

145 FERC ¶ 61,158
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 40

[Docket Nos. RM13-12-000, RM13-14-000 and RM13-15-000]

Monitoring System Conditions - Transmission Operations Reliability Standard
Transmission Operations Reliability Standards
Interconnection Reliability Operations and Coordination Reliability Standards

(Issued November 21, 2013)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: Pursuant to section 215 of the Federal Power Act (FPA), the Commission proposes to remand revisions to the Transmission Operations and Interconnection Reliability Operations and Coordination Reliability Standards, developed by the North American Electric Reliability Corporation (NERC), which the Commission has certified as the Electric Reliability Organization responsible for developing and enforcing mandatory Reliability Standards. In addition, the Commission proposes to approve NERC's proposed revisions to Reliability Standard TOP-006-3.

DATES: Comments are due [**Insert Date 60 days after publication in the FEDERAL REGISTER**].

ADDRESSES: Comments, identified by docket number, may be filed in the following ways:

- Electronic Filing through <http://www.ferc.gov>. Documents created electronically using word processing software should be filed in native applications or print-to-PDF format and not in a scanned format.
- Mail/Hand Delivery: Those unable to file electronically may mail or hand-deliver comments to: Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street, NE, Washington, DC 20426.

Instructions: For detailed instructions on submitting comments and additional information on the rulemaking process, see the Comment Procedures Section of this document.

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SUPPLEMENTARY INFORMATION:

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Monitoring System Conditions - Transmission Operations Reliability Standard	Docket No. RM13-12-000
Transmission Operations Reliability Standards	Docket No. RM13-14-000
Interconnection Reliability Operations and Coordination Reliability Standards	Docket No. RM13-15-000

NOTICE OF PROPOSED RULEMAKING

(Issued November 21, 2013)

1. Pursuant to section 215(d) of the Federal Power Act (FPA),¹ the Commission proposes to remand revisions to the Transmission Operations (TOP) and Interconnection Reliability Operations and Coordination (IRO) Reliability Standards, developed by the North American Electric Reliability Corporation (NERC), which the Commission has certified as the Electric Reliability Organization (ERO) responsible for developing and enforcing mandatory Reliability Standards. In addition, the Commission proposes to approve NERC's proposed revision to Reliability Standard TOP-006-3 concerning the monitoring role and notification obligation of reliability coordinators, balancing authorities and transmission operators. The Commission seeks comments on its proposals.

¹ 16 U.S.C. 824o(d) (2012).

2. NERC filed changes to the TOP Reliability Standards (Docket No. RM13-14-000) concurrently with its proposal to modify the IRO Reliability Standards (Docket No. RM13-15-000). NERC requests that the Commission process the two proposals together. In addition, NERC separately filed revisions to Reliability Standard TOP-006-3 (Docket No. RM13-12-000) that NERC proposes to become effective prior to the effective date of the revisions to the TOP Reliability Standards in Docket No. RM13-14-000. Because the proposed TOP and IRO Reliability Standards are interrelated, and because the proposed revisions to Reliability Standard TOP-006-3 involve similar issues raised in the TOP and IRO proposals concerning monitoring of the interconnected transmission network and notification of and by registered entities, the Commission addresses the three proposals together in this Notice of Proposed Rulemaking (NOPR).

3. NERC explains that the set of TOP Reliability Standards “address the important reliability goal of ensuring that the transmission system is operating within operating limits.”² The TOP Standards generally address real-time operations and planning for next-day operations, and apply primarily to the responsibilities of transmission operators. The set of IRO Standards apply to the responsibility and authority of reliability coordinators, the entities with the highest level of authority that are responsible for reliable operation of the bulk electric system, and have the wide-area view of the bulk

² NERC TOP Petition at 3.

electric system. The IRO Standards, which complement the TOP Standards, have the goal of ensuring that the bulk electric system is planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions.³ Thus, together, the TOP and IRO Reliability Standards address matters that are fundamental to grid reliability as they pertain to the coordinated efforts to operate the bulk electric system in a reliable manner during real-time operations.

4. Based on our review of the NERC petitions, it appears that the proposed TOP and IRO Reliability Standards contain some improvements over the current standards. Specifically, the revised standards include organizational and administrative improvements that reduce redundancy and clarify the delineation between applicable entities with regard to certain tasks. The Commission appreciates efforts to clarify standards and reduce redundancies.⁴ However, we are concerned that the changes in the proposed standards create reliability gaps in the standards that are critical to reliable operation of the Bulk-Power System. While NERC indicates that the revised TOP Reliability Standards eliminate gaps and ambiguities in the currently-effective TOP requirements, we are concerned that NERC has removed critical reliability aspects that are included in the currently-effective standards without adequately addressing these

³ See NERC IRO Petition at 6.

⁴ *Electric Reliability Organization Proposal to Retire Requirements in Reliability Standards*, Order No. 788, 145 FERC ¶ 61,147 (2013).

aspects in the proposed standards. One area of concern is that, unlike the currently-effective TOP Reliability Standards, there is no requirement in the proposed standards for transmission operators to plan and operate within all System Operating Limits (SOLs).⁵ The provisions in the proposed TOP Reliability Standards that require transmission operators to operate only within a subset of SOLs offset the potential improvements. The Commission believes that NERC's proposal for the treatment of SOLs adversely impacts multiple requirements in the proposed TOP Reliability Standards. Moreover, as discussed herein, the Commission identifies other concerns that may need to be addressed in order not to create further reliability gaps. Section 215(d)(4) requires that the Commission remand to the ERO for further consideration a Reliability Standard "that the Commission disapproves in whole *or in part*."⁶ Thus, notwithstanding the improvements mentioned above, the concern regarding the treatment of SOLs, and potentially other concerns discussed below, leads us to propose to remand the proposed TOP standards. In addition, given the interrelationship between the TOP and IRO Reliability Standards

⁵ NERC defines a SOL as "[t]he 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 [pre- and post-Contingency] are based upon certain operating criteria. ..."

⁶ 16 U.S.C. 824o(d)(4) (2012) (emphasis added).

and that NERC requests that both sets of standards be addressed together,⁷ we believe a remand of the proposed IRO standards in addition to those of the TOP will enable NERC to more comprehensively consider modifications to the standards that would address the reliability concerns identified in this NOPR. This approach, in turn, should allow NERC more flexibility in developing appropriate modifications that address our concerns since changes to the TOP standards might require, in some instances, commensurate changes to the IRO standards.

5. In addition to the concerns regarding the treatment of SOLs, the Commission has identified a reliability gap in the IRO Reliability Standards and accordingly proposes to direct that NERC develop modifications in these standards to ensure that reliability coordinators continue to develop and implement comprehensive generation and transmission outage coordination processes.

6. Further, we discuss below additional issues regarding the proposed TOP and IRO Reliability Standards that require clarification or further explanation and technical justification. Depending on the explanations provided by NERC and other interested entities in their comments to this NOPR, additional Commission action may be appropriate, including directives that NERC must address in response to a final rule in this proceeding.

⁷ NERC TOP Petition at 2 (stating that “simultaneous approval of both petitions by the Commission will help ensure a smooth transition and implementation of the proposed Reliability Standards for both the industry and the ERO.”).

I. Background

7. Section 215 of the FPA requires a Commission-certified ERO to develop mandatory and enforceable Reliability Standards, which are subject to Commission review and approval. Once approved, the Reliability Standards are enforced by the ERO, subject to Commission oversight, or by the Commission independently. On March 16, 2007, the Commission issued Order No. 693, approving 83 of the 107 initial Reliability Standards filed by NERC, including the existing TOP and IRO Reliability Standards.⁸ In addition, in Order No. 748, the Commission approved revisions to the IRO Reliability Standards; however, none of the standards approved in Order No. 748 are at issue in this NOPR.⁹

A. NERC's TOP Petition (Docket No. RM13-14-000)

8. On April 16, 2013, in Docket No. RM13-14-000, NERC submitted for Commission approval three revised TOP Reliability Standards: TOP-001-2 (Transmission Operations), TOP-002-3 (Operations Planning), TOP-003-2 (Operational Reliability Data), and one Protection Systems (PRC) Reliability Standard, PRC-001-2 (System Protection Coordination) to replace the eight currently-effective TOP standards.

⁸ *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, 72 FR 16416 (Apr. 4, 2007), FERC Stats. & Regs. ¶ 31,242, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007).

⁹ *Mandatory Reliability Standards for Interconnection Reliability Operating Limits*, Order No. 748, 134 FERC ¶ 61,213 (2011).

NERC also seeks approval of the implementation plan for the proposed TOP Reliability Standards and approval of the retirement of eight TOP and one PER Reliability Standards,¹⁰ and to retire Requirements R2, R5, and R6 of Reliability Standard PRC-001-1.

9. NERC states that the proposed TOP Reliability Standards represent significant revision and improvement to the current set of enforceable Reliability Standards by upgrading the overall quality of the standards, eliminating gaps in the requirements, ambiguity, redundancies, and addressing Order No. 693 directives. NERC adds that the proposed TOP Reliability Standards are also more efficient than the currently-effective standards because they incorporate the necessary requirements from today's standards into three cohesive, comprehensive Reliability Standards "that are focused on achieving a specific result."¹¹ NERC states that the proposed TOP Reliability Standards, along with the proposed IRO Reliability Standards, will help to ensure better coordination for

¹⁰ TOP-001-1a – (Reliability Responsibilities and Authorities); TOP-002-2.1b (Normal Operations Planning); TOP-003-1 (Planned Outage Coordination); TOP-004-2 (Transmission Operations); TOP-005-2a (Operational Reliability Information); TOP-006-2 (Monitoring System Conditions); TOP-007-0 (Reporting System Operating Limit and Interconnection Reliability Operating Limit Violations); TOP-008-1 (Response to Transmission Limit Violations); and on Personnel Performance, Training, and Qualifications (PER) Reliability Standard, PER-001-0.2 (Operating Personnel Responsibility and Authority).

¹¹ NERC TOP Petition at 4, 11, 42. NERC explains that the corresponding changes in proposed Reliability Standard PRC-001-2 are administrative in nature and are limited to removal of three requirements in currently-effective Reliability Standard PRC-001-1 that are now addressed in proposed Reliability Standard TOP-003-2.

transmission operators and reliability coordinators to “plan and operate the interconnected Bulk Electric System in a synchronized manner to perform reliably under normal and abnormal conditions.”¹²

10. NERC states that the proposed TOP Reliability Standards are a significant improvement from the currently-effective TOP Reliability Standards in three ways. First, NERC explains that the proposed TOP Reliability Standards “rais[e] the bar on system performance by mandating that all IROLs be resolved within the IROL T_v , which is a significant increase in performance over the existing Reliability Standards.”¹³ NERC indicates that the proposed TOP Reliability Standards adopt an approach “for operating within a subset of SOLs that more closely aligns with the original NERC Operating Guidelines.”¹⁴ Second, NERC states that it improved the proposed Reliability Standards by designating requirements to apply solely to transmission operators and removing several of the requirements applicable to reliability coordinators. NERC explains that it

¹² NERC TOP Petition at 9.

¹³ NERC TOP Petition at 11. The Interconnection Reliability Operating Limit (IROL) T_v is defined in the NERC Glossary of Terms as: “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.”

¹⁴ NERC TOP Petition at 11. NERC states that “[p]rior to becoming the ERO, NERC guidelines for power system operation and accreditation were referred to as the NERC Operating Guidelines, for which compliance was strongly encouraged yet ultimately voluntary.” *Id.* at n.23.

added requirements applicable to reliability coordinators to the proposed IRO Reliability Standards. Third, NERC states it consolidated “the necessary requirements from the eight existing TOP Reliability Standards into three cohesive, comprehensive Reliability Standards.”¹⁵ The specific revisions to the TOP Reliability Standards are as follows:

TOP-001-2 (Transmission Operations)¹⁶

11. In the TOP petition, NERC explains that the requirements of proposed Reliability Standard TOP-001-2 address the following matters: (1) transmission operator “Reliability Directives” (proposed Requirements R1 and R2); (2) emergencies and emergency assistance (proposed Requirements R3-R6); and (3) IROLs and SOLs (proposed Requirements R7-R11). Proposed Requirements R1 and R2 state:

R1. Each Balancing Authority, Generator Operator, Distribution Provider, and Load-Serving Entity shall comply with each Reliability Directive issued and identified as such by its Transmission Operator(s), unless such action would violate safety, equipment, regulatory, or statutory requirements.

R2. Each Balancing Authority, Generator Operator, Distribution Provider, and Load-Serving Entity shall inform its Transmission Operator of its inability to perform an identified Reliability Directive issued by that Transmission Operator.

NERC states that proposed Requirement R1 recognizes the reliability need to give transmission operators the ability to issue Reliability Directives to various entities,

¹⁵ NERC TOP Petition at 11.

¹⁶ The proposed TOP and IRO Reliability Standards are not attached to the NOPR. The complete text of the Reliability Standards is available on the Commission’s eLibrary document retrieval system in Docket Nos. RM13-14 and RM13-15 and is posted on the ERO’s web site, *available at:* <http://www.nerc.com>.

subject to limited exceptions in cases where such actions would violate safety, equipment, regulatory, or statutory requirements. NERC explains that Requirement R2 requires entities receiving the directive from the transmission operator to inform the transmission operator in situations where an identified Reliability Directive cannot be performed. NERC explains that these requirements give transmission operators the authority to issue Reliability Directives when needed, but also provide them the flexibility to take different action in those situations where an entity notifies its transmission operator of its inability to comply with a Reliability Directive.¹⁷

12. With regard to emergencies and emergency assistance, NERC proposes Requirements R3 through R6:

R3. Each Transmission Operator shall inform its Reliability Coordinator and Transmission Operator(s) that are known or expected to be affected by each actual and anticipated Emergency based on its assessment of its Operational Planning Analysis.

R4. Each Transmission Operator shall render emergency assistance to other Transmission Operators, as requested and available, provided that the requesting entity has implemented its comparable emergency procedures, unless such actions would violate safety, equipment, regulatory, or statutory requirements.

R5. Each Transmission Operator shall inform its Reliability Coordinator and other Transmission Operators of its operations known or expected to result in an Adverse Reliability Impact on those respective Transmission Operator Areas unless conditions do not permit such communications. Examples of such operations are relay or equipment failures, and changes in generation, Transmission, or Load.

¹⁷ NERC TOP Petition at 12-13.

R6. Each Balancing Authority and Transmission Operator shall notify its Reliability Coordinator and negatively impacted interconnected NERC registered entities of planned outages of telemetering equipment, control equipment and associated communication channels between the affected entities.

NERC states that proposed Requirements R3, R5, and R6 apply to the coordination aspects of interconnected operation. NERC explains that proposed Requirement R3 requires a transmission operator to inform its reliability coordinators and other transmission operators of actual and anticipated emergencies based on its assessment of its “Operational Planning Analysis.”¹⁸ NERC states that, in situations “where emergency assistance is needed, proposed Requirement R4 requires that Transmission Operators render emergency assistance to other Transmission Operators when it is requested and available” and that proposed Requirement R5 “requires Transmission Operators to inform entities (Reliability Coordinators and other Transmission Operators) of operations that may adversely impact them.”¹⁹ According to NERC, this proposed requirement addresses the Order No. 693 directive to consider the need for the transmission operator to notify the reliability coordinator or the balancing authority when facilities are removed

¹⁸ NERC defines an Operational Planning Analysis as “[a]n 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.)” NERC Glossary of Terms at 47.

¹⁹ NERC TOP Petition at 14.

from service.²⁰ NERC states that proposed Requirement R6 requires balancing authorities and transmission operators to notify the reliability coordinator and negatively impacted interconnected NERC registered entities of planned outages of telemetering equipment.

13. With respect to treatment of SOLs and IROLs, NERC explains that the standard drafting team examined the requirements for SOLs and IROLs in the currently-effective TOP Reliability Standards to ensure whether they adequately addressed the handling of these limits. In particular, the standard drafting team was concerned that the transition from the NERC Operating Guidelines to the Version 0 standards had resulted in an incorrect emphasis on non-IROL SOLs as opposed to IROLs. The standard drafting team noted a discrepancy among the three currently-effective SOL/IROL-related requirements.²¹ According to NERC, in Reliability Standards TOP-002-2a, Requirement R10 and TOP-004-2, Requirement R1, applicable entities are expected to plan and operate to meet all SOLs and IROLs, while in TOP-007-0, R1, entities are only instructed

²⁰ NERC TOP Petition at 14 (citing Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1588).

²¹ TOP-002-2a, Requirement R10: Each Balancing Authority and Transmission Operator shall plan to meet all System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs). TOP-004-2, Requirement R1: Each Transmission Operator shall operate within the Interconnection Reliability Operating Limits (IROLs) and System Operating Limits (SOLs). TOP-007-0, Requirement 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.

to take action for IROLs. According to NERC, the standard drafting team concluded that the Version 0 standards did not accurately reflect what the operating policies stated. Nevertheless, the standard drafting team determined that non-IROL SOLs are still important. NERC explains that reliability risk to the system exists when the system is operating in conditions such that an IROL limit is exceeded for a time exceeding T_v . Consequently, NERC revised the requirements related to operating within limits by tying IROL actions to T_v . NERC proposes Requirements R7 through R11 to address the transmission operator's responsibilities over IROLs²² or SOLs²³ that the transmission operator identifies as necessary to support reliability internal to its transmission operator area:

R7. Each Transmission Operator shall not operate outside any identified Interconnection Reliability Operating Limit (IROL) for a continuous duration exceeding its associated IROL T_v .

R8. Each Transmission Operator shall inform its Reliability Coordinator of each SOL which, while not an IROL, has been identified by the Transmission Operator as supporting reliability internal to its Transmission Operator Area based on its assessment of its Operational Planning Analysis.

²² NERC defines an IROL as “[t]he 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.”

²³ NERC defines a SOL as “[t]he 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 [pre- and post-Contingency] are based upon certain operating criteria. ...”

R9. Each Transmission Operator shall not operate outside any System Operating Limit (SOL) identified in Requirement R8 for a continuous duration that would cause a violation of the Facility Rating or Stability criteria upon which it is based.

R10. Each Transmission Operator shall inform its Reliability Coordinator of its actions to return the system to within limits when an IROL, or an SOL identified in Requirement R8, has been exceeded.

R11. Each Transmission Operator shall act or direct others to act, to mitigate both the magnitude and duration of exceeding an IROL within the IROL's T_v , or of an SOL identified in Requirement R8.

NERC explains that the responsibility for monitoring and handling IROLs is primarily given to the reliability coordinator, but the transmission operator has the primary responsibility to designate any SOLs that require special attention. NERC indicates that the delineation in the proposed TOP Reliability Standards with respect to operating within an identified IROL and in designating important SOLs is an important distinction in the proposed TOP Reliability Standards that is necessary for reliability.

14. NERC adds that the proposed TOP Reliability Standards include a requirement that provides for “the identification of a sub-set of non-IROL SOLs that are identified as important for local areas.”²⁴ NERC indicates that the proposed requirements mandate exceedances of these non-IROL SOLs to be monitored and reported to the reliability coordinator, giving transmission operators “the ability to ensure that any non-IROL SOLs

²⁴ NERC TOP Petition at 19.

that are of concern to the transmission operator will be monitored to ensure local consequences are managed.”²⁵

15. NERC states that the “difference between non-IROL SOLs and IROLs is expressed in the difference between the consequences to the System (or impact to reliability) should unplanned perturbations of the System occur when the limit is being exceeded. For an IROL, the consequences are described as Cascading, uncontrolled separation, or instability.”²⁶ NERC explains that the consequences of non-IROL SOLs are typically thought of in terms of equipment damage or total loss of an element and are restricted to a limited or local area. NERC states that the revised TOP requirements move the standards to where the NERC Operating Guidelines intended them to be and ensure that the reliability of the interconnected system will be maintained and even enhanced because system operators “will not be distracted from true reliability issues by local system issues.”²⁷ NERC states that the impact of exceeding a non-IROL SOL will not result in an Adverse Reliability Impact.²⁸

16. According to NERC, transmission operators may also identify and communicate to their reliability coordinator any of the non-IROL SOLs that are believed or anticipated

²⁵ *Id.* at 19-20.

²⁶ *Id.* at 19.

²⁷ NERC TOP Petition at 18.

²⁸ NERC TOP Petition at 18-19.

to have potential to develop into IROLs and, thus, to ensure that they too are monitored and managed. NERC also explains that, while non-IROL SOLs are similar to IROLs in that non-IROL SOLs must respect the ratings of equipment associated with the facilities to which the non-IROL SOL applies, there is no specific requirement established for a time exceedance similar to the T_v of an IROL. According to NERC, because T_v may be less than 30 minutes, T_v “mandates a tighter time frame for action than the 30-minute time that is mandated in the currently-effective standards, thereby improving reliability of the bulk power system.”²⁹

Proposed TOP-002-3 (Operations Planning)

17. NERC states that proposed Reliability Standard TOP-002-3 Requirements R1 through R3 require transmission operators to perform Operational Planning Analyses to ensure operations within IROLs and SOLs. The requirements for proposed Reliability Standard TOP-002-3 are as follows:

R1. Each Transmission Operator shall have an Operational Planning Analysis that represents projected System conditions that will allow it to assess whether the planned operations for the next day within its Transmission Operator Area will exceed any of its Facility Ratings or Stability Limits during anticipated normal and Contingency event conditions.

R2. Each Transmission Operator shall develop a plan to operate within each Interconnection Reliability Operating Limit (IROL) and each System Operating Limit (SOL) which, while not an IROL, has been identified by the Transmission Operator as supporting reliability internal to its Transmission Operator Area, identified as a result of the Operational Planning Analysis performed in Requirement R1.

²⁹ NERC TOP Petition at 18.

R3. Each Transmission Operator shall notify all NERC registered entities identified in the plan(s) cited in Requirement R2 as to their role in those plan(s).

NERC explains that Requirement R1 requires transmission operators to have an Operational Planning Analysis that will allow it to assess whether the planned operations for the next-day will exceed any of its facility ratings or stability limits during anticipated normal and contingency event conditions. NERC also explains that Requirement R2 requires transmission operators to develop a plan that will help ensure they do not operate in excess of limits identified in the Operational Planning Analysis. NERC indicates that Requirement R3 requires that entities be notified if they are identified in the transmission operator's plans and that the notification should inform entities of their role in the plans.

18. According to NERC, requiring transmission operators to perform Operational Planning Analyses that incorporate normal and contingency situations for next-day operations while assuring appropriate limits are not violated assures that the transmission operators "will have a plan to follow during Real-time operations that accurately reflects the anticipated conditions of the day's operations, including the ability to deliver generation to Load."³⁰ NERC adds that Requirement R3 is similar to the coordination requirements established in proposed Reliability Standard TOP-001-2 by ensuring that all entities know their role in next-day operations.

³⁰ NERC TOP Petition at 22.

Proposed TOP-003-2 (Operational Reliability Data)

19. NERC states that proposed Reliability Standard TOP-003-2, Requirements R1 through R5 were adapted for transmission operators and balancing authorities based on similar, Commission-approved requirements for reliability coordinators.³¹ The proposed requirements include:

R1. Each Transmission Operator shall create a documented specification for the data necessary for it to perform its Operational Planning Analyses and Real-time monitoring. The specification shall include:

- 1.1. A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses and Real-time monitoring.
- 1.2. A mutually-agreeable format.
- 1.3. A periodicity for providing data.
- 1.4. The deadline by which the respondent is to provide the indicated data.

R2. Each Balancing Authority shall create a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring...

R5. Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-Serving Entity, Transmission Owner, and Distribution Provider receiving a data specification... shall satisfy the obligations of the documented specifications for data.

NERC states that the proposed requirements emphasize the need for transmission operators and balancing authorities to obtain all of the data they need for reliability purposes and mandate that entities that have this data timely provide it to the transmission operator and balancing authority. According to NERC, lack of adequate data for real-time operations and modeling have contributed to system incidents in the past, and the

³¹ NERC TOP Petition at 23 (citing Reliability Standard IRO-010-1a.)

data specification concept will eliminate this problem by allowing transmission operators and balancing authorities to require entities to send them any required data.

NERC's Response to Order No. 693 Directives and Analysis of Southwest Outage Report

20. NERC indicates that its staff analyzed the recommendations from the report on the Arizona-Southern California Outages on September 8, 2011, Causes and Recommendations (“2011 Southwest Outage Blackout Report”) that apply to transmission operators and compared the recommendations to both the currently-effective TOP Reliability Standards and the proposed Reliability Standards.³² The TOP Petition provides that, “[b]ased on this analysis, NERC staff believes that if entities complied with the proposed TOP Reliability Standards, the likelihood of such an event occurring would be significantly diminished.”³³ NERC includes as Exhibit H a detailed report on this analysis, including the relevant 2011 Southwest Outage Blackout Report recommendations with an explanation of how the relevant recommendations would be addressed in the proposed TOP Reliability Standards.

21. The NERC TOP Petition includes a summary of nine Order No. 693 directives related to the proposed TOP Reliability Standards and NERC's responses to those directives in Exhibit I. NERC also explains that, rather than addressing two directives from Order No. 693 relating to minimum analysis and monitoring capabilities in the

³² NERC TOP Petition at 6 and Exh. H.

³³ NERC TOP Petition at 6.

proposed TOP Reliability Standards and proposed IRO Reliability Standards, the standard drafting team chose to have them addressed by the Project 2009-02 Standard Drafting Team.³⁴ According to NERC, it “is developing a set of Reliability Standards in Project 2009-02, which is expected to be completed in 2014,” that will establish requirements for the functionality, performance, and maintenance of real-time monitoring and analysis capabilities for reliability coordinators, transmission operators, generator operators, and balancing authorities for use by their system operators in support of reliable system operations.³⁵

TOP Implementation Plan

22. NERC states that some of the proposed revisions to the TOP Reliability Standards are dependent on corresponding changes to proposed IRO Reliability Standards (IRO-001-3 and IRO-005-4) and to one Verification and Data Reporting of Generator Real and Reactive Power Capability Reliability Standard - MOD-025-2. NERC states that the proposed TOP Reliability Standards cannot be implemented until all three of the above standards have been implemented.
23. In its implementation plan, NERC also states that there “are no new definitions in the proposed set of standards” but the standard drafting teams for the TOP and IRO

³⁴ One directive is applicable to Reliability Standard IRO-002 and is described in PP 905 and 906 of Order No. 693, and the second directive is applicable to Reliability Standard TOP-006 and is described in P 1660.

³⁵ NERC IRO Petition at 27.

projects have coordinated on a common definition of “Reliability Directive” and agreed that the IRO standard drafting team “would write the definition and post it for vetting by the industry.” The definition is as follows:

Reliability Directive - A communication initiated by a Reliability Coordinator, Transmission Operator, or Balancing Authority where action by the recipient is necessary to address an Emergency or Adverse Reliability Impacts.

Further, the IRO-014-2 implementation plan indicates that a revised definition for “Adverse Reliability Impact” was approved by the NERC Board of Trustees on August 4, 2011; however, the petition does not discuss the merits of this change.³⁶ In addition, NERC does not discuss the impact of this revised definition on the overall body of Reliability Standards.

24. NERC requests that all requirements except proposed Reliability Standard TOP-003-2, Requirements R1 and R2 become effective the first day of the first calendar quarter twelve months following applicable regulatory approval.³⁷ NERC also requests that Requirements R1 and R2 of proposed Reliability Standard TOP-003-2 become effective the first day of the first calendar quarter ten months following applicable

³⁶ Adverse Reliability Impact (ARI) - Previous Definition - 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. ARI – Revised Definition – The impact of an event that results in the Bulk Electric System instability or Cascading.

³⁷ NERC also requests that the existing TOP Reliability Standards be retired at midnight of the day immediately prior to the first day of the first calendar quarter twelve months following applicable regulatory approval.

regulatory approval. NERC explains that the twelve month period is to allow for entities to update processes and train operators on the revised requirements, and the two month differential for proposed Reliability Standard TOP-003-2, Requirements R1 and R2 is to provide time for recipients of a data specification to respond to the request for data.³⁸

B. NERC's IRO Petition (Docket No. RM13-15-000)

25. Also on April 16, 2013, NERC submitted for Commission approval four revised IRO Reliability Standards: IRO-001-3 (Responsibilities and Authorities), IRO-002-3 (Analysis Tools), IRO-005-4 (Current Day Operations), and IRO-014-2 (Coordination Among Reliability Coordinators).³⁹ NERC also requests approval of the implementation plan for the proposed IRO Reliability Standards, and approval of the retirement of six currently-effective Reliability Standards, effective at midnight immediately prior to the first day of the first calendar quarter that is twelve months following the effective date of a final rule in this proceeding.⁴⁰ NERC indicates that its petition also addresses two

³⁸ NERC TOP Petition, Exh. C at 2.

³⁹ NERC states that the NERC Board of Trustees approved a proposed Reliability Standard IRO-001-2 Reliability Standard on August 4, 2011, that was subsequently revised before it was filed at the Commission. The revision is designated as Reliability Standard IRO-001-3, was approved by the Board on August 16, 2012, and is included in this petition for approval. NERC IRO Petition at 4 n.5.

⁴⁰ NERC proposes to retire Reliability Standards IRO-001-1.1 (Responsibilities and Authorities); IRO-002-2 (Facilities); IRO-005-3a (Current Day Operations); IRO-014-1 (Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators); IRO-015-1 (Notifications and Information Exchange Between Reliability Coordinators); IRO-016-1 (Coordination of Real-time Activities Between Reliability Coordinators).

Order No. 693 directives associated with Reliability Standard IRO-005-1, but that it does not address a directive associated with Reliability Standard IRO-002-1 because this directive falls under the scope of Real-Time Tools Best Practices Task Force.

26. NERC identifies two “overall reliability benefits” of the proposed IRO Reliability Standards: (1) delineating a “clean division of responsibilities” between the reliability coordinator and transmission operator, giving the reliability coordinator authority to direct transmission operators to take actions to prevent or mitigate Interconnection Reliability Operating Limits (IROLs); and (2) “raising the bar” on IROL/SOL monitoring to focus on only those important to reliability. NERC also identifies four “improvements” reflected in the proposed IRO Reliability Standards, as follows:

- Interconnected bulk electric systems will be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions.
- Personnel responsible for planning and operating interconnected bulk electric systems will be trained, qualified, and have the responsibility and authority to implement actions.
- The security of the interconnected bulk electric systems will be assessed, monitored and maintained on a wide-area basis.
- Plans for emergency operation and system restoration ... will be developed, coordinated, maintained and implemented.⁴¹

⁴¹ NERC IRO Petition at 11.

IRO-001-3 (Responsibilities and Authorities)

27. NERC proposes to replace the nine currently-effective requirements of Reliability Standard IRO-001-1 with the following three requirements in proposed IRO-001-3:

R1. Each Reliability Coordinator shall have the authority to act or direct others to act (which could include issuing Reliability Directives) to prevent identified events or mitigate the magnitude or duration of actual events that result in an Emergency or Adverse Reliability Impact.

R2. Each Transmission Operator, Balancing Authority, Generator Operator, and Distribution Provider shall comply with its Reliability Coordinator's direction unless compliance with the direction cannot be physically implemented or unless such actions would violate safety, equipment, regulatory, or statutory requirements.

R3. Each Transmission Operator, Balancing Authority, Generator Operator, and Distribution Provider shall inform its Reliability Coordinator upon recognition of its inability to perform as directed in accordance with Requirement R2.

NERC states that these requirements ensure that reliability coordinators “have the responsibility and authority to act or direct others to act (which could include issuing Reliability Directives) to prevent identified events or mitigate the magnitude or duration of actual events that result in an Emergency or Adverse Reliability Impact.”⁴² According to NERC, these proposed requirements “ensure that the responsibility and authority to act or direct others to act (which could include issuing Reliability Directives) to prevent identified events or mitigate the magnitude or duration of actual events that result in an Emergency or Adverse Reliability Impact is assigned to the Reliability Coordinator.”⁴³

⁴² NERC IRO Petition at 12.

⁴³ NERC IRO Petition at 12-13.

28. NERC states that the changes to the proposed Reliability Standard IRO-001-3 are a result of the proposed retirement of the currently-effective Reliability Standard IRO-001-1.1, Requirement R7, which is now covered in proposed Reliability Standard IRO-014-2.⁴⁴ According to NERC, Reliability Standard IRO-014-2 will continue to ensure that both coordination agreements are in place to require that IROLs and SOLs are managed, and that system conditions that could cause Adverse Reliability Impacts are mitigated.

IRO-002-3 (Analysis Tools)

29. NERC proposes two new requirements pertaining to analytical tools and to retire Requirements R1 through R7 of currently-effective Reliability Standard IRO-002-2. The two proposed requirements provide:

R1. Each Reliability Coordinator shall provide its System Operators with the authority to approve, deny or cancel planned outages of its own analysis tools.

R2. Each Reliability Coordinator shall have procedures in place to mitigate the effects of analysis tool outages.

30. NERC states that the currently-effective requirements contain redundancies, which the proposed revision are intended to eliminate. NERC states that it revised Requirement R8 and incorporated it into proposed Requirements R1 and R2 of Reliability Standard

⁴⁴ Currently-effective Requirement R7 states: 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.

IRO-002-3. NERC also indicates that it is developing a set of Reliability Standards in Project 2009-02, that will establish requirements for the functionality, performance, and maintenance of real-time monitoring and analysis capabilities which affects Reliability Standard IRO-002.

IRO-005-4 (Current Day Operations)

31. NERC proposes the following two new requirements for proposed Reliability Standard IRO-005-4:

R1. When the results of an Operational Planning Analysis or Real-time Assessment indicate an anticipated or actual condition with Adverse Reliability Impacts within its Reliability Coordinator Area, each Reliability Coordinator shall notify all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area.

R2. Each Reliability Coordinator that identifies an anticipated or actual condition with Adverse Reliability Impacts within its Reliability Coordinator Area shall notify all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area when the problem has been mitigated.

32. NERC states that proposed Reliability Standard IRO-005-4 is a result of eliminating redundancies between existing and proposed standards. NERC also states that the requirements are to “ensure that entities are notified when an expected or actual event with Adverse Reliability Impacts is identified.”⁴⁵

IRO-014-2 (Coordination Among Reliability Coordinators)

33. NERC proposes the eight requirements of Reliability Standard IRO-014-2 to replace the currently-effective Reliability Standards IRO-014-1, IRO-015-1 and

⁴⁵ NERC IRO Petition at 28.

IRO-016-1. NERC states that proposed Reliability Standard IRO-014-2 ensures that each reliability coordinator's operations are coordinated to avoid an Adverse Reliability Impact on other reliability coordinator areas and to preserve the reliability benefits of interconnected operations. Proposed Reliability Standard IRO-014-2 provides in part:

IRO-014-2 R1. Each Reliability Coordinator shall have Operating Procedures, Operating Processes, or Operating Plans for activities that require notification, exchange of information or coordination of actions that may impact other Reliability Coordinator Areas to support Interconnection reliability. These Operating Procedures, Processes, or Plans shall collectively address the following:

- 1.1.** Communications and notifications, including the mutually agreed to 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.
- 1.2.** Energy and capacity shortages.
- 1.3.** Planned or unplanned outage information.
- 1.4.** Control of voltage, including the coordination of reactive resources.
- 1.5.** Coordination of information exchange to support reliability assessments.
- 1.6.** Authority to act to prevent and mitigate system conditions which could cause Adverse Reliability Impacts to other Reliability Coordinator Areas.
- 1.7.** Weekly conference calls.

R5. Each Reliability Coordinator, upon identification of an Adverse Reliability Impact, shall notify all other Reliability Coordinators.

R6. During each instance where Reliability Coordinators disagree on the existence of an Adverse Reliability Impact each impacted Reliability Coordinator shall operate as though the problem exists.

R7. During those instances where Reliability Coordinators disagree on the existence of an Adverse Reliability Impact, the Reliability Coordinator that identified the Adverse Reliability Impact shall develop an action plan to resolve the Adverse Reliability Impact.

34. NERC states that Requirement R1 is the same as the currently-effective requirement except for the addition of Part 1.7, which requires reliability coordinators to

have weekly conference calls. Additionally, while Requirement R1 of Reliability Standard IRO-014-1 addresses “Operating Procedures, Operating Processes, or Operating Plans for activities that require notification, exchange of information or coordination of actions that may impact other Reliability Coordinator Areas to support Interconnection reliability,” NERC states that proposed Requirement R1 defines specific information that is to be included in the procedures, processes, and plans.

IRO Implementation Plan

35. NERC proposes as the effective date for Reliability Standard IRO-001-3, the first day of the second calendar quarter beyond the date that the standard is approved by the Commission. NERC states that this time will allow applicable entities adequate time to develop the documentation and other evidence necessary to exhibit compliance with the requirements. NERC proposes as the effective date for Reliability Standards IRO-002-3 and IRO-005-4 the first day of the first calendar quarter following the effective date of a final rule because the revisions are “to an existing mandatory and enforceable standard, applicable entities are already complying with the existing standard.”⁴⁶

36. For proposed Reliability Standard IRO-014-2, NERC proposes the first day of the first calendar quarter that is twelve months following the effective date of a final rule as the effective date. NERC states that, while the revisions to this Reliability Standard are to an existing mandatory and enforceable standard, “applicable entities should only have

⁴⁶ NERC IRO Petition, Exh. A at 8.

to make minor revisions to their Operating Plans, Operating Processes or Operating Procedures to show compliance.”⁴⁷

37. NERC also proposes retirement of the six IRO Reliability Standards, effective at midnight immediately prior to the first day of the first calendar quarter that is twelve months following the effective date of a final rule.

C. Proposed Revisions to Reliability Standard TOP-006-3 (Docket No. RM13-12)

38. On April 4, 2013, NERC proposed revisions to Reliability Standard TOP-006-3 to divide the reporting responsibilities of balancing authorities and transmission operators into separate requirements. According to NERC, the proposed revisions clarify that transmission operators are responsible for monitoring and reporting available transmission resources, while balancing authorities are responsible for monitoring and reporting available generation resources. NERC states that this division is consistent with the roles and responsibilities of registered entities as set forth in NERC Reliability Functional Model.

39. NERC states that, as currently written, Requirement R1.2 could be interpreted as duplicating efforts to monitor and report the availability of generation and transmission resources. NERC explains that it specifically requires both transmission operators and balancing authorities to inform reliability coordinators and other affected transmission operators and balancing authorities of all transmission and generation resources available

⁴⁷ NERC IRO Petition, Exh. A at 8-9.

for use. To address these concerns, NERC revised Requirement R1.2 to limit a transmission operator's monitoring and notification obligations to transmission resources available for use. NERC created Requirement R1.3 to limit a balancing authority's monitoring and notification obligations to generation resources available for use. NERC explains that proposed Requirement R1.3 only requires balancing authorities to inform reliability coordinators of all generation resources available for use, and they are not required to report the availability of generation resources to transmission operators because transmission operators already receive this information from generator operators pursuant to currently effective Requirement R1.1. According to NERC, by defining the reporting channels from transmission operators and balancing authorities to reliability coordinators, reliability coordinators will receive necessary information in advance, as part of their operating tools, processes and procedures, to prevent and mitigate emergency operating situations in real and next day operations.

40. In addition, NERC proposes to modify currently-effective Requirement R3. According to NERC, while the currently-effective Requirement R3 requires reliability coordinators, transmission operators and balancing authorities to provide appropriate technical information concerning protective relays to their operating personnel, NERC states that it does not impose explicit geographical boundaries on the scope of this obligation. NERC indicates that revised Requirement R3 specifies that the relevant protective relays are those within these entities' respective reliability coordinator area, transmission operator area or balancing authority area.

41. NERC has proposed medium Violation Risk Factors (VRFs) for proposed TOP-006-3, Requirements R1.2, R1.3 and R3 because these three Requirements all ensure that critical reliability parameters are monitored in real-time. NERC also states that the proposed Violation Security Levels (VSLs) for Requirement R1.3 meet NERC's VSL guidelines. NERC requests that the revisions become effective on the first day of the first calendar quarter after applicable regulatory approval.

II. Discussion

42. Pursuant to section 215(d) of the FPA, we propose to remand NERC's proposed revisions to the TOP and IRO Reliability Standards (Docket Nos. RM13-14-000 and RM13-15-000). While we believe that NERC's approach of condensing the requirements and removing redundancies generally has merit, we are concerned that, unlike the currently-effective TOP Reliability Standards, there is no requirement in the proposed standards for transmission operators to plan and operate within all SOLs. Without a requirement to analyze and operate within all SOLs in the proposed standards and by limiting non-IROL SOLs to only those identified by the transmission operator internal to its area, system reliability is reduced and negative consequences can occur outside of the transmission operator's internal area. As described below, this was a problem during the Southwest Outage when the loss of a 500 kV line in Arizona Public Service's area overloaded equipment, which ultimately resulted in a cascade outage

leaving approximately 2.7 million customers without power.⁴⁸ The provisions in the proposed TOP Reliability Standards that require transmission operators to operate only within a subset of SOLs offsets the potential benefits the proposed Reliability Standards may otherwise provide.

43. The Commission believes that NERC's proposal for the treatment of SOLs affects at least proposed Reliability Standard TOP-002-3, Requirements R1 and R2 as well as proposed Reliability Standard TOP-001-2, Requirements R8 through R11. Section 215(d)(4) requires that the Commission remand to the ERO for further consideration a Reliability Standard "that the Commission disapproves in whole or in part."⁴⁹ Thus, notwithstanding the organizational and administrative improvements contained in other provisions of proposed TOP Reliability Standards, our concern regarding the treatment of SOLs provides us no option other than to propose to remand the entire Reliability Standards TOP-001-2 and TOP-002-3.

44. In addition to addressing the SOL issue in the TOP Reliability Standards, we also propose to direct that NERC, on remand, develop modifications to the IRO Reliability Standards to ensure that reliability coordinators continue to develop and implement comprehensive generation and transmission outage coordination processes.

⁴⁸ 2011 Southwest Outage Blackout Report at 1.

⁴⁹ 16 U.S.C. 824o(d)(4) (2012) (emphasis added).

45. Given that the SOL and outage coordination process issues pertain to numerous requirements across the proposed standards, the interrelationship among the TOP standards and between the TOP and IRO Reliability Standards, and that NERC requests that both sets of standards be addressed together, we propose to remand the entire set of TOP and IRO Reliability Standards.⁵⁰ This approach will give industry and NERC flexibility to develop modifications to the standards that address the concerns identified in this NOPR.

46. Further, the Commission discusses below certain provisions of NERC's proposal that require clarification or further technical explanation. Depending on the explanations provided by NERC and other interested entities in comments to this NOPR, additional Commission action may be appropriate, including the identification of additional issues that NERC must address on remand.

47. Finally, pursuant to section 215(d) of the FPA, we also propose to approve NERC's proposed revisions to Reliability Standard TOP-006-3. We find that proposed TOP-006-3 is sufficiently separate from the standards we propose to remand above. Below, we discuss: (A) the proposed TOP Standards; (B) the proposed IRO Standards; and (C) the proposed revisions to Reliability Standard TOP-006-3.

⁵⁰ NERC TOP Petition at 1-2.

A. TOP Reliability Standards

1. Issue to be Addressed

a. Plan and Operate Within All SOLs

NERC Petition

48. Currently-effective Reliability Standard TOP-002-2a, Requirement R10 requires the transmission operator to plan to meet all SOLs and IROLs. Similarly, currently-effective Reliability Standard TOP-004-2, Requirement R1 requires transmission operators to operate within all IROLs and SOLs.

49. Proposed Reliability Standard TOP-002-3, Requirement R2 provides that each transmission operator still plan to operate within all IROLs but within only a sub-set of SOLs. It states that each transmission operator “shall develop a plan to operate within each [IROL] and each [SOL] which, while not an IROL, has been identified by the Transmission Operator as supporting reliability internal to its Transmission Operator area” as a result of its Operational Planning Analysis performed in Reliability Standard TOP-002-3, Requirement R1.

50. NERC states that it is appropriate to limit Requirement R2 to a sub-set of “non-IROL SOLs” that are important to local areas and that the identified subset of non-IROL SOLs will be subject to the requirements of the proposed Reliability Standards. NERC states that non-IROL SOLs are typically thought of in terms of “equipment damage or

[element] loss of life” and are restricted to a limited or local area.⁵¹ According to NERC, the standard drafting team concluded that it is not necessary to monitor all non-IROL SOLs because the “true reliability requirement is to operate within IROLs and that non-IROL SOLs are a local operating issue.”⁵² NERC explains that the “difference between non-IROL SOLs and IROLs is expressed in the difference between the consequences to the System (or impact to reliability) should unplanned perturbations of the system occur when the limit is being exceeded.”⁵³ According to NERC, the consequences of exceeding an IROL are described as cascading, uncontrolled separation, or instability.⁵⁴ NERC states that the impact of exceeding a non-IROL SOL will not result in an Adverse Reliability Impact.⁵⁵

Commission Proposal

51. The Commission is concerned with NERC’s proposal because, unlike the currently-effective TOP Reliability Standards, the proposed standards do not require the

⁵¹ NERC states that the revised TOP requirements move the standards to where the NERC Operating Guidelines intended them to be and ensure that the reliability of the interconnected system will be maintained and even enhanced because system operators will not be distracted from true reliability issues by local system issues. NERC TOP Petition at 18.

⁵² NERC TOP Petition, Exh. D, Consideration of Comments (Consideration of Comments on Second Draft of Standards for Real-Time Operations) at 23.

⁵³ NERC TOP Petition at 19.

⁵⁴ *Id.*

⁵⁵ NERC TOP Petition at 19.

transmission operator to plan and operate within SOLs, only non-IROL SOLs that are identified by the transmission operator as supporting reliability internal to its area and identified as a result of an Operational Planning Analysis.⁵⁶ For example, non-IROL SOLs that appear to be excluded from the proposed standard are non-IROL SOLs that are in a transmission operator's area that impact another transmission operator's area or more than one transmission operator's area.

52. During deteriorating system conditions, an SOL can rapidly degrade into an IROL. Limiting the requirement for transmission operators to analyze and operate within SOLs only to non-IROL SOLs identified by the transmission operator for its internal area can reduce system reliability because operators have less situational awareness of the system and conditions. Even if we accept the argument that our rules for operating bulk electric facilities should not be concerned with "equipment damage or [element] loss of life," NERC has not explained adequately why the only "true reliability requirement is to operate within IROLs and that non-IROL SOLs are a local operating issue." Major cascading events including the Northeast Blackout of 2003 and the 2011 Southwest Outage were initiated by a non-IROL SOL exceedance, followed by a series of non-IROL

⁵⁶ NERC's Functional Model states one of the tasks of transmission operations is to "[d]evelop system limitations such as System Operating Limits...and operate within those limits." NERC's "Reliability Functional Model Function Definitions and Functional Entities Version 5" at 37 *available* at www.nerc.com.

SOLs exceedances until the system cascaded.⁵⁷ Thus, while non-IROL SOLs are essentially defined as not posing a risk of cascading outages, instability or uncontrolled separation if they are exceeded, experience indicates that operators do not always foresee the consequences of exceeding such SOLs and thus cannot be sure of preventing harm to reliability. The Commission believes that when any facility ratings or stability limits are exceeded or expected to be exceeded (i.e. causing a SOL or an expected SOL on jurisdictional facilities), these conditions should be mitigated to avoid the possibility of further deteriorating system conditions and a cascade event.

53. We recognize that, if IROLs and non-IROL SOLs are determined accurately, the reliability consequences of an exceedance should usually be greater for the former than the latter. If NERC or commenters believe this probability warrants general exclusion of the latter from the TOP Reliability Standards (subject to an entity's specific inclusions), they should explain this view in more detail and present any information that may help us weigh its merit.

54. Moreover, we believe that proposed Reliability Standard TOP-002-3, Requirement R1 is flawed because the transmission operator should have an operational plan to operate within all Bulk-Power System IROLs and SOLs for all cases when facility ratings or stability limits are exceeded during anticipated normal and contingency event conditions. The operational plan is needed to ensure the transmission operator operates

⁵⁷ See 2003 Northeast Blackout Report at 74 and the 2011 Southwest Outage Blackout Report at 1.

in, or can return its system to, a reliable operating state. For example, the 2011 Southwest Outage Blackout Report raised a similar concern, stating that transmission operators should “ensure that post-contingency mitigation plans reflect the time necessary to take mitigating actions, including control actions, to return the system to secure N-1 state as soon as possible but no longer than 30 minutes following a single contingency.”⁵⁸

We believe that the transmission operator should have operational or mitigation plans for all Bulk-Power System IROLs and SOLs that can be implemented within 30 minutes or less to return the system to a secure state. Absent such plans, system conditions can linger in an unsecure or emergency state exposing the system to cascading outages upon the next contingency. Thus, we are concerned that Requirement R1 is insufficient for the fundamental operation of the interconnected transmission network as proposed by NERC.

55. Similarly, proposed Reliability Standard TOP-001-2, Requirements R8 through R11 address transmission operator notification, operation and action with respect to IROLs and some SOLs based on the transmission operator’s next-day Operational Planning Analysis. Because proposed Reliability Standard TOP-001-2, Requirement R8 requires a transmission operator’s notification of only those SOLs identified in a next-day Operational Planning Analysis, the Commission believes it is possible for additional

⁵⁸ Southwest Outage Blackout Report (Recommendation 13 at 90). In addition, in Order No. 693 the Commission stated that operational plans for all IROLs should include the “[i]dentification and communication of control actions [to system operators] that can be implemented within 30 minutes” following a contingency to return the system to a reliable operating state....” Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1601.

SOLs to develop or occur in the same-day or real-time operational time horizon. This could impose an operational risk to the interconnected transmission network. For example, if real-time system load levels are unexpectedly higher than forecasted load conditions used in the Operational Planning Analysis, this condition could result in real-time SOLs not identified in the Operational Planning Analysis because facility ratings and stability limits are now exceeded under high load levels whereas under the forecasted load levels (lower load levels), facility ratings and stability limits were not expected to be exceeded. Another example is if an unplanned outage of a transmission element or generator unit occurred after the completion of the next-day Operational Planning Analysis, this condition may result in real-time SOLs not identified in the Operational Planning Analysis because facility ratings and stability limits are now possibly exceeded due to the change in the system topology (i.e. transmission element outage) or generation dispatch (i.e. generator unit outage) that redirected the power flow on some portions of the interconnected transmission network.⁵⁹ Thus, there are various reasons why a SOL could occur in real-time operations due to the dynamic nature of the real-time interconnected transmission network and not be identified in the next-day Operational Planning Analysis. To assure that transmission operators are equipped to react to such

⁵⁹ This condition was identified in the 2011 Southwest Outage Blackout Report, which found that Imperial Irrigation District did not perform a separate, updated next-day study and contingency analysis for September 8, 2011 and instead, referenced a previous study which was not valid because it did not match the load and generation dispatch for the day. 2011 Southwest Outage Blackout Report, Recommendation No. 1 at 66.

situations, we believe that the Requirement R8 operational responsibilities and actions should pertain to all IROLs and all SOLs for all operating time horizons.

56. Accordingly, pursuant to section 215(d)(4) of the FPA, we propose to remand proposed Reliability Standards TOP-001-2 and TOP-002-3. Specifically, we propose to direct that NERC develop modifications to Reliability Standard TOP-002-3, Requirements R1 and R2 that address our concerns discussed above to ensure that transmission operators develop mitigation plans for all IROLs and SOLs expected to be exceeded. Similarly, for proposed Reliability Standard TOP-001-2, Requirement R8, we propose to direct that NERC develop modifications to require that transmission operator actions apply to all SOLs identified in all operational time horizons (operations planning, same-day operations and real-time operations). Further, for proposed Reliability Standard TOP-001-2, Requirements R9 through R11, we propose to direct that NERC develop modifications to require that transmission operator specified actions apply to all SOLs related responsibilities in the real-time operations time horizon. Our concerns discussed above apply to specific provisions of proposed TOP-001-2 and TOP-002-3. However, as explained above, we propose to remand proposed Reliability Standards TOP-001-2 and TOP-002-3. Moreover, as explained above, because the TOP standards are so interrelated, we also propose to remand Reliability Standard TOP-003-2 to give NERC and industry flexibility to address our concerns.

2. TOP Reliability Standards – Issues Requiring Clarification

a. System Models, Monitoring and Tools

NERC Petition

57. NERC proposes to retire TOP and IRO Reliability Standards that require reliability coordinators and transmission operators to maintain and use certain models and analysis capabilities and monitoring. NERC proposes to delete requirements for transmission operators to (1) “maintain accurate computer models utilized for analyzing and planning system operations”; (2) “use monitoring equipment to bring to the attention of operating personnel important deviations”; (3) “use sufficient metering ... to ensure accurate and timely monitoring”; and (4) “have sufficient information and analysis tools to determine the cause(s) of SOL violations....”⁶⁰ NERC explains that these transmission operator requirements are unnecessary because transmission operators meet these requirements as part of NERC’s certification process or are in other currently-effective or proposed standards.⁶¹

58. Similarly, NERC proposes to retire Reliability Standard IRO-002-2 Requirements R4, R5, R6, and R7, which address real-time monitoring and analysis capabilities and functions required to enable the reliability coordinator to perform its responsibilities. According to NERC, these requirements are unnecessary because they are inherent in the

⁶⁰ See Reliability Standards TOP-002-2.1b, Requirement R19, TOP-006-2, Requirement R5, TOP-006-2, Requirement R6, and TOP-008-1, R4, respectively.

⁶¹ NERC TOP Petition, Exhibit J at 22, 34, 35, and 38.

reliability coordinator's duty to maintain area control error or operate within IROLs/SOLs and can be verified in the certification process.⁶² NERC also states that the Commission directives in Order No. 693 applicable to a minimum set of analytical tools and applicable to reliability coordinators and transmission operators will be addressed in Project 2009-02 - Real-time Monitoring and Analysis Capabilities – that has a projected completion date of 2014. Further, NERC proposes to retire other requirements of currently-effective Reliability Standard TOP-006-2 which address real-time monitoring responsibilities of the transmission operator.

Commission Proposal

59. In Order No. 693, the Commission directed NERC to develop requirements for a minimum set of analytical tools (analysis and monitoring capabilities) to ensure that a reliability coordinator has the tools it needs to perform its functions.⁶³ In its TOP Petition, NERC discusses the importance of analytical tools and real-time monitoring noting that, “[a]ccording to the August 2003 Blackout Report, a principal cause of the August 14, 2003 blackout was a lack of situational awareness, which was in turn the

⁶² Section 500 of NERC's Rules of Procedure provide for an organization certification program that is intended to ensure that the an applicant to be a reliability coordinator, balancing authority or transmission operator “has the tools, processes, training, and procedures to demonstrate their ability to meet the Requirements/sub-Requirements of all of the Reliability Standards applicable to the function(s) for which it is applying thereby demonstrating the ability to become certified and then operational.” NERC Rules of Procedure at 44.

⁶³ Order No. 693, FERC Stats. & Regs. ¶ 31,242, at PP 905, 906, 1660.

result of inadequate reliability tools.”⁶⁴ We agree with NERC’s statement and believe this is an area of reliability that requires vigilance. Moreover, our view is reinforced by the 2011 Southwest Outage Blackout Report, which found that “[a]ffected TOP’s real-time tools are not adequate or, in one case, operational to provide the situational awareness necessary to identify contingencies and reliably operate their systems” and consequently recommended that “TOPs should take measures to ensure that their real-time tools are adequate, operational, and run frequently enough to provide their operators the situational awareness necessary to identify and plan for contingencies and reliably operate their systems.”⁶⁵

60. Monitoring and analysis capabilities are essential in establishing and maintaining situational awareness. While NERC indicates that these functions are assured through the certification process,⁶⁶ we are not convinced that NERC’s certification process is a suitable substitute for a mandatory Reliability Standard. Monitoring and assessment capabilities must adapt to assess changing topography and system conditions so that

⁶⁴ NERC TOP Petition at 10. NERC also states that “the failure of control computers and alarm systems, incomplete tool sets, and the failure to supply network analysis tools with correct System data on August 14, contributed directly to this lack of situational awareness. Also, the need for improved visualization capabilities over a wide geographic area has been a recurrent theme in blackout investigations.”

⁶⁵ 2011 Southwest Outage Blackout Report at 88 and Finding 12. In addition, the 2011 Southwest Outage Blackout Report, Finding 27 (at 111) states that “[a] TOP did not have tools in place to determine the phase angle difference between two terminals of its 500 kV line after it tripped.”

⁶⁶ NERC TOP Petition, Exh. J at 33.

operators can continually maintain an adequate level of situational awareness. In contrast, certification is a one-time process that may not adequately assure continual operational responsibility would occur if these requirements were in a Reliability Standard.

61. In addition, as discussed above, NERC indicates that Standards Project 2009-02, Real-time Monitoring and Analysis Capabilities, will address the Commission directives in Order No. 693 that address a minimum set of analytical tools. According to NERC, this project has a projected completion date of 2014. NERC's retiring of current IRO and TOP requirements that address monitoring and analysis capabilities warrants expedition in the completion of Project 2009-02. The retirement of the current IRO and TOP requirements that address monitoring and analysis capabilities should not occur until the completion and implementation of Project 2009-02.⁶⁷ Thus, in its NOPR comments NERC should propose a schedule that it will follow to ensure it completes and implements Project 2009-02 prior to any retirement of the standard such that there would be no gap.

⁶⁷ NERC's "Standards Independent Experts Review Project" (Industry Experts Report) identifies one aspect of Project 2009-02 as a "high priority" gap. Industry Experts Report at Appendix F. The Industry Experts Report (App. F) identifies a high priority gap for Project 2009-02 to define the requirements for EMS RTCA models or performance expectations of the models; the Report also says proposed TOP-002 should incorporate current requirement for tools to determine cause of SOL violations.

b. Compliance with Reliability Directives**NERC Petition**

62. Currently-effective Reliability Standard TOP-001-1, Requirements R3 and R4 require applicable entities to comply with transmission operators' and reliability coordinators' "reliability directives," which currently is an undefined term. NERC proposes Reliability Standard TOP-001-2, Requirement R1 which requires applicable entities to comply with transmission operators' "Reliability Directives," which NERC proposes to define as "[a] communication initiated by a Reliability Coordinator, Transmission Operator, or Balancing Authority where action by the recipient is necessary to address an Emergency or Adverse Reliability Impacts."⁶⁸

63. In its implementation plan, NERC states that it is not proposing any new definitions but that the TOP standard drafting team coordinated with the IRO drafting team to develop a definition of "Reliability Directive." This definition is included in the IRO implementation plan.

Commission Proposal

64. The currently-effective TOP Reliability Standards use "reliability directive," which, as an undefined term, does not appear to be limited to a specific set of circumstances. Also IRO Reliability Standards use the term "reliability directive" in the

⁶⁸ NERC's proposed definition of Reliability Directive does not appear in the TOP Petition. Rather, NERC proposes the definition in the IRO Petition, Exhibit C at 1 (IRO Implementation Plan).

same manner as an undefined term.⁶⁹ In contrast, application of the proposed definition of “Reliability Directive” appears to require compliance with transmission operator directives only in emergencies, not normal or pre-emergency times. We believe that directives from a reliability coordinator or transmission operator should be mandatory at all times, and not just during emergencies (unless contrary to safety, equipment, regulatory or statutory requirements). For example, mandatory compliance with directives in non-emergency situations is important when a decision is made to alter or maintain the state of an element on the interconnected transmission network. NERC staff has noted in the context of how to communicate such directives that operating practices for such directives should be consistent, no matter what type of operating condition (normal, alert, emergency) exists.⁷⁰ Moreover, the transition from normal to emergency operation can be sudden and indistinguishable until recognized, often after the damage is done.⁷¹

65. NERC’s TOP and IRO petitions do not explain the proposed, defined term “Reliability Directive,” or why compliance with a transmission operator’s directives should be required only during emergencies (if this is the intent). Accordingly, we seek from NERC and other interested entities clarification and technical explanation regarding

⁶⁹ See Reliability Standard IRO-002-2, Requirement R8.

⁷⁰ See COM-003-1, Operations Communications Protocols White Paper, May 2012 at 12, *available* at [nerc.com](http://www.nerc.com).

⁷¹ See NERC staff’s letter to “Project 2009-22 Interpretation of COM-002-2 R2 for IRC Drafting Team” dated November 18, 2011, at 1, *available* at [nerc.com](http://www.nerc.com).

the scope and intent of the defined term, as well as the anticipated reliability benefits and/or drawbacks of the proposed term.

66. In addition, while NERC has included the proposed definition in its implementation plan, NERC has not explained or justified its request for approval of the revised definition. The Commission has held that definitions are standards.⁷² Therefore, we cannot approve the definition without a technical justification.

c. **Consideration of External Networks and sub-100 kV Facilities and Contingencies in Operational Planning Analysis**

NERC Petition

67. In proposed Reliability Standard TOP-002-3, Requirement R1, NERC proposes to require transmission operators to prepare an Operational Planning Analysis, i.e., next day study, which represents “projected System conditions” to determine if their planned operations will exceed facility ratings and stability limits for normal and contingency conditions. NERC does not indicate whether this includes external networks or sub-100 kV facilities.

⁷² As with Reliability Standards, the Commission reviews and approves revisions to the NERC glossary pursuant to FPA section 215(d)(2). Further, the Commission may direct a modification to address a specific matter identified by the Commission pursuant to section 215(d)(5). *See also* Order No. 693, FERC Stats. & Regs. ¶ 31,242 at PP 1893-98.

Commission Proposal

68. It is unclear whether NERC's proposal would require transmission operators to include updated external networks to reflect operating conditions external to their systems and (internal and external) sub-100 kV facilities in their operational planning analyses. In Order No. 693, the Commission directed a modification to planned outage coordination to require consideration of facilities below 100 kV that, in the opinion of the registered entity (such as a transmission operator) "will have a direct impact on the reliability of the Bulk-Power System...."⁷³ The 2011 Southwest Outage Blackout Report includes similar recommendations that transmission operators should ensure their next-day studies include updated external networks and internal and external facilities (including those below 100 kV) that can impact Bulk-Power System reliability.⁷⁴ Although proposed Reliability Standard TOP-002-3, Requirement R1 requires the transmission operator to consider "projected System conditions," it is unclear whether "projected System conditions" include the relevant updated external networks and (internal and external) sub-100 kV facilities.

69. The Commission seeks clarification and technical explanation from NERC whether the term "projected System conditions" in proposed Reliability Standard TOP-002-3 Requirement R1 includes updated external networks to reflect operating

⁷³ Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1624.

⁷⁴ 2011 Southwest Outage Blackout Report, Recommendations Nos. 2 and 3.

conditions external to their systems and sub-100 kV facilities (internal and external) in their operational planning analyses. If not, the Commission seeks comment on the associated reliability risks and, whether it is appropriate to include updated external networks to reflect operating conditions and external and sub-100 kV facilities (internal and external) in the operational planning analyses.

d. **Operating to Respect the Most Severe Single Contingency in Real-time Operations and Unknown Operating States**

NERC Petition

70. NERC proposes to delete Reliability Standard TOP-004-2, Requirement R2, which provides that 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.” NERC’s Petition does not provide an explanation for the deletion. However, the NERC “mapping document,” which is included as an exhibit to the TOP Petition indicates that NERC intends that Requirement R2 be replaced by proposed Reliability Standards TOP-001-2, Requirements R7 and R9.⁷⁵ Proposed Requirement R7 requires each transmission operator to not operate outside any identified IROL “for a continuous duration exceeding its associated IROL T_v .” Proposed Requirement R9 states each transmission operator shall not operate outside any SOL identified in Requirement R8 “for a continuous duration that could cause a violation of the Facility Rating or Stability criteria upon which it is based.” Further, NERC proposes to replace Reliability

⁷⁵ NERC TOP Petition, Exhibit J at 25.

Standard TOP-008-1, Requirement R4 with multiple proposed requirements from proposed Reliability Standards TOP-001-2, TOP-002-3, and TOP-003-2. Reliability Standard TOP-008-1, Requirement R4 requires that the transmission operator have information and analysis tools to determine the causes of SOL violations, such as a most severe single contingency event, and conduct this analysis in all operating timeframes.

71. With regard to unknown operating states, currently-effective Reliability Standard TOP-004-2, Requirement R4 states that, 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.”⁷⁶ Order No. 693 directed NERC to modify Requirement R4 to restore the system “to respect proven reliable power system limits as soon as possible and in no longer than 30 minutes.”⁷⁷

72. In the TOP Petition, NERC proposes to replace Requirement R4 with proposed Reliability Standard TOP-001-2, Requirements R7 through R11. Requirements R7 through 11 address the transmission operator’s responsibilities over IROLs or SOLs that have been identified by the transmission operator as necessary to support reliability internal to its transmission operator area. NERC explains that the proposed requirements “do not include an explicit reference to ‘unknown state’ since system limits can and

⁷⁶ Reliability Standard TOP-004-2, Requirement R4.

⁷⁷ Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1636.

should be determined and conditions can be monitored to know when they have been exceeded.”⁷⁸ NERC also states that unknown operating states “cannot exist because valid operating limits have been determined for all facilities in a TOP’s footprint.”⁷⁹ In addition, NERC states that the proposed requirements “prohibit operations outside of IROLs, or SOLs identified in TOP-001-2....”⁸⁰ Further, NERC explains that proposed Reliability Standard EOP-001-2, which applies to emergency operations planning, covers the general intent of being prepared to react to “Emergencies.”⁸¹

Commission Proposal

73. NERC has proposed to retire three key rules here, i.e., the requirements to be ready for the single largest contingency, to move quickly from an “unknown operating state” to within proven limits, and to determine the cause of SOL violations in all time-frames, including real-time. We believe these three rules represent the bedrock core of real-time operating rules and practices, and it is therefore incumbent upon NERC to provide a more thorough and comprehensive explanation of how the proposed

⁷⁸ NERC TOP Petition, Exhibit H at 5.

⁷⁹ NERC TOP Petition, Exhibit I at 4.

⁸⁰ NERC TOP Petition, Exhibit H at 5.

⁸¹ NERC TOP Petition, Exhibit I (Resolution of Order No. 693 directives) at 4.

replacement standards compare in meeting the same objectives as the current standards.

We request comment on these concerns, as elaborated below.⁸²

74. In particular, NERC should address whether its proposal would allow a different approach to real-time operational assessments and operation to the most severe single contingencies and, if so, NERC should explain and technically support the nature and associated reliability effects of any different approaches.⁸³ How are the proposed requirements to not exceed IROLs or certain SOLs for more than the specified times are the functional or implicit equivalent of the current rules? For example, do the proposed rules allow reliance on post-contingency mitigation at times when the current rules would require pre-contingency mitigation? If so, is the difference significant for reliability purposes? Do both the current and proposed rules prohibit an entity from operating for more than 30 minutes in a state where loss of a particular line would cause the loss of enough resources or load to risk cascading outages or instability? Or, if the entity is not yet operating beyond the pre-determined ratings of the particular line, would the

⁸² The 2011 Southwest Outage Blackout Report indicated that the September 8, 2011 cascade event “showed that the system was not being operated in a secure N-1 state” and that “[NERC’s] mandatory Reliability Standards...require that the BES be operated so that it generally remains in a reliable condition, without instability, uncontrolled separation or cascading, even with the occurrence of any single contingency.” 2011 Southwest Outage Blackout Report at 5.

⁸³ Currently-effective Reliability Standard IRO-008-1, Requirement R2 requires that “[e]ach 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.”

proposed rules allow doing so while the current rules do not? Should all transmission operators be required to run a real-time contingency analysis (RTCA) frequently, since the lack of such analysis can impair situational awareness substantially? Or is the value of such information outweighed for smaller entities with such limited facilities and operations that they generally can maintain similar reliability based on operator experience and judgment without any extra staffing and procedures needed to ensure that the RTCA's informational inputs and modeling are valid and useful?

75. With regard to mitigation of unknown operating states, while NERC asserts that “unknown states” cannot exist, a transmission provider could have valid operating limits for all facilities but lack situational awareness when valid limits are exceeded. In addition, a transmission operator could operate in an unanalyzed or unstudied state (as a result of loss of EMS facilities that meter and report voltage, MW flow and other key system indicators). For example, the 2011 Southwest Outage Blackout Report found that Western Area Power Administration-Lower Colorado was operating in an “unknown state” when it lost its real-time contingency analysis capabilities and, at the same time, did not notify its reliability coordinator to assist with situational awareness.⁸⁴ In light of

⁸⁴ 2011 Southwest Outage Blackout Report, Recommendation 15, at 95 states that “[a]n entity should never be operating in an unknown state, as WALC [Western Area Power Administration-Lower Colorado] was when it lacked functional RTCA [real-time contingency analysis] and State Estimator, and did not ask any other entity to assist it with situational awareness.” *Cf.* NERC Compliance Filing, Docket No. RM06-16-000 (Oct. 31, 2008) at 7 (“the Reliability Coordinators in the West operate only to study conditions and note that they do not operate in IROL conditions, only SOLs, unless there are one or more unanticipated outages. In these cases, when an IROL condition is

(continued...)

this concern, the Commission seeks comment and technical explanation from NERC and other interested entities on the proposed retirement. As above, our main question is whether the proposed rules are comparable to the current rules for reliability purposes and, if not, whether the difference is reasonable.

e. **System Protection Coordination**

NERC Petition

76. NERC proposes to replace currently-effective Requirements R2, R5 and R6 in Reliability Standard PRC-001-1, with proposed Reliability Standard TOP-003-2, Requirement R5.⁸⁵ Currently-effective Reliability Standard PRC-001-1, Requirement R2 requires generator operators and transmission operators to notify affected entities of relay or equipment failures and if the failure reduces system reliability, take corrective action as soon as possible. Requirement R5 requires generator operators and transmission operators to coordinate changes in generation, transmission, load or operating conditions with appropriate advance notice that could require changes in the protection systems of others. Requirement R6 obligates transmission operators and balancing authorities to

experienced, the Reliability Coordinators must restore the system to a known operating state within 20 minutes for stability concerns and 30 minutes for thermal concerns.”).

⁸⁵ NERC TOP Petition, Exhibit J at 40 and 41. According to NERC (petition at 4), the “corresponding changes in proposed PRC-001-2 are administrative in nature and are limited to removal of three requirements in currently-effective PRC-001-1 that are now addressed in proposed TOP-003-2, included herein for approval.”

monitor the status of each special protection system in their area and to notify affected transmission operators and balancing authorities of a change in status.

77. Proposed Reliability Standard TOP-003-2, Requirement R5 states that entities “receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications for data.” In the standard development process, the standard drafting team explained that a “data specification” is required to contain all of the information that a transmission operator and balancing authority needs to fulfill its obligations.⁸⁶ In addition, the standard drafting team stated that the transmission operator and balancing authority “are the best ones to determine the contents of the data specification and that any attempt to provide a minimal list or other guidance would be short-sighted and possibly misleading.”⁸⁷ The standard drafting team indicated that “an auditor can only question what is contained in the requirements and in this case that

⁸⁶ *E.g.*, NERC TOP Petition, Exh. D, Consideration of Comments (Consideration of Comments on the 7th Draft) at 72. Southwest Power Pool Regional Entity stated that it “does not believe TOP-003-2 addresses the requirements in PRC-001.” Exh. D at 73. Texas Reliability Entity states that “Requirements R2, R5 and R6 of PRC-001-1, which are proposed to be deleted, are not actually replaced by any new or revised requirements in other standards, resulting in reliability gaps.” Exh. D at 89.

⁸⁷ NERC TOP Petition, Consideration of Comments (Consideration of Comments on the 7th Draft) at 79. Southwest Power Pool Standards Review Group states that “[t]o be sure that all the bases are covered, we would suggest that the SDT provide a guideline which incorporates the types of data and information they envisioned when drafting these requirements.” *Id.*

would include only the existence of the data specification and not its contents. Any omissions of data will be caught up in failures to adhere to other standards.”⁸⁸

Commission Proposal

78. The Commission seeks comment and technical explanation from NERC and other interested entities on how current Reliability Standard PRC-001-1 Requirement R2’s requirement for corrective action (i.e., return a system to a stable state) is addressed in its proposal.⁸⁹ Further, the Commission proposes that NERC issue guidance on data needed for protection system coordination that addresses the applicable Order No. 693 directives and the proposed retirement of the Reliability Standard PRC-001-1 requirements.⁹⁰

⁸⁸ NERC TOP Petition, Consideration of Comments (Consideration of Comments on the 7th Draft) at 88. Southwest Power Pool Standards Review Group states that “incorporating protective relay information in the data specifications of R1 and R2 raises the potential for auditors to question the contents of an entity’s specification.” *Id.* at 79.

⁸⁹ In Order No. 693, the Commission required changes to Requirement R2 of Reliability Standard PRC-001-1 to clarify “corrective action” (i.e., return a system to a stable state), specify time limit for notification, and require corrective action as soon as possible but no longer than 30 minutes. Order No. 693, FERC Stats. & Regs. ¶ 31,242 at PP 1441, 1445 and 1449.

⁹⁰ In Order No. 693, the Commission directed NERC to develop a modification to Reliability Standard TOP-006-1 to clarify “the meaning of ‘appropriate technical information’ concerning protective relays” so that “operators can make better informed decisions. An example of such information would be the allowable reclosing angle set in the existing relays and the maximum angle at specific points in the Bulk-Power System that would be acceptable to allow closing of lines during system restoration.” Order No. 693, FERC Stats. & Regs. ¶ 31,242, at P 1663 and P 1665.

f. Notification of Emergencies

NERC Petition

79. Currently-effective TOP Reliability Standard TOP-001-1a requires each transmission operator to inform its reliability coordinator and other potentially affected transmission operators “of real time or anticipated emergency conditions, and take actions to avoid, when possible, or mitigate the emergency.”⁹¹ In its petition, NERC proposes to retire Reliability Standard TOP-001-1a and proposes as replacements Requirements R3-R6 of Reliability Standard TOP-001-2. In particular, Requirement R3 provides “[e]ach Transmission Operator shall inform its Reliability Coordinator and Transmission Operator(s) that are known or expected to be affected by each actual and anticipated Emergency based on its assessment of its Operational Planning Analysis.”⁹² In addition, Requirement R3 has a time horizon of “Operations Planning,” which NERC describes as the “operating and resource plans from day-ahead up to and including seasonal” and does not include same-day operations or real-time operations.⁹³

⁹¹ Reliability Standard TOP-001-1a, Requirement R5.

⁹² The NERC Glossary defines Operational Planning Analysis as “[a]n 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.”

⁹³ See NERC Time Horizons at 1, available at <http://www.nerc.com/pa/Stand/Resources/Documents/TimeHorizons.pdf> at 1.

Commission Proposal

80. NERC's proposed revisions warrant clarification. Read one way, proposed Requirement R3 is less comprehensive than the currently-effective requirements pertaining to notification of emergencies. Yet, it also contains provisions that, read another way, could require TOPs to notify others of all emergencies, not just day-ahead.⁹⁴ Indeed, during the standard development process, similar concerns were expressed.⁹⁵

81. Similarly, it is not clear whether proposed Reliability Standard TOP-001-2, Requirement R5 would address same-day and real-time operating emergencies not covered by TOP-001-2, Requirement R3. Proposed TOP-001-2, Requirement R5, states that “[e]ach [TOP] shall inform its [RC] and other [TOPs] of its operations known or expected to result in an Adverse Reliability Impact on those respective Transmission Operator Areas....” The definition of Adverse Reliability Impact in NERC's TOP filing is “[t]he impact of an event that results in frequency related instability; unplanned tripping of load or generation; or uncontrolled separation or cascading outages that

⁹⁴ An “anticipated” emergency should apply to all operational time horizons: operations planning, same-day, and real-time. Further, an “actual” emergency could only occur during the real-time operational time horizon.

⁹⁵ NERC TOP Petition, Exh. D, Consideration of Comments (Consideration of Comments on the 7th Draft) at 21: “R3 seems to be missing some words...it is not clear if this requirement is supposed to be about planning (“expected to be affected by anticipated Emergencies”) or real-time operations (“known to be affected by actual Emergencies”) or both. If the latter is intended, the Time Horizon should include Real-Time Operations and Same Day Operations....” The standard drafting team responded that “it is clear as to what needs to be communicated.” *Id.* at 23.

affects a widespread area of the Interconnection.”⁹⁶ In contrast, NERC defines Emergency as “[a]ny 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.” An Adverse Reliability Impact is an event that results in instability, or cascade conditions, while an Emergency includes conditions that could be a precursor to an Adverse Reliability Impact. Thus, the notification provisions of Requirement R5 do not cure the possible ambiguity in proposed Requirement R3.

82. While NERC states that the obligation to notify for real-time emergency conditions was replaced by proposed Requirement R3, NERC does not indicate in its petition that the real-time or same-day obligation was purposely deleted or offer an explanation for the deletion.⁹⁷ We believe that, consistent with the currently-effective TOP Reliability Standards, the notification requirement of proposed Reliability Standard TOP-001-2 should apply to all emergencies, including real-time and same day emergencies. The Commission seeks comment from NERC and other interested entities regarding (1) the proper understanding of the scope of the notification provisions in the proposed requirements and (2) if the notification does not include all operational time

⁹⁶ NERC TOP Petition at 19. In the IRO Petition, NERC cites a different definition of Adverse Reliability Impact: “[t]he impact of an event that results in Bulk Electric System instability or cascading.” NERC IRO Petition at 13, n20.

⁹⁷ NERC TOP Petition, Exhibit C at 3.

horizons, technical justification for why transmission operators should not be required to notify reliability coordinators and other affected transmission operators of all emergencies in all operating time horizons.

83. In addition, as noted above, NERC uses two different definitions of Adverse Reliability Impact in the TOP and IRO Petitions. NERC has not explained the intent or effect of the two definitions, and the term is used in several provisions of the proposed TOP and IRO Reliability Standards. The Commission seeks clarification and a technical explanation from NERC and other interested entities regarding the two definitions, including if it is proposing a revised definition, which definition it is proposing. In addition, if the definition NERC is proposing no longer includes the phrase “uncontrolled separation” NERC should explain the removal of the statutory phrase “uncontrolled separation.”

g. Primary Decision-Making Authority for Mitigation of IROLs/SOLs

84. NERC’s proposal contains a potential overlap in authority between the transmission operator and reliability coordinator with regard to the provisions pertaining to mitigation of IROLs and SOLs as set forth in the proposed TOP and IRO Standards.

85. NERC states in its TOP Petition that “[t]he responsibility for monitoring and handling IROLs is primarily given to the Reliability Coordinator, but the Transmission Operator has the primary responsibility to designate any SOLs that require special

attention.”⁹⁸ Likewise, NERC also states that an improvement resulting from the changes to the IRO Reliability Standards is that they delineate a clean division of responsibilities between the reliability coordinator and transmission operators to “help to ensure that the Reliability Coordinator is responsible for identifying and controlling operations associated with IROs and the Transmission Operator is responsible for identifying and controlling operations associated with SOLs.”⁹⁹ Proposed Reliability Standard IRO-001-3, Requirement R1, provides that each reliability coordinator “shall have the authority to act or direct others to act (which could include issuing Reliability Directives) to prevent identified events or mitigate the magnitude or duration of actual events that result in an Emergency or Adverse Reliability Impact.” Further, currently-effective Reliability Standard IRO-009-1, Requirement R4 states that “[w]hen 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.”¹⁰⁰

86. However, proposed Reliability Standard TOP-001-2, Requirement R11 provides similar authority for the transmission operator with respect to IROs. NERC proposes

⁹⁸ NERC TOP Petition at 15.

⁹⁹ NERC IRO Petition at 5-7.

¹⁰⁰ Reliability Standard IRO-009-1, Requirement R4.

that each transmission operator “shall act or direct others to act, to mitigate both the magnitude and duration of exceeding an IROL within the IROL’s T_v, or of an SOL identified in Requirement R8.”¹⁰¹

87. NERC’s proposal with respect to mitigating IROLs appears to give both the transmission operator and reliability coordinator authority to act.¹⁰² Therefore, we seek clarification and technical explanation whether the reliability coordinator or the transmission operator has primary responsibility for IROLs.

B. IRO Reliability Standards

88. As discussed above, because of the interrelationship of the TOP and IRO Reliability Standards, the Commission proposes to remand proposed IRO Reliability Standards: IRO-001-3, IRO-002-3; IRO-005-4; and IRO-014-2. In addition, as discussed below, as part of the remand, the Commission proposes to direct that NERC develop modifications with regard to planned outage coordination. We also seek comment from NERC and other interested entities regarding several proposed provisions

¹⁰¹ NERC’s TOP Petition (at 15) states that “the delineation in the proposed TOP Reliability Standards with respect to operating within an identified IROL...is an important distinction in the proposed TOP Reliability Standards that is necessary for reliability.”

¹⁰² NERC in its 2009 filing to revise and add new IRO standards (RM10-15-000 petition at 8) states that under its “Functional Model, the reliability coordinator is the functional entity with the highest level of responsibility and authority for the real-time reliability of the bulk power system.”

of the IRO Reliability Standards. Depending on the responses in the NOPR comments, the Commissions may issue further directives in the final rule in this proceeding.

1. Issues to be Addressed

a. Planned Outage Coordination

NERC Petition

89. In its IRO petition, NERC proposes to retire Reliability Standard IRO-005-3.1a, Requirement R6, which requires reliability coordinators 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.”¹⁰³ NERC states that the “coordination aspects of this part of Requirement R6 are addressed in the requirements of currently-effective IRO-008-1,¹⁰⁴ Requirement R3, and IRO-010-1a, Requirement R3,” which provide:

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.

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

¹⁰³ NERC IRO Petition at 33-34.

¹⁰⁴ NERC IRO Petition at 34.

information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship.

Commission Proposal

90. The Commission is concerned with NERC's proposal because Reliability Standards IRO-008-1, Requirement R3 and IRO-010-1a do not require coordination of outages. Outage coordination is a critical reliability function that should be performed by the reliability coordinator. Outage coordination is an integral part of the operational planning process with generation outages being scheduled from three to five years in advance and transmission maintenance and construction outages being scheduled one to three years in advance. Outages that have been planned well in advance still must go through a month-ahead, week-ahead, and sometimes even a day-ahead approval process depending on system topography and system conditions that may change as the scheduled maintenance outage approaches. For instance, forced outages often disrupt planned outage schedules. Therefore, the Commission believes it is essential that, as the functional entity with the wide-area view, the reliability coordinator coordinates this critical area of operational planning.¹⁰⁵

¹⁰⁵ The Independent Experts Report identifies outage coordination as one of the key areas where risk to the Bulk-Power System is not adequately mitigated. Industry Experts Report at 15. The Independent Experts Report proposes (Appendix H) to fill this gap "by giving the Reliability Coordinator the authority and responsibility to develop and implement a generation and transmission outage coordination process across Transmission Operators and Balancing Authorities in their footprint" and "between its adjacent Reliability Coordinators." Industry Experts Report at 31. This outage coordination process "shall cover the time period from the current operating hour out through at least 36 months." In addition, The 2011 Southwest Outage Blackout Report

(continued...)

91. Because outage coordination is critical to operations planning and the reliability coordinator has the needed wide-area view for operations planning, on remand, the Commission proposes to direct NERC to develop modifications to the IRO Reliability Standards that would require the reliability coordinator to have the authority and responsibility to develop and implement a generation and transmission outage coordination and planning process across transmission operators and balancing authorities in its footprint and between its adjacent reliability coordinators for the operations planning timeframe.¹⁰⁶

2. **IRO Reliability Standards – Issues Requiring Clarification**

a. **Use of a Secure Data Network**

NERC Petition

92. Currently-effective Reliability Standard IRO-002-2, Requirement R2, requires that the data exchange between the reliability coordinator, transmission operator, and balancing authority be accomplished “via a secure network.” According to NERC, the requirement to provide information via a “secure network” is now addressed in NERC

(at 67) found a problem with Imperial Irrigation District’s lack of awareness of another entity’s planned generation outage.

¹⁰⁶ This proposed directive is consistent with the Order No. 693 directive for NERC to modify Reliability Standard TOP-003-1, Planned Outage Coordination, to require communication of scheduled outages to affected entities well in advance. Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1620 through P 1624. In addition, the Commission has a similar concern with proposed Reliability Standard TOP-003-2 because it is not clear whether it addresses planned outage coordination.

Rules of Procedure, Section 1002 (Reliability Support Services).¹⁰⁷ NERC also indicates that Requirement R2 is now addressed in proposed Reliability Standard IRO-014-2, Requirements R1, R2, and R3.

Commission Proposal

93. Although NERC cites Section 1002 of the Rules of Procedure and proposed Reliability Standard IRO-014-2 as providing for the use of a secured data network, NERC does not explain how secured networks are covered in those sections. While Section 1002 of the NERC Rules and Reliability Standard IRO-014-2, Requirements R1, R2, and R3 address notification and exchange of information and data and coordination of actions, no language in these provisions appears to require the data exchange or notifications to be conducted in a secure mode.

94. A secure network is essential to prevent unauthorized access to or modification of information that is critical for interconnected transmission network reliability functions performed by reliability coordinators. Therefore, we seek comment and technical explanation from NERC and other interested parties regarding how the identified section in the Rules of Procedure and Reliability Standard IRO-014-2, Requirements R1, R2, and

¹⁰⁷ NERC IRO Petition at 16, quoting section 1002 of the NERC Rules of Procedure which states in part that “NERC may assist in the development of tools and other support services for the benefit of Reliability Coordinators and other system operators to enhance reliability, operations and planning. NERC states that it will work with the industry to identify new tools, collaboratively develop requirements, support development, provide an incubation period, and at the end of that period, transition the tool or service to another group or owner for long term operation of the tool or provision of the service.”

R3 ensure that the data exchange and notifications will be conducted using a secure mode in a secure environment.

b. Reliability Coordinator Monitoring of SOLs and IROLs
NERC Petition

95. NERC proposes to retire Reliability Standard IRO-002-2, Requirements R4 through R7, which require reliability coordinators to monitor IROLs and SOLs.

Requirement R5 requires reliability coordinators to monitor bulk electric system elements that could result in SOL or IROL violations. NERC argues that it is appropriate to retire these requirements because: (1) an SOL is unlikely to have an impact on the wide-area reliability of the Bulk-Power System as it will generally not have an impact outside the affected transmission operator's area and (2) Requirement R4 is redundant with the requirements contained in existing Reliability Standards IRO-010-1a, and EOP-008-1.¹⁰⁸

NERC also asserts that these requirements are redundant with proposed Reliability Standard TOP-001-2, Requirements R8 through R11.

Commission Proposal

96. Although NERC's petition focuses on the appropriate entity to identify SOLs, it does not adequately explain the proposed retirement of the currently-effective Reliability Standard IRO-002-2 that establishes the obligation for reliability coordinators to monitor SOLs. With regard to NERC's explanation that Reliability Standard IRO-002-2

¹⁰⁸ NERC IRO Petition at 19-24.

Requirement R4 is redundant with the requirements contained in IRO-010-1a and EOP-008-1, neither of these Reliability Standards requires the reliability coordinator to monitor SOLs.

97. The reliability coordinator's monitoring function is important to ensure that the reliability coordinator can identify, assess and take appropriate action so that elements of the system do not operate outside established limits causing cascading outages or blackouts. Thus, monitoring is not simply a support function but a major reliability activity necessary to maintain situational awareness and ensure reliable operation of the interconnected transmission network. As we explain above, the reliability coordinator's obligation to monitor SOLs is important to reliability because an SOL can evolve into an IROL during deteriorating system conditions, and for potential system conditions such as this, the reliability coordinator's monitoring of SOLs provides a necessary backup function to the transmission operator.

98. Notwithstanding these concerns, currently-effective Reliability Standard IRO-003-2, Requirements R1 and R2 address the concern over monitoring of SOLs and IROLs, which provide:

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.

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.

Thus, the Commission seeks comment on whether the currently-effective Reliability Standard IRO-003-2 Requirements R1 and R2 require reliability coordinators to monitor all SOLs and IROLs.

C. Proposed Revisions to Reliability Standard TOP-006-3

99. Pursuant to section 215(d)(5) of the FPA, we propose to approve NERC's proposed revisions to Reliability Standard TOP-006-3 as just, reasonable, not unduly discriminatory or preferential, and in the public interest. We believe that the proposed revisions reasonably clarify that transmission operators are responsible for monitoring and reporting available transmission resources and that balancing authorities are responsible for monitoring and reporting available generation resources is reasonable. Further, NERC's proposed revision to TOP-006-3 is consistent with the Commission's approval of NERC's approach to ensure that reliability entities have clear decision-making authority and capabilities to take appropriate actions with a clear division of responsibility with respect to balancing authority and transmission operator responsibilities during a system emergency.¹⁰⁹

¹⁰⁹ *Electric Reliability Organization Interpretation of Transmission Operations Reliability Standard*, 136 FERC ¶ 61,176 (2011).

III. Information Collection Statement

100. The Commission's information collection requirements are typically subject to review by the Office of Management and Budget (OMB) under section 3507(d) of the Paperwork Reduction Act of 1995.¹¹⁰ However, by remanding the TOP and IRO Reliability Standards, any information collection requirements are unchanged. With regard to proposed Reliability Standard TOP-006-3, the Commission estimates that the information collection burden will not change as compared to the currently-effective standard. The reporting requirements for transmission operators and balancing authorities remain unchanged because the new requirements clarify the existing standard that the transmission operators report transmission information, while the balancing authorities report generation information.

IV. Environmental Analysis

101. The Commission is required to prepare an Environmental Assessment or an Environmental Impact Statement for any action that may have a significant adverse effect on the human environment.¹¹¹ The Commission has categorically excluded certain actions from this requirement as not having a significant effect on the human environment. Included in the exclusion are rules that are clarifying, corrective, or

¹¹⁰ 44 U.S.C. 3507(d) (2012).

¹¹¹ Order No. 486, Regulations Implementing the National Environmental Policy Act, 52 FR 47897 (Dec. 17, 1987), FERC Stats. & Regs. Preambles 1986-1990 ¶ 30,783 (1987).

procedural or that do not substantially change the effect of the regulations being amended.¹¹² The actions proposed herein fall within this categorical exclusion in the Commission's regulations.

V. Regulatory Flexibility Act Certification

102. The Regulatory Flexibility Act of 1980 (RFA)¹¹³ generally requires a description and analysis of final rules that will have significant economic impact on a substantial number of small entities. The RFA mandates consideration of regulatory alternatives that accomplish the stated objectives of a proposed rule and that minimize any significant economic impact on a substantial number of small entities. The Small Business Administration's (SBA) Office of Size Standards develops the numerical definition of a small business.¹¹⁴ The SBA has established a size standard for electric utilities, stating that a firm is small if, including its affiliates, it is primarily engaged in the transmission, generation and/or distribution of electric energy for sale and its total electric output for the preceding twelve months did not exceed four million megawatt hours.¹¹⁵ The RFA is not implicated by this NOPR because the Commission is proposing to remand the TOP and IRO Reliability Standards and not proposing any modifications to the existing burden or reporting requirements. With no changes to the TOP and IRO Reliability Standards as

¹¹² 18 CFR 380.4(a)(2)(ii).

¹¹³ 5 U.S.C. 601-612.

¹¹⁴ 13 CFR 121.201.

¹¹⁵ *Id.* n.22.

approved, the Commission certifies that this NOPR will not have a significant economic impact on a substantial number of small entities.

103. In addition, for proposed Reliability Standard TOP-006-3, the Commission estimates that there will be no material change in burden for all small entities because the effect of the changes merely clarify that transmission operators are responsible for reporting transmission information while balancing authorities are responsible for reporting generation information.

VI. Comment Procedures

104. The Commission invites interested persons to submit comments on the matters and issues proposed in this notice to be adopted, including any related matters or alternative proposals that commenters may wish to discuss. Comments are due [**INSERT DATE 60 days after publication in the FEDERAL REGISTER**]]. Comments must refer to Docket No. RM13-15-000, and must include the commenter's name, the organization they represent, if applicable, and their address in their comments.

105. The Commission encourages comments to be filed electronically via the eFiling link on the Commission's web site at <http://www.ferc.gov>. The Commission accepts most standard word processing formats. Documents created electronically using word processing software should be filed in native applications or print-to-PDF format and not in a scanned format. Commenters filing electronically do not need to make a paper filing.

106. Commenters that are not able to file comments electronically must send an original of their comments to: Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street NE, Washington, DC, 20426.

107. All comments will be placed in the Commission's public files and may be viewed, printed, or downloaded remotely as described in the Document Availability section below. Commenters on this proposal are not required to serve copies of their comments on other commenters.

VII. Document Availability

108. In addition to publishing the full text of this document in the Federal Register, the Commission provides all interested persons an opportunity to view and/or print the contents of this document via the Internet through the Commission's Home Page (<http://www.ferc.gov>) and in the Commission's Public Reference Room during normal business hours (8:30 a.m. to 5:00 p.m. Eastern time) at 888 First Street, NE, Room 2A, Washington DC 20426.

109. From the Commission's Home Page on the Internet, this information is available on eLibrary. The full text of this document is available on eLibrary in PDF and Microsoft Word format for viewing, printing, and/or downloading. To access this document in eLibrary, type the docket number excluding the last three digits of this document in the docket number field.

110. User assistance is available for eLibrary and the Commission's website during normal business hours from the Commission's Online Support at (202) 502-6652 (toll free at 1-866-208-3676) or email at ferconlinesupport@ferc.gov, or the Public Reference Room at (202) 502-8371, TTY (202) 502-8659. E-mail the Public Reference Room at public.referenceroom@ferc.gov.

By direction of the Commission.

(S E A L)

Nathaniel J. Davis, Sr.,
Deputy Secretary.