator Operator failed to meet the directed values by more than 15%. OR When a generator's automatic voltage regulator is out of service, the Generator Operator failed to use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator and the Generator

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
				Operator. OR The Generator Operator failed to provide an explanation of why the voltage schedule could not be met.		Operator failed to provide an explanation of why the voltage schedule could not be met.
VAR-002-1.1b	R2.1.	When a generator's automatic voltage regulator is out of service, the Generator Operator shall use an alternative method to control the generator voltage and reactive output to meet the voltage or Reactive Power schedule directed by the Transmission Operator.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R2.2.	When directed to modify voltage, the Generator Operator shall comply or provide an explanation of why the schedule cannot be met.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R3.	Each Generator Operator shall notify its associated Transmission Operator as soon as practical, but within 30 minutes of any of the following:	N/A	N/A	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in either R3.1 or R3.2	The Generator Operator failed to notify the Transmission Operator within 30 minutes of the information as specified in both R3.1 and R3.2
VAR-002-1.1b	R3.1.	A status or capability change on any generator Reactive Power resource, including the status of each automatic voltage regulator and power system stabilizer and the expected duration of the change in status or capability.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R3.2.	A status or capability change on any other Reactive Power resources under the Generator Operator's control and the expected duration of the change in status or	N/A	N/A	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		capability.				
VAR-002-1.1b	R4.	The Generator Owner shall provide the following to its associated Transmission Operator and Transmission Planner within 30 calendar days of a request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner one of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 30, but less than or equal to 35 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner two of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 35, but less than or equal to 40 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner three of the types of data as specified in R4.1.1 or R 4.1.2 or 4.1.3 or 4.1.4 OR The information was provided in more than 40, but less than or equal to 45 calendar days of the request.	The Responsible entity failed to provide to its associated Transmission Operator and Transmission Planner any of the types of data as specified in R4.1.1 and R 4.1.2 and 4.1.3 and 4.1.4 OR The information was provided in more than 45 calendar days of the request.
VAR-002-1.1b	R4.1.	For generator step-up transformers and auxiliary transformers with primary voltages equal to or greater than the generator terminal voltage:	N/A	N/A	N/A	N/A
VAR-002-1.1b	R4.1.1.	Tap settings.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R4.1.2.	Available fixed tap ranges.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R4.1.3.	Impedance data.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R4.1.4.	The +/- voltage range with step-change in % for load-tap changing transformers.	N/A	N/A	N/A	N/A
VAR-002-1.1b	R5.	After consultation with the Transmission Operator regarding necessary step-up transformer tap changes, the Generator Owner shall ensure that transformer tap	N/A	N/A	N/A	The responsible entity failed to ensure that transformer tap positions were

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
		positions are changed according to the specifications provided by the Transmission Operator, unless such action would violate safety, an equipment rating, a regulatory requirement, or a statutory requirement.				changed according to the specifications provided by the Transmission Operator when said actions would not have violated safety, an equipment rating, a regulatory requirement, or a statutory requirement.
VAR-002-1.1b	R5.1.	If the Generator Operator can't comply with the Transmission Operator's specifications, the Generator Operator shall notify the Transmission Operator and shall provide the technical justification.	N/A	N/A	N/A	The responsible entity failed to notify the Transmission Operator and to provide technical justification.
VAR-002-WECC-1	R1.	Generator Operators and Transmission Operators shall have AVR in service and in automatic voltage control mode 98% of all operating hours for synchronous generators or synchronous condensers. Generator Operators and Transmission Operators may exclude hours for R1.1 through R1.10 to achieve the 98% requirement. <i>[See Standard pdf for R1.1 through R1.10]</i>	AVR is in service less than 98% but at least 90% or more of all hours during which the synchronous generating unit or synchronous condenser is on line for each calendar quarter.	AVR is in service less than 90% but at least 80% or more of all hours during which the synchronous generating unit or synchronous condenser is on line for each calendar quarter.	AVR is in service less than 80% but at least 70% or more of all hours during which the synchronous generating unit or synchronous condenser is on line for each calendar quarter.	AVR is in service less than 70% of all hours during which the synchronous generating unit or synchronous condenser is on line for each calendar quarter.
VAR-002-WECC-1	R2.	Generator Operators and Transmission Operators shall have documentation identifying the number of hours excluded for each requirement in R1.1 through R1.10.	There shall be a Lower Level of non-compliance if documentation is incomplete with any requirement R1.1 through R1.10.	There shall be a Moderate Level of non-compliance if the Generator Operator does not have documentation to demonstrate compliance with any requirement R1.1 through R1.10.	N/A	N/A

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Standard Number	Requirement Number	Text of Requirement	Lower VSL	Moderate VSL	High VSL	Severe VSL
VAR-501-WECC-1	R1.	Generator Operators shall have PSS in service 98% of all operating hours for synchronous generators equipped with PSS. Generator Operators may exclude hours for R1.1 through R1.12 to achieve the 98% requirement. [<i>See Standard pdf for R1.1 through R1.12</i>]	PSS is in service less than 98% but at least 90% or more of all hours during which the synchronous generating unit is on line for each calendar quarter.	PSS is in service less than 90% but at least 80% or more of all hours during which the synchronous generating unit is on line for each calendar quarter.	PSS is in service less than 80% but at least 70% or more of all hours during which the synchronous generating unit is on line for each calendar quarter.	PSS is in service less than 70% of all hours during which the synchronous generating unit is on line for each calendar quarter.
VAR-501-WECC-1	R2.	Generator Operators shall have documentation identifying the number of hours excluded for each requirement in R1.1 through R1.12.	There shall be a Lower Level of non-compliance if documentation is incomplete with any requirement R1.1 through R1.12.	There shall be a Moderate Level of non-compliance if the Generator Operator does not have documentation to demonstrate compliance with any requirement R1.1 through R1.12.	N/A	N/A