



January 21, 2010

**VIA ELECTRONIC FILING**

Kirsten Walli, Board Secretary  
Ontario Energy Board  
P.O Box 2319  
2300 Yonge Street  
Toronto, Ontario, Canada  
M4P 1E4

Re: *North American Electric Reliability Corporation*

Dear Ms. Walli:

The North American Electric Reliability Corporation (“NERC”) hereby submits this petition seeking approval of the following proposed Interconnection Reliability Operating Limit (“IRO”) standards set forth as **Exhibit A** to this petition that were approved by the NERC Board of Trustees on October 17, 2008:

- IRO-008-1 — Reliability Coordinator Operational Analyses and Real-time Assessments;
- IRO-009-1 — Reliability Coordinator Actions to Operate Within IROLs; and
- IRO-010-1a<sup>1</sup> — Reliability Coordinator Data Specification and Collection.

In developing the “new” standards proposed in this filing, the standard drafting team also addressed some of FERC’s directives in Order No. 693.<sup>2</sup> In doing so, the

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<sup>1</sup> The NERC Board of Trustees approved the proposed IRO-010-1 Reliability Standard on October 17, 2008. Subsequently, on August 5, 2009, the NERC Board of Trustees approved an interpretation to the proposed IRO-010-1 standard. Accordingly, NERC is herein requesting approval of both the proposed standard and the appended interpretation, and has designated the proposed standard and appended interpretation in this filing as IRO-010-1a.

<sup>2</sup> See *Mandatory Reliability Standards for the Bulk-Power System*, 18 CFR Part 40, Docket No. RM06-16-000 (March 16, 2007) (“Order No. 693”) at PP 627-630, 636-638.

standard drafting team determined that it was necessary to revise some additional requirements in Reliability Standards so that the requirements are consistent with and not duplicative of the new standards being proposed in this filing. Accordingly, as explained below, the Implementation Plan for the new IRO standards calls for modifications to or deletions of the following standards:

- EOP-001-0<sup>3</sup> — Emergency Operations Planning
  - § Retire Requirement R2
- IRO-002-1 — Reliability Coordination — Facilities
  - § Retire Requirement R2
- IRO-004-1 — Reliability Coordination — Operations Planning
  - § Retire Requirements R1 through R6
- IRO-005-2 — Reliability Coordination — Current Day Operations
  - § Retire Requirements R2, R3, and R5; modify Requirements R9, R13, and R14; retire R16 and R17
- TOP-003-0 — Planned Outage Coordination
  - § Modify Requirement R1.2
- TOP-005-1 — Operational Reliability Information
  - § Retire Requirements R1 and R1.1
  - § Modify Attachment 1
- TOP-006-1 — Monitoring System Conditions
  - § Modify Requirement R4

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<sup>3</sup> NERC recognizes that revised standard EOP-001 is included for approval in this filing as well as in the filing requesting approval of Emergency Preparedness and Operations Reliability Standards (“System Restoration and Blackstart Filing”) being filed contemporaneously. The modifications proposed to the EOP-001 standard in this filing and in the System Restoration and Blackstart Filing include changes unique to each project. NERC includes in Exhibit A a proposed Version 1 of EOP-001 that exclusively contains the changes directed by the IRO project in the event this authority acts on this filing before the System Restoration and Blackstart Filing or if the System Restoration and Blackstart Filing is remanded before the IRO filing is acted upon. In the event that this authority acts to approve the System Restoration and Blackstart Filing first, NERC also includes in Exhibit B Version 2 of EOP-001 that contains both the System Restoration and Blackstart team directed changes and those proposed in this IRO filing. Because EOP-001-0 is the currently-approved standard in effect, the changes proposed in this filing are applied against this Version 0. Should the System Restoration and Blackstart Filing be affirmatively acted upon first, NERC modifies its requests for approval of EOP-001-2 as provided in Exhibit B.

Therefore, revised Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2 and TOP-006-2 are also proposed for approval in this filing.

NERC is also requesting in this filing approval of the following two new definitions:

- Operational Planning Analysis
- Real-time Assessment

This filing discusses each of the three new standards (IRO-008-1, IRO-009-1 and IRO-010-1a), including justification for the standards and the basis for the proposed changes to the other listed standards.

This filing consists of the following:

- This transmittal letter;
- A table of contents ;
- A narrative description justifying the proposed Reliability Standards;
- Reliability Standards and definitions submitted for approval or modification (**Exhibit A**);
- Reliability Standards EOP-001-2 Proposed for Approval (to be substituted for proposed EOP-001-1 in the event this authority approves NERC's System Restoration and Blackstart Filing before acting on EOP-001-1) (**Exhibit B**);
- Standard Drafting Team Roster (**Exhibit C**);
- Development Record of the proposed Reliability Standards (**Exhibit D**); and,
- Development Record of the proposed Interpretation to IRO-010-1 (**Exhibit E**)

Please contact me if you have any questions regarding this filing.

Respectfully submitted,

/s/ Holly A. Hawkins

Holly A. Hawkins

*Attorney for North American Electric  
Reliability Corporation*

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**BEFORE THE  
ONTARIO ENERGY BOARD  
OF THE PROVINCE OF ONTARIO**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**PETITION OF THE NORTH AMERICAN ELECTRIC RELIABILITY  
CORPORATION FOR APPROVAL OF PROPOSED NEW AND REVISED  
RELIABILITY STANDARDS FOR OPERATING WITHIN  
INTERCONNECTION OPERATING LIMITS**

Gerry W. Cauley  
President and Chief Executive Officer  
David N. Cook  
Vice President and General Counsel  
North American Electric Reliability  
Corporation  
116-390 Village Boulevard  
Princeton, NJ 08540-5721  
(609) 452-8060  
(609) 452-9550 – facsimile  
[david.cook@nerc.net](mailto:david.cook@nerc.net)

Rebecca J. Michael  
Assistant General Counsel  
Holly A. Hawkins  
Attorney  
North American Electric Reliability  
Corporation  
1120 G Street, N.W.  
Suite 990  
Washington, D.C. 20005-3801  
(202) 393-3998  
(202) 393-3955 – facsimile  
[rebecca.michael@nerc.net](mailto:rebecca.michael@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)

January 21, 2010

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## **I. INTRODUCTION**

The North American Electric Reliability Corporation (“NERC”) hereby requests approval of the following new Reliability Standards:

- IRO-008-1 — Reliability Coordinator Operational Analyses and Real-time Assessments;
- IRO-009-1 — Reliability Coordinator Actions to Operate Within IROLs; and
- IRO-010-1a — Reliability Coordinator Data Specification and Collection.

Additionally, NERC requests approval of conforming changes to additional standards reflected in the proposed Reliability Standards EOP-001-1, IRO-002-2, IRO-004-2, IRO-005-3, TOP-003-1, TOP-005-2 and TOP-006-2. Specifically, these changes are:

- Retire IRO-004-1 Requirements R1 and R2 when IRO-008-1 becomes effective;
- Retire EOP-001-1 Requirement R2 when IRO-009-1 becomes effective;
- Retire IRO-004-1 Requirements R3 and R6 when IRO-009-1 becomes effective;
- Modify IRO-005-2 Requirement R14 when IRO-009-1 becomes effective;
- Retire IRO-005-2 Requirements R16 and R17 when IRO-009-1 becomes effective;
- Modify IRO-005-2 Requirements R9 and R13 when IRO-009-1 becomes effective;
- Retire IRO-002-1 Requirement R2 when IRO-010-1a becomes effective;
- Retire IRO-005-2 Requirement R2 when IRO-010-1a becomes effective;
- Modify TOP-003-0 Requirement R1.2 when IRO-010-1a becomes effective;
- Modify TOP-005-1 Requirements R1 and R1.2 and modify Attachment 1 when IRO-010-1a becomes effective; and

- Modify TOP-006-1 Requirement R4 and Attachment 1 when IRO-010-1a becomes effective.

The NERC Board of Trustees approved the listed new or modified Reliability Standards on October 17, 2008, and the subsequent interpretation to IRO-010-1a on August 5, 2009. In this filing, NERC requests approval of the proposed Reliability Standards, to be made effective in accordance with the implementation plan accompanying this filing.

NERC also requests application of the existing Violation Risk Factors (“VRFs”) and Violation Severity Levels (“VSLs”) to the modified requirements proposed in this filing. This filing also identifies and seeks approval for definitions for the following terms:

- Operational Planning Analysis; and
- Real-time Assessment.

**Exhibit A** to this filing sets forth the proposed Reliability Standards and definitions.

**Exhibit B** includes the Reliability Standard EOP-001-2 proposed for approval, if necessary, for the reasons discussed in footnote 3, above. **Exhibit C** presents the roster for the drafting team that developed the proposed Reliability Standards. **Exhibit D** contains the complete development record of the proposed Reliability Standards. **Exhibit E** contains the complete development record for the interpretation to IRO-010-1. NERC filed these proposed Reliability Standards and interpretation with the Federal Energy Regulatory Commission (“FERC”) on December 31, 2009, and is also filing these proposed Reliability Standards and interpretation with the other applicable governmental authorities in Canada.

## **II. NOTICES AND COMMUNICATIONS**

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

Gerry W. Cauley  
President and Chief Executive Officer  
David N. Cook  
Vice President and General Counsel  
North American Electric Reliability Corporation  
116-390 Village Boulevard  
Princeton, NJ 08540-5721  
(609) 452-8060  
(609) 452-9550 – facsimile  
[david.cook@nerc.net](mailto:david.cook@nerc.net)

Rebecca J. Michael  
Assistant General Counsel  
Holly A. Hawkins  
Attorney  
North American Electric Reliability  
Corporation  
1120 G Street, N.W.  
Suite 990  
Washington, D.C. 20005-3801  
(202) 393-3998  
(202) 393-3955 – facsimile  
[rebecca.michael@nerc.net](mailto:rebecca.michael@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)

### **III. BACKGROUND**

#### **a. Reliability Standards Development Procedure**

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Reliability Standards Development Procedure*, which is incorporated into the Rules of Procedure as Appendix 3A. NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards. The Development Process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to the applicable governmental authorities.

The work culminating in this filing originated in 2002, predating the Version 0 Reliability Standards that took effect in April 2005. The description of the development history for the Reliability Standards focuses on the standard drafting team's activities since April 2005. However, from 2005 to 2007, the standard drafting team for the IRO project was primarily on hold due to the fact that the FAC-010-1, FAC-011-1 and FAC-014-1 standards were under



development at that time and required much of the same resources that were required in developing the IRO standards. The proposed Reliability Standards and definitions set out in **Exhibit A** have been developed and approved by industry stakeholders using NERC's *Reliability Standards Development Procedure*.<sup>1</sup> A narrative of this process appears in section VI of this filing. These proposed Reliability Standards were approved by the NERC Board of Trustees on October 17, 2008 and the proposed interpretation to IRO-010-1 was approved by the NERC Board of Trustees on August 5, 2009.

#### **b. Progress in Improving Proposed Reliability Standards**

NERC continues to develop new and revised Reliability Standards that address the issues NERC identified in its initial filing of proposed Reliability Standards on April 4, 2006, the concerns noted in the FERC Staff Report issued on May 11, 2006, and the directives FERC has made in several subsequent orders pertaining to Reliability Standards.<sup>2</sup> NERC has incorporated these activities into its *Reliability Standards Development Plan: 2009-2011*, submitted on May 5, 2009 and its *Reliability Standards Development Plan: 2010-2012*, submitted on December 17, 2009.

NERC has filed with the regulatory authorities in the U.S. and Canada petitions to approve numerous Reliability Standards that were proposed as new, modified, or retired Reliability Standards, as well as several interpretations, and, in the U.S., FERC has taken action on a large number of these standards and interpretations.

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<sup>1</sup> NERC's *Reliability Standards Development Procedure* is available on NERC's website at [http://www.nerc.com/fileUploads/File/Standards/RSDP\\_V6\\_1\\_12Mar07.pdf](http://www.nerc.com/fileUploads/File/Standards/RSDP_V6_1_12Mar07.pdf).

<sup>2</sup> *Rules Concerning Certification of the Electric Reliability Organization: Procedures for the Establishment, Approval and Enforcement of Electric Reliability Standards*, Order No. 672, 71 FR 8662 (February 17, 2006), FERC Stats. & Regs. ¶ 31,204 (2006), *order on reh'g*, Order No. 672-A, 71 FR 19814 (April 18, 2006), FERC Stats. & Regs. ¶ 31,212 (2006). (*Order 672*). *Mandatory Reliability Standards for the Bulk-Power System*, 118 FERC ¶ 61,218, FERC Stats. & Regs. ¶ 31,242 (2007) ("Order No. 693"), *order on reh'g*, *Mandatory Reliability Standards for the Bulk-Power System*, 120 FERC ¶ 61,053 ("Order No. 693-A") (2007).

### **c. Fundamental Issues Supporting the New IRO Standards**

Work in developing the IRO standards was initiated prior to the development of the Version 0 standards. In developing the IRO standards, the drafting team worked on the following assumptions:

- The IRO standards support the authorities and tasks identified in the NERC Functional Model;
- The IRO standards coordinate with other standards either already approved or also under development;
- Reliability Coordinators have either been through NERC’s organization certification process or have been through a reliability readiness audit to verify that the entity has the “capability” to perform the tasks assigned to the Reliability Coordinator; and
- New standards identify “what” performance is required without necessarily focusing on the details of “how” to accomplish the required performance.

As explained below, each of these assumptions had a significant impact on the work done to develop the IRO standards.

#### **i. The IRO standards support the authorities and assignment of tasks identified in the NERC Functional Model**

The NERC Functional Model was developed by first identifying all of the operating tasks necessary for reliability, and then assigning each of these operating tasks to a single functional entity.<sup>3</sup> This approach results in a clear identification of a single functional entity with responsibility for each reliability task.

The Functional Model clarified the hierarchy of authorities for both operating and planning entities. As identified in the August 2003 blackout investigation, a clear understanding of each entity’s authority and responsibility for each reliability task, especially during abnormal operating conditions, is essential to reliability. During the events that led to the August 2003 blackout, the authority of the various operating entities was, at times, unclear. Shortly after the

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<sup>3</sup> While the early versions of the Functional Model also assigned a single planning task to just one planning entity, later versions of the Functional Model do assign some activities to more than one planning entity.

blackout, each Reliability Coordinator and each entity operating a control area was asked to review the authority of its system operators.<sup>4</sup> The development of the IRO standards formalizes this authority.

Under the NERC Functional Model, the Reliability Coordinator is the functional entity with the highest level of responsibility and authority for real-time reliability of the bulk power system. The Reliability Coordinator is responsible for identifying the subset of System Operating Limits (“SOLs”) that are known as IROs, and may direct its Transmission Operators to take actions associated with IROs. Under the NERC Functional Model, the Transmission Operator is not required to have the tools necessary to identify IROs. Therefore, in assigning a single task to a single functional entity, the Reliability Coordinator is the sole functional entity responsible for developing IROs and for actions to prevent/mitigate instances of exceeding IROs. While the Transmission Operator has no “direct” responsibility for developing IROs, the Transmission Operator may be assigned the task of developing some IROs, monitoring real-time values against identified IROs, and taking actions to prevent reaching an IRO or to mitigate an instance of exceeding an IRO. However, the Transmission Operator only performs these tasks when directed to do so by its Reliability Coordinator. The IRO standards were developed in support of this authority and assignment of tasks. While Reliability Coordinators will assign their Transmission Operators tasks associated with IROs, it is the Reliability Coordinator with ultimate responsibility for these tasks, and it is the Reliability Coordinator that will be sanctioned if these tasks are not performed as required by the standards.

In a similar fashion, the NERC Functional Model assigns responsibility for other SOLs to the Transmission Operator. Again, this is a “shared” responsibility. Where the Transmission

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<sup>4</sup> October 15, 2003 letter from Michael R. Gent, President and CEO of North American Electric Reliability Council to the CEO of all NERC control areas and Reliability Coordinators.

Operator has primary responsibility for developing the SOLs within its Transmission Operator Area, the Transmission Operator may request the assistance of its Reliability Coordinator in developing these SOLs. It is the Reliability Coordinator that is held responsible for ensuring that SOLs are developed for its Reliability Coordinator Area in accordance with a methodology developed by the Reliability Coordinator. The Transmission Operator must share its SOLs with its Reliability Coordinator, and the Reliability Coordinator must share any SOLs it develops with its Transmission Operator. The Reliability Coordinator monitors the status of some, but not all, SOLs. The Reliability Coordinator's visualization tools are not expected to display all SOLs within the Wide-Area that the Reliability Coordinator monitors, as this would be unduly burdensome and duplicative, mixing SOLs that have little impact on the bulk power system with those SOLs that are associated with facilities that are important to the bulk power system. The Reliability Coordinator's visualization tools are expected to display the real-time status of parameters against all IROs that the Reliability Coordinator monitors and display the subset of SOLs associated with facilities that are most critical to the portions of the bulk power system that are monitored by the Reliability Coordinator.

## **ii. The IRO Standards Coordinate with other Standards**

The Version 0 NERC Reliability Standards included the development of approximately 10-15 standards that, in total, would support reliable planning and operation of the bulk power system. The development of these standards was initiated before the development of the Version 0 Standards, and the intent was to have the set of standards work cooperatively to ensure reliability. No one standard was intended to be implemented by itself. The IRO Standards were designed to work closely with the "Coordinate Operations" standards, which were also assigned to the Reliability Coordinator, with the "Facilities" standards, and the Personnel (System

Operator Training and Certification) standards. Over time, and with the implementation of mandatory and enforceable Reliability Standards, the path to develop the original set of standards has been modified. Most of the other standards originally envisioned in the “set” of 10-15 standards developed to address the reliable planning and operation of the bulk power system have not yet been developed but are included, in part, in the requirements of the Version 0 standards. Thus, the requirements in the IRO Standards work cooperatively with requirements in Version 0 IRO standards. Following are just a few of many examples of this coordination.

The IRO Standards require the Reliability Coordinator to collect the data and information it needs to perform studies to determine if the operations within its Reliability Coordinator Area are likely to result in approaching or exceeding any IROLs. If the studies show that an IROL may be approached or exceeded, the Reliability Coordinator is required to have an action plan to prevent and to mitigate the exceedance so that no IROL is ever exceeded for a time greater than the IROL’s  $T_v$ . The IROL  $T_v$  is defined as follows:

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.

The Facility Ratings standards require the Reliability Coordinator to have a methodology for developing IROLs and establishing a  $T_v$  for each of these IROLs, and require the Reliability Coordinator to share the values of its IROLs with other entities. The Training Standard (PER-005-1) requires that the Reliability Coordinator verify that its real-time system operators can perform reliability-related tasks to meet a specified degree of competence. This competence should assure that the Reliability Coordinator’s system operators recognize when to take action, and make appropriate decisions about what actions to take. The Operating Personnel Credentials standard (PER-003-0) provides a basic level of assurance that the Reliability Coordinator’s real-

time system operators have a demonstrated understanding of NERC's requirements for real-time operations, including the authorities and required interactions of all the operating entities.

**iii. Reliability Coordinators Certified or Capabilities Verified by Reliability Readiness Audit**

The vision in the development of the Version 0 standards included developing standards that would address the certification of Reliability Coordinators, Transmission Operators and Balancing Authorities. The certification requirements included in draft versions of the Version 0 standards were aimed at ensuring that each entity assuming responsibility for one of these functions could demonstrate that it had the tools, procedures, and agreements in place to be capable of assuming the responsibility for that function. Before the Version 0 standards were approved by FERC, the certification requirements were moved into Section 500 and Appendix 5 of the NERC Rules of Procedure,<sup>5</sup> rather than in the form of a standard, and they retain the concept that entities must demonstrate that they have the tools and capabilities necessary to operate as the functional entities for which they are registered. Entities that were already performing the duties of the Reliability Coordinator, Transmission Operator or Balancing Authority were not forced to go through the full organization certification process. Instead, each of these entities underwent a "readiness audit" or "readiness evaluation" to verify that they had the tools and processes in place to operate reliably. An entity that was not operating as a Reliability Coordinator, Transmission Operator, or Balancing Authority at the time NERC was certified to be the ERO must undergo the full organization certification process in order to demonstrate its capabilities to perform the assigned reliability function.

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<sup>5</sup> See the NERC Rules of Procedure Section 500 – Organization Registration and Certification, and Appendix 5, *Organization Registration and Certification Manual*, Version 3.3 (January 18, 2007), available at [http://www.nerc.com/files/NERC\\_Rules\\_of\\_Procedure\\_EFFECTIVE\\_20091002.pdf](http://www.nerc.com/files/NERC_Rules_of_Procedure_EFFECTIVE_20091002.pdf).

Drafting teams continue to assume that the requirements in Reliability Standards apply to entities that have already demonstrated that they have the tools, processes, and agreements in place that are necessary to operate reliably. As new standards are developed and as existing Version 0 standards are revised, the basic capability requirements that were prevalent in the Version 0 standards are being recommended for retirement, provided that appropriate tools, procedures, and facilities, are used in support of an operating entity's daily operations. There is no degradation to reliability as a consequence because these operating entities use the necessary tools, procedures, and facilities on a regular basis to meet performance-based requirements in Reliability Standards. However, if some basic facility requirements, such as those used for communications during emergencies or those monitoring capabilities that a Reliability Coordinator uses to prevent instances of exceeding IROLs, are not used on a routine basis and are not measured through other performance-based requirements, it would not be appropriate to retire these Version 0 requirements.

- iv. The IRO standards identify “what” performance is required without necessarily focusing on the details of “how” to accomplish the required performance.**

Before becoming the ERO, NERC developed Compliance Templates for some of its former Operating Policies and Planning Standards. The drafting team developing these templates noted that the use of passive language and the use of ambiguous language in some of the policies (precursors of the Version 0 Reliability Standards) made the development of Compliance Templates challenging.

This experience highlighted the importance of writing the new standards with a greater degree of clarity, describing only the “required” performance, and using other documents, such as guidelines and job aids, to describe the details of “how” to comply. Where only one way of

achieving an objective is possible or only one way of achieving an objective is required, then that way would be included in the requirement, but where more than one way of achieving the objective is possible, the intent was to refrain from specifying “how” to achieve the objective. In this manner, entities will not be required to change existing tools and practices except in those rare instances in which the change will lead to an improvement in reliability. The proposed standards were prepared following this concept. They define the “required” performance but do not identify the details of “how” to achieve that performance. In some instances this may give the appearance, when comparing a set of Version 0 requirements with the requirements in a new standard, of “eliminating” details that were “helpful” to some entities. The IRO drafting team agrees that details are “helpful” but disagrees that these detail are necessary to be included in a Reliability Standard. Rather, Reliability Standards are appropriately focused on the end performance necessary to provide an adequate level of reliability. Accordingly, details useful to the regulated entities and others will be incorporated not into the standards but rather into guidelines that can be employed to support compliance with the Standards.

#### **IV. JUSTIFICATION FOR APPROVAL OF PROPOSED RELIABILITY STANDARDS**

##### **a. Section Overview**

This section summarizes the development of the three proposed IRO Reliability Standards and identifies the associated necessary changes or retirements to other Reliability Standards as discussed in section VI, below. The discussion in this section is also intended to demonstrate that the proposed Reliability Standards are just, reasonable, not unduly discriminatory or preferential and in the public interest.

The standard drafting team roster is provided in **Exhibit C**. The complete development record for the proposed Reliability Standards, including the Implementation Plan referenced in



this filing, is available in **Exhibit D**. This extensive development record includes *ten* successive drafts of the Operate within Interconnection Reliability Standards, the Implementation Plan, the ballot pool, and the final ballot results by registered ballot body members, and stakeholder comments received during the development of these Reliability Standards, as well as a discussion regarding how those comments were considered in developing them.

The discussion of each of the three proposed Reliability Standards presented sequentially below is followed by discussion of the various requirements that are recommended for retirement or revision when the new Reliability Standard becomes effective. If a requirement recommended for retirement was addressed in FERC Order No. 693, the directive has been identified, and the work done to meet the directive is described.

### **IRO-008-1 — Reliability Coordinator Operational Analyses and Real-time Assessments**

NERC proposes the addition of a new standard, IRO-008-1, to the current suite of Reliability Standards. IRO-008-1 is presented in **Exhibit A** of this filing.

#### **Demonstration that the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential and in the public interest**

##### ***1. Proposed Reliability Standard is designed to achieve a specified reliability goal***

IRO-008-1 is designed to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by ensuring that the bulk power system is assessed during the operations horizon.

##### ***2. Proposed Reliability Standard contains a technically sound method to achieve the goal***

IRO-008-1 uses analyses and assessments as methods of achieving the stated goal. The standard requires:

- Analysis of the Reliability Coordinator's Wide-Area ahead of time,

- Assessment of the Reliability Coordinator’s Wide-Area during real-time, and
- Communication with the entities that need to take specific operational actions based on analyses and assessments.

The term “Wide-Area” is an approved term and includes not only the Reliability Coordinator’s Area, but also critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of IROLs. Upon approval of the proposed IRO-008-1, the currently-effective IRO-004-1, Requirement R1 should be retired because this requirement only requires a next-day reliability analysis of the Reliability Coordinator’s own Reliability Coordinator Area.

The standard drafting team’s intent in using the term “Wide-Area” in the development of the proposed IRO-008-1 was to ensure that the Reliability Coordinator looks beyond its boundaries into the adjacent Reliability Coordinator Areas to determine if there are activities that it has planned, or that its adjacent Reliability Coordinators have planned, that may bring some facility to approach or exceed an IROL. This may be caused by combinations of forced and scheduled outages, planned interchange transactions, or other activities.

Additionally, the new requirement enhances and works cooperatively with other IRO standards. For example, if the Reliability Coordinator conducts an Operational Planning Analysis and notes a possible problem in an adjacent Reliability Coordinator’s Area, even though IRO-008-1 does not require the Reliability Coordinator to notify the other Reliability Coordinator, under IRO-014-1, the Reliability Coordinator that sees any potential operating problem involving another Reliability Coordinator Area is required to notify the adjacent Reliability Coordinator and work cooperatively to resolve the issue. Because the proposed IRO-008-1 requires the Reliability Coordinator to assess a wider area than is currently required by IRO-004-1, the Reliability Coordinator is required to continuously look beyond its own area

boundaries and assess a broader portion of the interconnected bulk power system. This gives the Reliability Coordinators a better opportunity to support one another.

The terms “Operational Planning Analysis” and “Real-time Assessment” are new terms with the following definitions:

**Operational Planning Analysis:** An analysis of the expected system conditions for the next day’s operation. (That analysis may be performed either a day ahead or as much as 12 months ahead.) Expected system conditions include things such as load forecast(s), generation output levels, and known system constraints (transmission facility outages, generator outages, equipment limitations, *etc.*).

The definition of Operational Planning Analysis was designed to provide greater specificity regarding the day-ahead study. The language in the predecessor standard, IRO-004-1, was unclear with respect to the need for a “unique” study for each operating day. The use of the term “Operational Planning Analysis” clarifies that, if there were no changes to the expected conditions from one day to the next, the Reliability Coordinator would not be forced to conduct a new analysis of the expected system conditions solely to have documentation for compliance.

The proposed term “Real-time Assessment” is defined as follows:

**Real-time Assessment:** An examination of existing and expected system conditions, conducted by collecting and reviewing immediately available data.

The definition of Real-time Assessment was designed to assure that, under all circumstances, the Reliability Coordinator is required to conduct a real-time assessment, including situations when the Reliability Coordinator is operating without its primary control facilities, by collecting and reviewing available data.

### ***3. Proposed Reliability Standard is applicable to users, owners, and operators of the bulk power system, and not others***

Reliability Standard IRO-008-1 specifically applies to the Reliability Coordinator and no other functional entities.

**4. Proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply**

Each of the requirements in IRO-008-1 is clear in identifying the required performance (what) and the responsible entity (who).

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

**5. Proposed Reliability Standard includes clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation**

Each primary requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Reliability Standards, as defined in the ERO Sanction Guidelines. The table below shows the VRFs and VSLs resulting in the indicated range of penalties for violations.

| Violation Risk Factors | Violation Severity Levels |                      |                 |                       |
|------------------------|---------------------------|----------------------|-----------------|-----------------------|
|                        | Lower Range               | Moderate Range       | High Range      | Severe Range          |
| Lower                  | \$1-3k                    | \$2-7.5k             | \$3-15k         | \$5-25k               |
| Moderate               | \$2-30k<br>R1             | \$4-100k<br>R1<br>R3 | \$6-200k<br>R1  | \$10-335k<br>R1<br>R3 |
| High                   | \$4-125k<br>R2            | \$8-300k<br>R2       | \$12-625k<br>R2 | \$20-1,000k<br>R2     |

**6. *Proposed Reliability Standard identifies clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner***

The proposed Reliability Standard identifies clear and objective criteria in the language of the requirements so that that the standards can be enforced in a consistent and non-preferential manner. The language in the requirements is unambiguous with respect to the applicable entity expectations. Each requirement has a single associated measure.

- M1.** The Reliability Coordinator shall have, and make available upon request, the results of its Operational Planning Analyses. (R1)
- M2.** The Reliability Coordinator shall have, and make available upon request, evidence to show it conducted a Real-Time Assessment at least once every 30 minutes. This evidence could include, but is not limited to, dated computer log showing times the assessment was conducted, dated checklists, or other evidence. (R2)
- M3.** The Reliability Coordinator shall have and make available upon request, evidence to confirm that it shared the results of its Operational Planning Analyses or Real-Time Assessments with those entities expected to take actions based on that information. This evidence could include, but is not limited to, dated operator logs, dated voice recordings, dated transcripts of voice records, dated facsimiles, or other evidence. (R3)

The measures require the Reliability Coordinator to have evidence for each of the three requirements. The measures are clear in stating that the Reliability Coordinator must have evidence of day-ahead analyses, evidence of Real-time Assessments, and evidence of communicating information under specific conditions. The measures provide samples of what constitutes acceptable evidence and allow for other types of evidence. The measures are written so that the Reliability Coordinator is required to conduct the Real-time Assessment even if its energy management system is not operational. The definition of Real-time Assessment was written to allow the assessment to be conducted either through the energy management system or manually. The measures are specific in asking only for a demonstration that that system was analyzed and assessed. The requirements and associated measures are designed to allow the

Reliability Coordinator the ability to perform a level of analysis applicable to the actual situation, focusing on the “situational awareness” aspect of the requirement.

**7. *Proposed Reliability Standard achieves a reliability goal effectively and efficiently, but does not necessarily have to reflect “best practices” without regard to implementation cost***

The proposed Reliability Standard achieves its reliability goal effectively and efficiently, not necessarily reflecting “best practices” without regard to implementation costs. Reliability Coordinators must have tools to conduct analyses and assessments. This standard requires that the Reliability Coordinator perform an Operational Planning Analysis of its Wide-Area, and thus requires modeling beyond that currently required for Reliability Coordinator certification,<sup>6</sup> as well as beyond what is required to comply with the requirements of IRO-004. The proposed standard supports the implementation of the Reliability Coordinator function as described in the Functional Model. The Functional Model identifies the Reliability Coordinator as the operational entity with a “Wide-Area” view – and to implement this Wide-Area view modeling beyond the Reliability Coordinator’s own Reliability Coordinator Area is required. Without a “Wide-Area” view, the Reliability Coordinator cannot determine IROLs appropriately.

The standard has requirements to achieve the purpose – preventing instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection – by ensuring that the bulk power system is assessed during two specific time periods within the operations horizon. The 30-minute time period was selected to establish a reasonable assessment frequency. This limits the amount of risk to the bulk power system. The 30-minute interval is consistent with the Disturbance Control Standard’s requirements and the maximum time (IROL  $T_v$ ) for resolving an instance of exceeding an IROL. The day-ahead time

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<sup>6</sup> The certification requirements for the Reliability Coordinator only require that the Reliability Coordinator have a view of the Reliability Coordinator Area and facilities of other Reliability Coordinators that may have IROLs.

period was selected to identify any potential issues in a time frame where actions could be taken proactively.

***8. Proposed Reliability Standards is not the “lowest common denominator,” i.e., does not reflect a compromise that does not adequately protect bulk power system reliability***

The standard does not aim at “lowest common denominator.” The requirements are independent of any particular Reliability Coordinator’s situation. The proposed IRO-008-1 Requirement R1 requires a broader model and view than is currently required under IRO-004-1. There is no existing requirement to conduct a Real-time Assessment, thus IRO-008-1 Requirement R2 is requiring something that does not currently exist in any current Reliability Standard, thereby raising the threshold for reliability performance.

***9. Proposed Reliability Standard considers costs to implement for smaller entities but not at consequence of less than excellence in operating system reliability***

The proposed Reliability Standards do not reflect any differentiation in requirements based on size. There are no small Reliability Coordinators.

***10. Proposed Reliability Standard is designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one area or approach***

The requirements in this standard apply throughout North America, with no exceptions.

***11. Proposed Reliability Standard causes no undue negative effect on competition or restriction of the grid***

The requirements in the standard support competition by assuring that the system is analyzed and assessed, with a goal of keeping the transmission system available and stable.

***12. The implementation time for the proposed Reliability Standard is reasonable***

The Implementation Plan (see **Exhibit C**) does not allow a lengthy time period for entities to become fully compliant. This standard assumes that the Reliability Coordinator currently has the tools to meet the performance in the requirements, and no new tools are needed.

The three-month implementation period will allow entities to develop internal procedures to support collection of evidence needed for the measures.

***13. The Reliability Standard development process was open and fair***

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Reliability Standards Development Procedure*, which was incorporated into the Rules of Procedure as Appendix 3A. NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards. The development process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to the applicable governmental authorities. The drafting team developed this standard by following the *Reliability Standards Development Procedure*, without exception. In this case, the process has been extensive, with nine draft versions of the standards prepared before the proposed Reliability Standards presented in this filing were developed. The standard was publicly posted for five different comment periods, and the standard drafting team responded to every comment submitted during each of these comment periods. With each posting, the commenters were advised that there is an appeals process, and no stakeholder has asked for an appeal.

***14. Proposed Reliability Standard balances with other vital public interests***

The standard does not conflict with any vital public interests. Compliance with this standard supports preventing instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection.



***15. Proposed Reliability Standard considers any other relevant factors***

No other factors for consideration were identified in the development of these proposed Reliability Standards.

**IRO-009-1 — Reliability Coordinator Actions to Operate Within IROLs**

NERC proposes the addition of a new Reliability Standard, IRO-009-1 to the current suite of Reliability Standards. IRO-009-1 is presented in **Exhibit A** of this filing.

**Demonstration that the proposed reliability standard is just, reasonable, not unduly discriminatory or preferential and in the public interest**

***1. Proposed Reliability Standard is designed to achieve a specified reliability goal***

IRO-009-1 is designed to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by mandating that action plans be developed and implemented to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection.

***2. Proposed Reliability Standard contains a technically sound method to achieve the goal***

Requirements R1 through R4 use advance planning as a method for preparing the Reliability Coordinator to take preventive and corrective actions relative to instances of approaching or exceeding IROLs. Technically, having advance plans in place to use under specific conditions provides a greater likelihood of appropriate action if the studied conditions occur. The fifth requirement (R5) of the proposed IRO-009-1 standard uses a dispute resolution process as a method of bringing closure when involved Reliability Coordinators cannot agree on the correct value of an IROL or IROL  $T_v$ . The dispute resolution process requires all involved Reliability Coordinators to use the more conservative of the IROL values because this minimizes the risk to the grid until the issue is resolved.

**3. *Proposed Reliability Standard is applicable to users, owners, and operators of the bulk power system, and not others***

Reliability Standard IRO-009-1 applies to the Reliability Coordinator and no other functional entities.

**4. *Proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply***

Each of the requirements is clear in identifying the required performance (what) and the responsible entity (who).

- R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs. (*Violation Risk Factor: Medium*)
- R2.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's  $T_v$ . (*Violation Risk Factor: Medium*)
- R3.** When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL. (*Violation Risk Factor: High*)
- R4.** When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's  $T_v$ . (*Violation Risk Factor: High*)
- R5.** If unanimity cannot be reached on the value for an IROL or its  $T_v$ , each Reliability Coordinator that monitors that Facility (or group of Facilities) shall, without delay, use the most conservative of the values (the value with the least impact on reliability) under consideration. (*Violation Risk Factor: High*)

**5. Proposed Reliability Standard includes clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation**

Each primary requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Reliability Standards, as defined in the ERO Sanction Guidelines. The table below shows the VRFs and VSLs, resulting in the indicated range of penalties for violations.

| Violation Risk Factors | Violation Severity Levels |                |                 |                               |
|------------------------|---------------------------|----------------|-----------------|-------------------------------|
|                        | Lower Range               | Moderate Range | High Range      | Severe Range                  |
| Lower                  | \$1-3k                    | \$2-7.5k       | \$3-15k         | \$5-25k                       |
| Moderate               | \$2-30k                   | \$4-100k       | \$6-200k        | \$10-335k<br>R1<br>R2         |
| High                   | \$4-125k                  | \$8-300k       | \$12-625k<br>R4 | \$20-1,000k<br>R3<br>R4<br>R5 |

**6. Proposed Reliability Standard identifies clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner**

Each requirement of IRO-009-1 has a single associated measure. Some measures address more than one requirement. The measures require the Reliability Coordinator to have evidence for each of the five requirements.

- M1.** Each Reliability Coordinator shall have, and make available upon request, evidence to confirm that it has Operating Processes, Procedures, or Plans to address both preventing and mitigating instances of exceeding IROLs in accordance with Requirement R1 and Requirement R2. This evidence shall include a list of any IROLs (and each associated T<sub>v</sub>) identified in advance, along with one or more dated Operating Processes, Procedures, or Plans that that will be used. (R1 and R2)
- M2.** Each Reliability Coordinator shall have, and make available upon request, evidence to confirm that it acted or directed others to act in accordance with Requirement R3 and

Requirement R4. This evidence could include, but is not limited to, Operating Processes, Procedures, or Plans from Requirement R1, dated operating logs, dated voice recordings, dated transcripts of voice recordings, or other evidence. (R3 and R4)

- M3.** For a situation where Reliability Coordinators disagree on the value of an IROL or its  $T_v$  the Reliability Coordinator shall have, and make available upon request, evidence to confirm that it used the most conservative of the values under consideration, without delay. Such evidence could include, but is not limited to, dated computer printouts, dated operator logs, dated voice recordings, dated transcripts of voice recordings, or other equivalent evidence. (R5)

The measures for the first two requirements are very specific, requiring a list of IROLs and the associated action plans (called Operating Processes, Procedures, or Plans). The measures for the other requirements provide examples of what constitutes acceptable evidence, and they allow for other evidence.

***7. Proposed Reliability Standard achieves a reliability goal effectively and efficiently — but does not necessarily have to reflect “best practices” without regard to implementation cost***

The Reliability Standard has requirements to achieve the purpose – to mandate actions intended to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection. The actions required in the standard do not require any new capital investments in facilities. The only significant implementation costs are those associated with human labor.

***8. Proposed Reliability Standard is not the “lowest common denominator,” i.e., does not reflect a compromise that does not adequately protect bulk power system reliability***

The Reliability Standard does not aim at a “lowest common denominator.” The requirements apply equally to all Reliability Coordinators without regard to differences in any Reliability Coordinator’s tools, size of Reliability Coordinator Area, or any other factors. Each requirement is written to specify that the required performance is on a “per IROL” basis, not in performance with IROLs “in general.” The drafting team assumed that any entity operating as a Reliability Coordinator has the training, tools, and authorities needed to calculate IROLs and associated IROL  $T_v$ s, to conduct analyses and assessments, to communicate with other operating

entities, and to develop and implement action plans to either prevent or mitigate instances of exceeding IROLs.

***9. Proposed Reliability Standard considers costs to implement for smaller entities but not at consequence of less than excellence in operating system reliability***

The proposed Reliability Standards do not reflect any differentiation in requirements based on size. There are no small Reliability Coordinators.

***10. Proposed Reliability Standard is designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one area or approach***

The requirements in this Reliability Standard apply throughout North America, with no exceptions.

***11. Proposed Reliability Standard causes no undue negative effect on competition or restriction of the grid***

The requirements in the Reliability Standard support competition by assuring that the system is analyzed and assessed, with a goal of keeping the transmission system available and stable.

***12. The implementation time for the proposed Reliability Standard is reasonable***

The Implementation Plan (see **Exhibit D**) does not allow a long time period for entities to become fully compliant. This standard assumes that the Reliability Coordinator currently has the tools to meet the performance in the requirements, and no new tools are needed. The three-month implementation period will allow entities adequate time to develop internal procedures to support collection of evidence needed to implement the measures.

***13. The Reliability Standard Development Process was open and fair***

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Reliability Standards Development Procedure*, which was incorporated into the Rules of Procedure as Appendix 3A.

NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards. The Development Process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to the applicable governmental authorities. The drafting team developed this standard by following the Reliability Standards Development Process, without exception. In this case, the process has been extensive, with nine draft versions of the standards prepared before the proposed standards presented in this filing were developed. The standard was publicly posted for five different comment periods, and the standard drafting team responded to every comment submitted during each of these comment periods. With each posting, the commenters were advised that there is an appeals process, and no stakeholder has asked for an appeal.

***14. Proposed Reliability Standard balances with other vital public interests***

The Reliability Standard does not conflict with any vital public interests. Compliance with this standard supports preventing instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection.

***15. Proposed Reliability Standard considers any other relevant factors***

No other factors for consideration were identified in the development of these proposed standards.

**IRO-010-1a — Reliability Coordinator Data Specification and Collection**

NERC proposes the addition of a new Reliability Standard, IRO-010-1a to the current suite of Reliability Standards. IRO-010-1a is presented in **Exhibit A** of this filing.

**Demonstration that the proposed Reliability Standard is just, reasonable, not unduly discriminatory or preferential and in the public interest**

***1. Proposed Reliability Standard is designed to achieve a specified reliability goal***

IRO-010-1a is designed to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by mandating that the Reliability Coordinator have the data it needs to monitor and assess the operation of its Reliability Coordinator Area.

***2. Proposed Reliability Standard contains a technically sound method to achieve the goal***

The requirements in the standard specify a formal request as the method for the Reliability Coordinator to explicitly identify the data and information it needs for reliability; and require the entities with the data to provide it as requested. This method is sound because the Reliability Coordinator is the only entity that knows what data it needs to properly perform its reliability tasks, and the most efficient format for accepting this data. The requirements were written so that the Reliability Coordinator must cooperate with the entities that provide data, so that the format specified is acceptable to both parties. The purpose is to assure that there are checks and balances protecting the entity that needs the data as well as the entities that must provide the data.

***3. Proposed Reliability Standard is applicable to users, owners, and operators of the bulk power system, and not others***

The Reliability Standard applies to the Reliability Coordinator and to the other functional entities that must supply data to the Reliability Coordinator. This includes entities that have been identified as owners, users, or operators of the bulk-power system. The requirements in the standard are specifically applicable to the following functional entities:

- Reliability Coordinator
- Balancing Authority

- Generator Owner
- Generator Operator
- Interchange Authority
- Load-Serving Entity
- Transmission Operator
- Transmission Owner

**4. *Proposed Reliability Standard is clear and unambiguous as to what is required and who is required to comply***

Each of the requirements clearly identifies the required performance (what) and the responsible entity (who).

- R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following: (*Violation Risk Factor: Low*)
  - R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.
  - R1.2.** Mutually agreeable format.
  - R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
  - R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. (*Violation Risk Factor: Low*)
- R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. (*Violation Risk Factor: Medium*)

**5. *Proposed Reliability Standard includes clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation***

Each primary requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of



requirements in Reliability Standards, as defined in the ERO Sanction Guidelines. The table below shows the VRFs and VSLs, resulting in the indicated range of penalties for violations.

| Violation Risk Factors | Violation Severity Levels |                      |                     |                     |
|------------------------|---------------------------|----------------------|---------------------|---------------------|
|                        | Lower Range               | Moderate Range       | High Range          | Severe Range        |
| Lower                  | \$1-3k<br>R1<br>R2        | \$2-7.5k<br>R1<br>R2 | \$3-15k<br>R1<br>R2 | \$5-25k<br>R1<br>R2 |
| Moderate               | \$2-30k<br>R3             | \$4-100k<br>R3       | \$6-200k<br>R3      | \$10-335k<br>R3     |
| High                   | \$4-125k                  | \$8-300k             | \$12-625k           | \$20-1,000k         |

**6. Proposed Reliability Standard identifies clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner**

Each requirement has a single associated measure. There are three measures that are clear and objective – requiring the actual specification, requiring evidence that the specification was distributed, and requiring evidence that data and information was provided. The measure for Requirement R1 requires the Reliability Coordinator to have its specification available as evidence. Measures for Requirements R2 and R3 provide examples of what constitutes acceptable evidence and allow for other evidence.

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

information, as specified in Requirement R3. This evidence could include, but is not limited to, dated operator logs, dated voice recordings, dated computer printouts, dated SCADA data, or other equivalent evidence. (R3)

***7. Proposed Reliability Standard achieves a reliability goal effectively and efficiently - but do not necessarily have to reflect “best practices” without regard to implementation cost***

As written, Requirement R1 supports Reliability Coordinator data and information specifications that include items to support advanced applications (for instance) that may currently be used by some, but not all, Reliability Coordinators. Auditors are limited in assessing compliance based on what is stated in the requirement. On that basis, if the standard included a list of 10 items for inclusion in the data specification, then the auditor would be limited in looking just for those 10 items. As written, Requirement R1 does not include such limitations. Requirement R1 includes checks and balances aimed at assuring that the data and information identified in the specification is limited to what is needed for reliability. By specifying that the format must be mutually agreeable, the standard supports efficiency by precluding the submission of data that is in a format that cannot be used. Similarly, the requirement limits the data and information that can be requested to data and information needed for Real-Time Monitoring, Operational Planning Analyses, and Real-time Assessments. In addition, the requirement includes preparation for loss of automated data, so that there is a plan in place for providing data in advance of actual need.

***8. Proposed Reliability Standard is not the “lowest common denominator,” i.e., does not reflect a compromise that does not adequately protect bulk power system reliability***

The Reliability Standard does not aim at “lowest common denominator.” The requirements are based on each Reliability Coordinator developing its own specification, distributing that specification, and then receiving data needed from other entities. Because the standard is based on having each Reliability Coordinator develop its own data specification, the

standard does not attempt to identify the minimum list of data that would be needed by every Reliability Coordinator. To do so would be establishing the “lowest common denominator.”

***9. Proposed Reliability Standard considers costs to implement for smaller entities but not at consequence of less than excellence in operating system reliability***

The proposed Reliability Standard requirements do not differentiate in applicability based on size. There are no small Reliability Coordinators. Entities are already providing one another with data and information today. This standard does not require the installation of any new equipment.

***10. Proposed Reliability Standard is designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one area or approach***

The requirements in this Reliability Standard apply throughout North America, with no exceptions.

***11. Proposed Reliability Standard causes no undue negative effect on competition or restriction of the grid***

The requirements in the Reliability Standard support competition by assuring that the Reliability Coordinator has the data and information it needs to monitor and assess the system, with a goal of keeping the bulk power system stable and available.

***12. The implementation time for the proposed Reliability Standard is reasonable***

The Implementation Plan (*see Exhibit D*) does not allow a long time period for entities to become fully compliant. This standard assumes that the Reliability Coordinator currently has the tools to meet the performance in the requirements, and no new tools are needed. The three month implementation period will allow entities the time necessary to develop internal procedures to support collection of evidence needed to ensure compliance with the measures.

***13. The Reliability Standard Development Process was open and fair***

NERC develops Reliability Standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure and the NERC *Reliability Standards Development Procedure*, which was incorporated into the Rules of Procedure as Appendix 3A. NERC's proposed rules provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards. The Development Process is open to any person or entity with a legitimate interest in the reliability of the bulk power system. NERC considers the comments of all stakeholders and a vote of stakeholders and the NERC Board of Trustees is required to approve a Reliability Standard for submission to the applicable governmental authority. The drafting team developed this standard by following the Reliability Standards Development Process, without exception. In this case, the process has been extensive, with nine draft versions of the standards prepared before the proposed standards presented in this filing were developed. The standard was publicly posted for five different comment periods, and the standard drafting team responded to every comment submitted during each of these comment periods. With each posting, the commenters were advised that there is an appeals process, and no stakeholder has asked for an appeal.

***14. Proposed Reliability Standard balances with other vital public interests***

The Reliability Standard does not conflict with any vital public interests. Compliance with this standard supports preventing instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection.

***15. Proposed Reliability Standard considers any other relevant factors***

No other factors for consideration were identified in the development of these proposed standards.

## **b. Violation Risk Factor and Violation Severity Level Assignments**

The proposed Reliability Standards include VRFs and VSLs. The ranges of penalties for violations are based on the applicable VRF and VSLs and will be administered based on the Sanctions table and supporting penalty determination process described in the NERC Sanction Guidelines, included as Appendix 4B in NERC's Rules of Procedure. Each primary requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Reliability Standards, as defined in the ERO Sanction Guidelines.

### **Assignment of Violation Risk Factors**

The IRO Standard Drafting Team applied the following criteria when proposing VRFs for the requirements in IRO-008-1, IRO-009-1 and IRO-010-1a:

#### ***High Risk Requirement***

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

#### ***Medium Risk Requirement***

A requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

***Lower Risk Requirement***

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.<sup>7</sup>

The team also considered consistency with the FERC Violation Risk Factor Guidelines for setting VRFs:<sup>8</sup>

**Guideline (1) — Consistency with the Conclusions of the Final Blackout Report**

The Commission seeks to ensure that Violation Risk Factors assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System.

In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:<sup>9</sup>

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief.

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<sup>7</sup> These three levels of risk are defined by NERC and recognized by FERC in the May 18, 2007 Order at P9, and the November 16, 2007 Order at Appendix A.

<sup>8</sup> North American Electric Reliability Corp., 119 FERC ¶ 61,145, order on reh'g and compliance filing, 120 FERC ¶ 61,145 (2007) (“VRF Rehearing Order”).

<sup>9</sup> *Id.* at n. 15.

**Guideline (2) — Consistency within a Reliability Standard<sup>10</sup>**

The Commission expects a rational connection between the sub-Requirement Violation Risk Factor assignments and the main Requirement Violation Risk Factor assignment.

**Guideline (3) — Consistency among Reliability Standards**

The Commission expects the assignment of Violation Risk Factors corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

**Guideline (4) — Consistency with NERC’s Definition of the Violation Risk Factor Level**

Guideline (4) was developed to evaluate whether the assignment of a particular Violation Risk Factor level conforms to NERC’s definition of that risk level.

**Guideline (5) — Treatment of Requirements that Co-mingle More Than One Obligation**

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

The following discussion addresses how the drafting team considered FERC’s VSL Guidelines 2 through 5. The team did not address Guideline 1 directly because of an apparent conflict between Guidelines 1 and 4. Whereas Guideline 1 identifies a list of topics that encompass nearly all topics within NERC’s Reliability Standards and implies that these requirements should be assigned a “High” VRF, Guideline 4 directs assignment of VRFs based on the impact of a specific requirement to the reliability of the system. The team believes that Guideline 4 is reflective of the intent of VRFs in the first instance and therefore concentrated its approach on the reliability impact of the requirements.

There are three requirements in IRO-008-1:

- R1.** Each Reliability Coordinator shall perform an Operational Planning Analysis to assess whether the planned operations for the next day within its Wide Area, will exceed any of its Interconnection Reliability Operating Limits (IROLs) during

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<sup>10</sup> Of the three new standards proposed for approval, only IRO-010-1a has sub-requirements and the “roll up” approach was used such that the drafting team proposed a single set of VSLs for the requirement “in total.” Thus, this guideline is not applicable to the three new proposed standards.

anticipated normal and Contingency event conditions. (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning*)

- R2.** Each Reliability Coordinator shall perform a Real-Time Assessment at least once every 30 minutes to determine if its Wide Area is exceeding any IROLs or is expected to exceed any IROLs. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)
- R3.** When a Reliability Coordinator determines that the results of an Operational Planning Analysis or Real-Time Assessment indicates the need for specific operational actions to prevent or mitigate an instance of exceeding an IROL, the Reliability Coordinator shall share its results with those entities that are expected to take those actions. (*Violation Risk Factor: Medium*) (*Time Horizon: Real-time Operations or Same Day Operations*)

Of the three requirements, Requirement R1 and R3 were assigned a “Medium” VRF, and Requirement R2 was assigned a “High” VRF.

- **VRF for IRO-008-1, Requirement R1:**

- FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirement has no subrequirements so only one VRF was assigned. Therefore, there is no conflict.
- FERC’s Guideline 3 — Consistency among Reliability Standards. There is a similar requirement (Requirement R1) in IRO-004-1 that is assigned a High VRF. The VRF assigned to IRO-008 Requirement R1 is lower than IRO-004-1 R1. The drafting team recognizes that the VRF for IRO-008-1 Requirement R1 is lower than the VRF for the similar requirement IRO-004-1 which is assigned a High VRF, however the IRO drafting team and stakeholders support the Medium VRF based on NERC’s criteria for VRFs. The assignment of the Medium VRF was made based on the premise that failure to have a single Operational Planning Analysis, by itself, would not directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures. For a requirement to be assigned a “High” VRF, there should be the expectation that failure to meet the required performance “will” result in instability, separation, or cascading failures. This is not the case when a Reliability Coordinator fails to conduct a single Operational Planning Analysis. While the drafting team agrees that, under some circumstances, it is possible that a failure to have a single Operational Planning Analysis may put the Reliability Coordinator in a position where it is not as prepared as it should be to address the operating day, the failure to have a new Operational Planning Analysis would not, by itself, result in instability, separation, or cascading failures. If the Reliability Coordinator failed to conduct an Operational Planning Analysis, it would still be expected to perform Real-time Assessments at least every 30 minutes. The results of these analyses should provide the Reliability Coordinator’s competent system operators with information needed to prevent and/or mitigate instances of exceeding IROLs. The NERC Uniform Compliance Monitoring and Enforcement Program and the



Sanctions Guidelines give the Compliance Enforcement Authority the right to provide a higher sanction for failure to meet multiple requirements. And if the Reliability Coordinator failed to have an Operational Planning Analysis and also failed to conduct Real-time Assessments, or if the Reliability Coordinator failed to have an Operational Planning Analysis and also failed to have system operators who were competent in analyzing real-time operating issues, the expectation is that the sanction for noncompliance would be higher than for the failure to conduct a single Operational Planning Analysis with no other violations.

- FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. Failure to perform an analysis for the “next day” could directly affect the electrical state or the capability of the bulk electric system, and could affect the Reliability Coordinator’s ability to effectively monitor and control the bulk electric system. However, violation of this requirement is unlikely to lead to bulk power system instability, separation, or cascading failures. Because the Reliability Coordinator is also required (under IRO-008-1, Requirement R2) to conduct a real-time assessment every thirty minutes, if there is an instance of approaching or exceeding an IROL, the Reliability Coordinator’s system operators are required to have the competence (under PER-005-1, Requirement R2) to react to changing system conditions and would be expected to take actions to prevent instability, separation, or cascading failure. Thus, this requirement meets NERC’s criteria for a Medium VRF. Failure to have an analysis of the next day will not, by itself, lead to instability, separation, or cascading failures.
  - FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-008-1 Requirement R1 contains only one objective, therefore only one VRF was assigned.
- **VRF for IRO-008-1, Requirement R2:**
    - FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirement has no subrequirements; only one VRF was assigned so there is no conflict.
    - FERC’s Guideline 3 — Consistency among Reliability Standards. IRO-008-1 Requirement R2 is a new requirement, so there are no comparable requirements with which to compare VRFs.
    - FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. Failure to perform a Real-time Assessment can have an adverse impact on the bulk electric system because IROLs could be approached or exceeded without the Reliability Coordinator knowing in time to take action before instability, separation, or cascading failures occur. This meets NERC’s criteria for a High VRF.
    - FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-008-1, Requirement R2 contains only one objective, therefore only one VRF was assigned.

- **VRF for IRO-008-1, Requirement R3:**
  - FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirement has no subrequirements; only one VRF was assigned so there is no conflict.
  - FERC’s Guideline 3 — Consistency among Reliability Standards. IRO-004-1 Requirement R5 includes actions similar to those required in IRO-008-1, Requirement R3. The VRF for IRO-004-1, Requirement R5 is “High.” The drafting team recognizes that the VRF for IRO-008-1 Requirement R3 is lower than the VRF for the similar requirement IRO-004-1 which is assigned a High VRF; however, the IRO drafting team and stakeholders support the Medium VRF based on NERC’s criteria for VSLs. IRO-008-1 Requirement R3 requires the Reliability Coordinator to share the results of its analyses with entities that are expected to take actions to prevent or mitigate instances of exceeding an IROL.
  - The assignment of the “Medium” VRF was made based on the premise that failure to share this information, by itself, would not directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures. For a requirement to be assigned a “High” VRF, there should be the expectation that failure to meet the required performance “will” result in instability, separation, or cascading failures. This is not the case when a Reliability Coordinator fails to share the results of its analyses. While the drafting team agrees that if the Reliability Coordinator fails to share the results of its analyses, this failure will put other entities in a position where they are not as prepared as they should be to address instances of preventing or exceeding IROLs. However, even if the Reliability Coordinator failed to share this information in advance, the Reliability Coordinator is still required, under IRO-009-1, Requirements R1 through R4 to have action plans for preventing and mitigating instances of exceeding IROLs and for implementing action plans to prevent or mitigate exceeding each IROL within IROL T<sub>v</sub>. If IRO-009-1, Requirements R1 through R4 are met, then the failure to meet IRO-008-1, Requirement R3 should not result in instability, separation, or cascading failures. The NERC Uniform Compliance Monitoring and Enforcement Program and the Sanctions Guidelines give the Compliance Enforcement Authority the right to provide a higher sanction for failure to meet multiple requirements – and if the Reliability Coordinator failed to share the results of its analyses and also failed to direct actions to prevent or mitigate exceeding an IROL within its IROL T<sub>v</sub>, the expectation is that the sanction for noncompliance would be higher than for the failure to share the results of analyses with no other violations.
  - FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. Failure to share the results of its analyses or assessments will impact the situational awareness of the operating entities involved, and thus could affect the Transmission Operator’s or Balancing Authority’s ability to effectively monitor and control the BES, however violation of this requirement is unlikely to lead to BES instability, separation or cascading failures. Because the Reliability Coordinator is required to have and implement action plans to mitigate and prevent instances of exceeding each identified IROL (IRO-009-1 Requirements R1 and R2) and the

Reliability Coordinator is required to either implement an action plan or direct actions (IRO-009-1 Requirements R3 and R4), the impact of not sharing the analyses and assessments should not result in instability, separation, or cascading failures. Thus, this requirement meets the criteria for a Medium VRF.

- FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-008-1, Requirement R3 contains only one objective, therefore only one VRF was assigned.

There are five requirements in IRO-009-1:

- R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs. (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning or Same Day Operations*)
- R2.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL’s  $T_v$ . (*Violation Risk Factor: Medium*) (*Time Horizon: Operations Planning or Same Day Operations*)
- R3.** When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)
- R4.** When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL’s  $T_v$ . (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)
- R5.** If unanimity cannot be reached on the value for an IROL or its  $T_v$ , each Reliability Coordinator that monitors that Facility (or group of Facilities) shall, without delay, use the most conservative of the values (the value with the least impact on reliability) under consideration. (*Violation Risk Factor: High*) (*Time Horizon: Real-time Operations*)

Of the five requirements, the Requirements R1 and R2 were assigned a “Medium” VRF, and Requirements R3 through R5 were assigned a “High” VRF.

- **VRFs for IRO-009-1, Requirements R1 and R2:**

- FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirements have no subrequirements; only one VRF was assigned to each requirement so there is no conflict.
- FERC’s Guideline 3 — Consistency among Reliability Standards. IRO-004-1, Requirement R3 includes actions similar to those required in IRO-009-1, Requirements R1 and R2. The VRF for IRO-004-1, Requirement R3 is High. The drafting team recognizes that the VRFs for IRO-009-1 Requirements R1 and R2 are lower than the VRF for the similar requirement IRO-004-1 which is assigned a High VRF, however the IRO drafting team and stakeholders support the Medium VRFs based on NERC’s criteria for VSLs.
- Action plans are based on a set of assumptions, and often these assumptions do not match the real-time conditions — that is, the further ahead the action plans are developed, the less likely the set of assumptions will match the real-time conditions. System operators are required to be trained and competent to develop and modify action plans in real-time to meet actual operating conditions. The assignment of the Medium VRF was made based on the premise that failure to develop an action plan (for an IROL identified at least a day ahead of the operating day), by itself, would not directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures. For a requirement to be assigned a “High” VRF, there should be the expectation that failure to meet the required performance “will” result in instability, separation, or cascading failures. This is not the case when a Reliability Coordinator fails to develop an action plan for an IROL that is identified more than a day ahead. While the drafting team agrees that if the Reliability Coordinator fails to develop an action plan, this failure will put its system operators in a position where they are not as prepared as they should be to address instances of preventing or mitigating the exceedance of an IROL. However, even if the Reliability Coordinator has an action plan for an IROL, that action plan will be based on a set of assumptions that may or may not match the real-time conditions, and the action plan may need to be modified or a new action plan may need to be developed. The expectation is that the Reliability Coordinator’s real-time system operators are competent and will be able to make modifications or develop a new action plan based on current conditions. Thus, the failure to have an action plan identified in advance, by itself, will not result in instability, separation, or cascading failures. If the Reliability Coordinator does not take any action to prevent or to mitigate exceeding an IROL, then this is a violation of IRO-009 Requirement R3 or R4 and these are assigned High VRFs.
- FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. IRO-009-1 Requirements R1 and R2 mandate that the Reliability Coordinator have action plans to prevent exceeding identified IROLs and action plans to mitigate instances of exceeding identified IROLs. If the Reliability Coordinator fails to develop such plans, this could adversely impact the Reliability Coordinator’s readiness to address an instance of exceeding an IROL that occurred exactly as studied, but this failure would not, by itself, result in instability, separation, or

cascading failures. The Reliability Coordinator's system operators should have the ability to react to real-time conditions, and they can develop action plans as needed to address emerging conditions. As noted earlier, action plans developed in advance of real-time are developed based on a set of assumptions that do not always match the real-time conditions. System operators must be able to modify these plans to bring them into alignment with real-time conditions. The system operator's competence is addressed in the PER-005-1 standard, Requirement R2.

- FERC's Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-009-1, Requirements R1 and R2 each contain only one objective, therefore only one VRF was assigned to each of these requirements.
  
- **VRFs for IRO-009-1, Requirements R3 and R4:**
  - FERC's Guideline 2 — Consistency within a Reliability Standard. IRO-009-1 Requirements R3 and R4 do not have any subrequirements. Therefore, only one VRF was assigned to each requirement.
  - FERC's Guideline 3 — Consistency among Reliability Standards. IRO-004-1, Requirement R6 includes actions similar to those required in IRO-009-1, Requirements R3 and R4. The VRF for IRO-004-1, Requirement R6 is High, and this is consistent with the High VRF assigned to IRO-009-1 Requirements R3 and R4.
  - FERC's Guideline 4 — Consistency with NERC's Definition of a VRF. The third and fourth requirements are for the Reliability Coordinator to take action to either prevent or mitigate instances of exceeding IROLs. These are both rated as "High" VRFs since, if the Reliability Coordinator fails to take prompt action, an IROL could be exceeded for a time greater than its  $T_v$ , and by definition, this would be expected to lead to instability, separation, or cascading failures.
  - FERC's Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-009-1, Requirements R3 and R4 each contain only one objective. Therefore only one VRF was assigned to each of these requirements.
  
- **VRF for IRO-009-1, Requirement R5:**
  - FERC's Guideline 2 — Consistency within a Reliability Standard. The requirement has no subrequirements. Therefore only one VRF was assigned so there is no conflict.
  - FERC's Guideline 3 — Consistency among Reliability Standards. IRO-005-2, Requirement R13 includes actions similar to those required in IRO-009-1, Requirements R5. The VRF for IRO-005-2, Requirement R5 is High, and this is consistent with the High VRF assigned to IRO-009-1 Requirement R5.
  - FERC's Guideline 4 — Consistency with NERC's Definition of a VRF. IRO-009-1 Requirement R5 addresses the situation where two Reliability Coordinators have different values for the same IROL or the IROL's  $T_v$  and requires both

Reliability Coordinators to use the most conservative value. A violation of this requirement is assigned a “High” VRF because, if the Reliability Coordinator’s system operators use the wrong value of an IROL or its  $T_v$  system parameters could be allowed to exceed the “real” IROL or the “real” IROL’s  $T_v$  and this could lead, without any other violations of any other requirements, to instability, separation, or cascading failures.

- FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-009-1 Requirement R5 contains only one objective. Therefore only one VRF was assigned the requirement.

**R1. There are three requirements in IRO-010-1a:** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*

**R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

**R1.2.** Mutually agreeable format.

**R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).

**R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

**R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator. *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*

**R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. *(Violation Risk Factor: Medium) (Time Horizon: Operations Planning; Same-day Operations; Real-time Operations)*

Of the three requirements, Requirement R1 and R2 are assigned a “Lower” VRF, and Requirement R3 is assigned a “Medium” VRF.

- **VRFs for IRO-010-1a, Requirements R1 and R2:**
  - FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirement and its subrequirements in Requirement R1 have a single reliability objective, therefore only one VRF was assigned. Requirement R2 has no subrequirements and is assigned a single VRF.
  - FERC’s Guideline 3 — Consistency among Reliability Standards. IRO-002-1, Requirement R2 includes actions similar to those required in IRO-010-1a, Requirements R1 and R2. The VRF for IRO-002-1, Requirement R1 is Medium, and this is inconsistent with the Lower VRF assigned to IRO-010-1a Requirements R1 and R2. The drafting team recognizes that the VRFs for IRO-010-1a Requirements R1 and R2 are lower than the VRF for the similar requirement in IRO-002-1 which is assigned a Medium VRF, however the IRO drafting team and stakeholders support the Lower VRFs based on NERC’s criteria for VSLs. IRO-010-1a, Requirement R1 is an administrative requirement, not a real-time requirement, and if IRO-010-1a, Requirement R1 were violated, by itself, there would be no impact on the bulk electric system and there would be no impact to the ability of the Reliability Coordinator to monitor and control the bulk electric system. This meets NERC’s criteria for a “Lower” VSL.
  - IRO-010-1a, Requirement R1 works with other requirements in IRO-010-1a to provide the Reliability Coordinator with the data and information it needs to effectively monitor and control its portion of the bulk electric system.
  - FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. IRO-010-1a Requirements R1 and R2 mandate that the Reliability Coordinator have and distribute a specification for data and information, and the requirements are primarily administrative. If a Reliability Coordinator fails to document its data and information needs, or fails to distribute the specification, the data specification, while a useful construct, is not the only way to identify what data is needed. The Reliability Coordinator has the authority to direct entities to provide whatever data and information it needs and the entities are required to provide that data and information. While the data specification provides a mechanism to provide the data, this is not the only mechanism the Reliability Coordinator has to obtain the data, and the failure to distribute the data specification does not mean that the needed data will not be provided to the Reliability Coordinator.
  - FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-010-1a Requirements R1 and R2 each address a single objective and each has a single VRF.
  
- **VRFs for IRO-010-1a, Requirement R3:**
  - FERC’s Guideline 2 — Consistency within a Reliability Standard. The requirement has no subrequirements; only one VRF was assigned so there is no conflict.

- FERC’s Guideline 3 — Consistency among Reliability Standards. TOP-005-1, Requirement R1 includes actions similar to those required in IRO-010-1a, Requirement R3, to provide the Reliability Coordinator with data and information. The VRF assigned to TOP-005-1, Requirement R1 is Medium, which is consistent with the VRF assigned to IRO-010-1a, Requirement R3.
- FERC’s Guideline 4 — Consistency with NERC’s Definition of a VRF. IRO-010-1a, Requirement R3 mandates that entities provide data and information to their Reliability Coordinator. A failure to provide this data or information could affect the Reliability Coordinator’s ability to effectively monitor and control the bulk electric system. However, violation of this requirement is unlikely, by itself, to lead to bulk electric system instability, separation, or cascading failures, thus the assignment of a “Medium” VRF.
- FERC’s Guideline 5 — Treatment of Requirements that Co-mingle More Than One Objective. IRO-010-1a Requirement R3 addresses a single objective and has a single VRF.

### **Violation Severity Levels**

The IRO Standard Drafting Team completed its development of IRO-008-1, IRO-009-1, and IRO-010-1a, including the development of VSLs, before FERC issued its June 19, 2008 Order on VSLs.<sup>11</sup> Accordingly, the IRO drafting team did not have the benefit of FERC’s VSL Guidelines when it developed its VSLs. In addition, the team developed its VSLs before NERC made a filing describing the way in which drafting teams assign VRFs and VSLs. Therefore, some of the proposed VSLs do not comport with FERC’s VSL Guidelines and some do not comport with the guidelines NERC submitted on September 10, 2009 in NERC’s informational filing on VRFs and VSLs. Each set of VSLs is discussed below, and where there are VSLs that do not meet FERC’s VSL Guidelines or do not match NERC’s revised guidelines, NERC has identified the differences and will propose revisions to the VSLs in its future VSL Compliance Filing.

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<sup>11</sup> *Order on Violation Severity Levels Proposed by the Electric Reliability Organization*, 123 FERC ¶ 61,284 (June 19, 2008) (“VSL Guideline Order”).



In developing the VSLs for the IRO standards, the IROL team anticipated the evidence that would be reviewed during an audit, and developed its VSLs based on the noncompliance an auditor may find during a typical audit. The drafting team based its assignment of VSLs on the following criteria:

| Lower   | Moderate  | High  | Severe   |
|---|---|---|--|
| Missing a minor element (or a small percentage) of the required performance<br>The performance or product measured has significant value as it almost meets the full intent of the requirement. | Missing at least one significant element (or a moderate percentage) of the required performance.<br>The performance or product measured still has significant value in meeting the intent of the requirement. | Missing more than one significant element (or is missing a high percentage) of the required performance or is missing a single vital component.<br>The performance or product has limited value in meeting the intent of the requirement. | Missing most or all of the significant elements (or a significant percentage) of the required performance.<br>The performance measured does not meet the intent of the requirement or the product delivered cannot be used in meeting the intent of the requirement. |

The VSLs are presented below, followed by an analysis of whether the VSLs meet the FERC Guidelines for assessing VSLs:

**Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

Compare the VSLs to any prior Levels of Non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when Levels of Non-compliance were used.

**Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

A violation of a “binary” type requirement must be a “Severe” VSL.

Do not use ambiguous terms such as “minor” and “significant” to describe noncompliant performance.

**Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

VSLs should not expand on what is required in the requirement.

**Guideline 4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

. . . unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

**VSLs for IRO-008-1**

| R# | Lower   | Moderate  | High  | Severe  |
|----|---|---|---|---|
| R1 | Performed an Operational Planning Analysis that covers all aspects of the requirement for all except one of 30 days. (R1) | Performed an Operational Planning Analysis that covers all aspects of the requirement for all except two of 30 days. (R1) | Performed an Operational Planning Analysis that covers all aspects of the requirement for all except three of 30 days. (R1) | Missed performing an Operational Planning Analysis that covers all aspects of the requirement for four or more of 30 days. (R1) |

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

- The most comparable VSLs for a similar requirement to conduct a next-day analysis are for IRO-004-1, Requirement R1. The VSLs for IRO-004-1, Requirement R1 assign a Lower VSL for missing one of 30 analyses, a Moderate for missing two, High for missing three, and a Severe for missing four or more. Thus, the VSLs in the proposed standard do not lower the level of compliance currently required by setting VSLs that are less punitive than those already approved.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs do not meet this guideline, as the VSLs are based on a number of violations over a 30-day period. The VSLs will be revised so they are based on a single violation, not on the number of violations in a 30-day period.

**Compliance with NERC’s revised VSL Guidelines**

- Not applicable.

|    |  |  |  |  |
|----|--|--|--|--|
| R2 | For any sample 24 hour period within the 30 day retention period, a Real-time Assessment was not conducted for one 30-minute period. within that 24-hour period (R2) | For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for two 30-minute periods within that 24-hour period (R2) | For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for three 30-minute periods within that 24-hour period (R2) | For any sample 24 hour period within the 30 day retention period, Real-time Assessments were not conducted for more than three 30-minute periods within that 24-hour period (R2) |
|----|--|--|--|--|

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the**

**Current Level of Compliance**

- The proposed requirement is new and there are no comparable VSLs.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs do not meet this guideline, as they are based on a number of violations over a 24 hour period, not on a single violation. Therefore, the VSLs will be revised in NERC’s March 1, 2010 VSL filing so they are based on a single violation, not on the number of violations over a 24-hour period.

**Compliance with NERC’s revised VSL Guidelines**

- Not applicable.

|    |  |   |  |   |
|----|--|---|--|---|
| R3 |  | Shared the results with some but not all of the entities that were required to take action (R3) |  | Did not share the results of its analyses or assessments with any of the entities that were required to take action (R3). |
|----|--|---|--|---|

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

- The most comparable VSLs for a similar requirement to conduct a next-day analysis are for IRO-004-1, Requirement R5. The VSLs for IRO-004-1, Requirement R5 assign a Lower VSL for failing to share the results for one day during a calendar month; Moderate for failure to share results for two or three days during a calendar month, High for failure to share results for four or five days during a calendar month, and a Severe for failure to share results for more than five days during a calendar month. The VSLs in the proposed standard focus on sharing the results with some, but not all of the required entities and are stricter than the VSLs in IRO-004-1, Requirement R5.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs meet this guideline, as they are based on the completeness of sharing the results of a single analysis or assessment.

**Compliance with NERC’s revised VSL Guidelines**

- No changes are needed to meet NERC’s revised VSL guidelines.

## VSLs for IRO-009-1

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

### **Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

- The only VSL assigned to Requirements R1 through R3 is Severe, in support of the position that any degree of noncompliance with these requirements would result in performance that did not meet the reliability-related intent of the associated requirement. Since these violations are assigned the highest possible VSL, there can be no unintended lowering of the current level of compliance.

### **Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

### **Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

### **Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs meet this guideline, as each of the single Severe VSLs is based on a single violation – For Requirements R1 and R2, the Severe VSL is based on a failure to have an action plan to either prevent or mitigate an instance of exceeding an identified IROL. For Requirement R3, the single Severe VSL is based on a failure to act when an assessment shows that an IROL may be exceeded.

### **Compliance with NERC's revised VSL Guidelines**

No changes are needed to meet NERC's revised VSL guidelines.

| R  | Lower | Moderate | High  | Severe  |
|----|-------|----------|---|---|
| R4 |       |          | Actual system conditions showed that there was an instance of exceeding an IROL in its Reliability Coordinator Area, and there was a delay of five minutes or more before acting or directing others to act to mitigate the magnitude and duration of the instance of exceeding that IROL, however the IROL was mitigated within the IROL T <sub>v</sub> . (R4) | Actual system conditions showed that there was an instance of exceeding an IROL in its Reliability Coordinator Area, and that IROL was not resolved within the IROL's T <sub>v</sub> . (R4) |

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

- The most comparable VSLs for a similar requirement to direct entities to take action to resolve an IROL are for IRO-004-1, Requirement R6. The VSLs for IRO-004-1, Requirement R6 assign a Lower VSL for failing to direct actions to resolve an IROL once in a month; Moderate for failure to direct actions to resolve an IROL two or three times in a calendar month; High for failure to direct actions to resolve an IROL four or five times in a calendar month, and Severe for failure to direct actions to resolve an IROL on more than five occasions in a calendar month. The IRO drafting team's VSLs have a "zero tolerance" for a total failure to act to resolve an IROL. The only deviation for this is to allow a High VSL for an instance where the Reliability Coordinator delays before taking action but was able to resolve the IROL before the IROL's T<sub>v</sub>. The VSLs assigned to IRO-009-1 Requirement R4 are much more stringent than those in IRO-004-1.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs meet this guideline, as each of the VSLs is based on a single violation of the requirement to take action to resolve an instance of exceeding an IROL.

**Compliance with NERC's revised VSL Guidelines**

No changes are needed to meet NERC's revised VSL guidelines.

|    |                 |                 |                 |  |
|----|-----------------|-----------------|-----------------|--|
| R5 | Not applicable. | Not applicable. | Not applicable. | There was a disagreement on the value of the IROL or its T <sub>v</sub> and the most conservative limit under consideration was not used. (R5) |
|----|-----------------|-----------------|-----------------|--|

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the**

| R | Lower | Moderate | High | Severe |
|---|-------|----------|------|--------|
|---|-------|----------|------|--------|

**Current Level of Compliance**

- The most comparable VSLs for a similar requirement to direct entities to take action to resolve an IROL are for IRO-005-2, Requirement R13. IRO-005-2, Requirement R13 has a single Severe VSL for a single instance of failure to operate to the most limiting parameter in instances where there is a difference in a limit. The same level of VSL is assigned to IRO-009-1, Requirement R5.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSL meets this guideline, as the single, Severe VSL is based on a single violation of the requirement to use the most conservative IROL or IROL  $T_v$  if there is disagreement on the value of that IROL or disagreement on the  $T_v$ .

**Compliance with NERC’s revised VSL Guidelines**

No changes are needed to meet NERC’s revised VSL guidelines.

**VSLs for IRO-010-1a**

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

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

- The most comparable VSLs for a similar requirement to have and distribute a data specification are in IRO-002, Requirement R2, which addresses both having a data specification and distributing that specification. The VSLs for IRO-002,

| R# | Lower | Moderate | High | Severe |
|----|-------|----------|------|--------|
|----|-------|----------|------|--------|

Requirement R2 that address noncompliance with having a data specification assigns a Moderate VSL for having a specification that addresses the “majority” of the required data; a High VSL for having a specification that addresses “less than the majority” of the required data; and a Severe VSL for failure to develop a data specification. The VSLs in IRO-010-1a are more stringent than those in IRO-002-1, Requirement R2 as the VSLs in IRO-10-1, Requirement R1 all require, for the Lower, Moderate, and High VSLs, that the data specification address all of the required data – degrees of noncompliance are based on the additional elements that must be identified in the data specification such as the periodicity of providing the data and the format for providing the data.

- The VSLs for IRO-002-1, Requirement R2 also address noncompliance with distribution of the data specification. The VSLs in IRO-002-1, Requirement R2 are based on sending the data specification to specific functional entities such as Transmission Operators and Transmission Service Providers. The VSLs for IRO-010-1a, Requirement R2 are based on the failure to distribute to all the required entities, using percentages that range from a 5% failure for Lower; up to a 15% failure for Moderate; up to a 25% failure for a High and anything greater than 25% as Severe. Because there is no way of knowing how many entities may be involved in the distribution of the data specification, it is not possible to definitively state that the VSLs in IRO-010-1a Requirement R2 are more or less stringent than those in IRO-002-1, Requirement R2 for the same degree of noncompliant performance.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The proposed VSLs meet this guideline because, for Requirement R1 they are based on the completeness of the single data specification, and for R2, they are based on the completeness of the distribution of the data specification.

**Compliance with NERC’s revised VSL Guidelines**

- IRO-010-1a Requirement R1 has four parts (R1.1 through R1.4). The VSLs for R1 were developed using the “roll-up” approach where a single set of VSLs is developed to identify a range of noncompliant performance for the requirement “in total.” Noncompliance with each of the four parts of the requirement is addressed in one of the VSLs, based on the contribution that part of the requirement makes to the intent of the overall requirement. This matches NERC’s revised VSL guidelines.
- The phrasing and percentage of noncompliant performance in the VSLs proposed for Requirement R2 do not match the percentage thresholds that NERC proposed in its August 10, 2009 informational filing. To meet NERC’s guidelines, the VSLs will need to be rephrased so they identify the % of performance that was noncompliant rather than the % of performance that was compliant. In addition, the threshold for the Lower VSL would need to be changed to 5% or less; for a Moderate VSL the noncompliant performance would need to be more than 5% but less than or equal to 10%; for a High VSL the noncompliant performance would need to be more than 10% but less than or equal to 15%; and for a Severe VSL the noncompliant performance would need to be 15 % or more.

|    |   |  |  |   |
|----|---|--|--|---|
| R3 | Provided greater than or equal to 95% but less than 100% of the data and information as specified. (R3) | Provided greater than or equal to 85% but less than 95% of the data and information as specified. (R3) | Provided greater than or equal to 75% but less than 85% of the data and information as specified. (R3) | Provided less than 75% of the data and information as specified. (R3) |
|----|---|--|--|---|

**Guideline 1 — Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance**

| R# | Lower | Moderate | High | Severe |
|----|-------|----------|------|--------|
|----|-------|----------|------|--------|

- The most comparable VSLs for a similar requirement to direct entities to take action to resolve an IROL are for TOP-005-1, Requirement R1. TOP-005-1, Requirement R1 has two VSLs, Lower for failure to provide “all” of the requested data, and “Severe” for failure to provide “any” of the requested data. The VSLs in IRO-010-1a provide a Lower VSL for failure to provide 5%, Moderate for failure to provide 15%, High for failure to provide 25%, and Severe for failure to provide more than 25% of the requested data and information. As such, the VSLs in IRO-010-1a, Requirement R3 are more stringent than those in TOP-005-1, Requirement R1.

**Guideline 2 — Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties**

- The proposed VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

**Guideline 3 — Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement**

- The proposed VSLs use the same terminology as used in the associated requirement, and are, therefore, consistent with the requirement.

**Guideline 4 — Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations**

- The requirement is not written in a manner that requires compliance to be assessed based on a single violation, so this guideline is not applicable to Requirement IRO-010-1a, Requirement R3.

**Compliance with NERC’s revised VSL Guidelines**

The phrasing and percentage of noncompliant performance in the VSLs proposed for Requirement R3 do not match the percentage thresholds that NERC proposed in its August 10, 2009 informational filing. To meet NERC’s guidelines, the VSLs will need to be rephrased so they identify the % of performance that was noncompliant rather than the % of performance that was compliant. In addition, the threshold for the Lower VSL would need to be changed to 5% or less; for a Moderate VSL the noncompliant performance would need to be more than 5% but less than or equal to 10%; for a High VSL the noncompliant performance would need to be more than 10% but less than or equal to 15%; and for a Severe VSL the noncompliant performance would need to be 15 % or more.

**V. Order No. 693 Directives Relative to Retirements or Revisions of Standards Modified as a Result of new Requirements in IRO-008-1, IRO-009-1, and IRO-010-1a**

In addition to seeking approval of the proposed new standards, discussed above, this filing seeks approval to modify several Reliability Standards to simplify and avoid confusion with the newly proposed IRO standards when approved. To avoid having more than one requirement addressing the same activity, the IRO drafting team identified requirements in Version 0 Standards that were redundant with, or no longer needed once the proposed IRO standards were approved. For each Version 0 Standard impacted by the IRO standards, the IRO drafting team reviewed Order No. 693 to identify any FERC directives associated with the requirements recommended for retirement or revision. The drafting team’s scope of work was



limited to addressing only those directives associated with requirements changed as a result of the IRO Standards effort.

There are seven Version 0 standards with requirements that the IRO drafting team identified as having requirements requiring retirement or revisions in order to avoid conflicts or duplication with the proposed IRO standards. These standards and the relevant directives from FERC’s Order 693 are presented in the following table. The directives associated with each of these seven standards and a narrative discussion identifying how the IRO drafting team addressed each of the relevant directives is also provided.

| <b>Relationship Between Modifications to Already Approved Standards and Directives in Order No. 693</b> |   |
|---|---|
| <b>Modification to Associated Approved Standards</b>  | <b>Paragraph with Associated Directives</b> |
| EOP-001-0 — Emergency Operations Planning   | 566   |
| IRO-002-1 — Reliability Coordination – Facilities   | 908   |
| IRO-004-1 — Reliability Coordination – Operations Planning  | 935   |
| IRO-005-2 — Reliability Coordination – Current Day Operations   | 951   |
| TOP-003-0 — Planned Outage Coordination   | 1626  |
| TOP-005-1 — Operational Reliability Information   | 1651  |
| TOP-006-1 — Monitoring System Conditions  | 1665  |

## **Order No. 693 Directives Associated with Requirements That are Proposed for Revision or Retirement in the IROL Implementation Plan**

### **Directives Associated with Modification of EOP-001-0 – Emergency Operations Planning<sup>12</sup>**

<sup>12</sup> As noted above, NERC recognizes that revised standard EOP-001 is included for approval in this filing as well as in the filing requesting approval of Emergency Preparedness and Operations Reliability Standards (“System Restoration and Blackstart Filing”) being filed contemporaneously. The modifications proposed to the EOP-001 standard in this filing and in the System Restoration and Blackstart Filing include changes unique to each project. NERC includes in Exhibit A a proposed Version 1 of EOP-001 that exclusively contains the changes directed by the IRO project in the event this authority acts on this filing before the System Restoration and Blackstart Filing or if the System Restoration and Blackstart Filing is remanded before the IRO filing is acted upon. In the event that this authority acts to approve the System Restoration and Blackstart Filing first, NERC also includes in Exhibit B Version 2 of EOP-001 that contains both the System Restoration and Blackstart team directed changes and those proposed in this IRO filing. Because EOP-001-0 is the currently-approved standard in effect, the changes proposed

Order 693 P 566. *Accordingly, the Commission concludes that Reliability Standard EOP-001-0 is just, reasonable, not unduly discriminatory or preferential and in the public interest and approves it as mandatory and enforceable. In addition, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to EOP-001-0 through the Reliability Standards development process that: (1) includes the Reliability Coordinator as an applicable entity with responsibilities as described above; (2) clarifies the 30-minute requirement in Requirement R2 of the Reliability Standard to state that load shedding should be capable of being implemented as soon as possible but in no more than 30 minutes; (3) includes definitions of system states to be used by the operators, such as transmission-related “normal,” “alert” and “emergency” states, provides criteria for entering into these states, and identifies the authority that will declare these states and (4) clarifies that the actual emergency plan elements, and not the “for consideration” elements of Attachment 1, should be the basis for compliance. Further, the Commission directs the ERO to consider a pilot program for system states, as discussed above.*

The first directive is further clarified in Paragraph 547:

Order 693 P 547. *Given the importance NERC attributes to the reliability coordinator in connection with matters covered by EOP-001-0, the Commission is persuaded that specific responsibilities for the reliability coordinator in the development and coordination of emergency plans must be included as part of this Reliability Standard.*

The IRO drafting team limited its focus to aspects of the first two directives in Order No. 693 Paragraph 566, relative to Reliability Coordinators and the treatment of IROLs. Addressing the remaining directives was outside the scope of work assigned to the IRO drafting team.

The drafting team understood that the intent of the first directive is to ensure that the Reliability Coordinator has a requirement that identifies its responsibility relative to having plans to address operating emergencies, including plans to address the mitigation of instances of exceeding IROLs. The drafting team understood the intent of the second directive is to clarify that operating plans developed to mitigate instances of exceeding an IROL should be implemented to resolve the IROL as soon as possible but within 30 minutes.

Modifying the entire EOP-001-0 Reliability Standard was outside the scope of work assigned to the IRO drafting team. However, the IRO drafting team did modify the

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in this filing are applied against this Version 0. Should the System Restoration and Blackstart Filing be affirmatively acted upon first, NERC modifies its requests for approval of EOP-001-2 as provided in Exhibit B.

responsibility for Requirement R2 so that instead of assigning the Transmission Operator the responsibility for having load reduction plans for resolving IROLs, the Reliability Coordinator is responsible for having action plans that will either prevent or mitigate instances of exceeding IROLs. The Transmission Operator is not required to have the Wide-Area view necessary for developing action plans relative to IROLs. Under the direction of the Reliability Coordinator, the Transmission Operator would implement the load reduction plans. The proposed Requirements R1 and R2 in IRO-009-1 meet the intent of the first directive as it relates to IROLs. There are other types of operating emergencies, such as system restoration, and as these standards are revised, additional clarity is being added to ensure that the Reliability Coordinator's role, as defined in the Functional Model, is implemented.

When developing the IRO standard, the IRO drafting team determined that there are some IROLs that must be resolved in a timeframe that is shorter than 30 minutes. FAC-010-1 and FAC-011-1 require that each IROL have an associated  $T_v$  with  $T_v$  defined as follows:

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.

IRO-009-1, Requirement R2, requires that each action plan developed to resolve an IROL must be capable of being executed such that the IROL is relieved within the IROL's  $T_v$ . While the drafting team did include a reference to load shedding, the team did not highlight this as the only means of resolving an IROL. IRO-009-1, Requirement R4, requires the Reliability Coordinator to act, without delay, when actual system conditions show that there is an instance of exceeding an IROL. Additionally, as discussed below, EOP-001-1 — Emergency Operations Planning, Requirement R4, which is not recommended for retirement

by the IRO drafting team, requires the Transmission Operator to have load reduction plans that can be executed within a specific timeframe.

**R4.** Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:

**R4.1.** Communications protocols to be used during emergencies.

**R4.2.** A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.

**R4.3.** The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.

**R4.4.** Staffing levels for the emergency.

The IRO drafting team believes that the proposed requirements collectively provide an equally effective and efficient method of achieving the objective of the second directive in Paragraph 566.

Directives 3 and 4 of paragraph 566 are outside the scope of work assigned to the IRO drafting team.

#### **Directives Associated with Modification of IRO-002-1 — Reliability Coordination — Facilities**

*Order 693 P 908. Reliability Standard IRO-002-1 serves an important purpose in ensuring that reliability coordinators have the information, tools and capabilities to perform their functions. The Measures and Levels of Non-Compliance submitted by NERC further enhance the Reliability Standard. Accordingly, the Commission approves Reliability Standard IRO-002-1 as mandatory and enforceable. In addition we direct the ERO to develop a modification to IRO-002-1 through the Reliability Standards development process that requires a minimum set of tools that should be made available to reliability coordinators.*

The IRO drafting team understood the intent of the directive is to ensure that the Reliability Coordinator has a set of tools to support real-time monitoring of the Reliability Coordinator's Area. The modification made to IRO-002-1 does not address any of the requirements associated with "tools" and thus the sole directive is outside the scope of the IRO

drafting team's work. Therefore, this directive is being considered in Project 2009-02 — Real-time Tools.

### **Directives Associated with Modification of IRO-004-1 — Reliability Coordination — Operations Planning**

Order 693, P 935. *Accordingly, we approve Reliability Standard IRO-004-1 as mandatory and enforceable. Further, we direct the ERO to modify IRO-004-1 through the Reliability Standards development process to require the next-day analysis to identify control actions that can be implemented and effective within 30 minutes after a contingency.*

The drafting team understood the intent of the directive is to require that the Reliability Coordinator has an action plan that can be used to resolve any IROL identified during the “day-ahead” study within 30 minutes. The drafting team believes that the intent of this objective is met through the combination of IRO-009-1 Requirements R1 and R2.

- IRO-009-1 Requirement R1 requires the Reliability Coordinator to have one or more operating procedures, processes or plans that identify actions that can be implemented in time to **prevent** exceeding each identified IROL.
- § IRO-009-1 Requirement R2 requires the Reliability Coordinator to have one or more operating procedures, processes or plans that identify actions that can be implemented in time to **mitigate** the magnitude and duration of exceeding each identified IROL such that the IROL is relieved within its  $T_v$ , which may be shorter than 30 minutes.

Thus, the proposed IRO-009-1 Requirements R1 and R2 use an equally efficient and effective method of achieving the objective of the FERC directive in paragraph 935. The drafting team did not address action plans to resolve any identified SOLs. Under the Functional Model, (and TOP-002-2, Requirement R11) the Transmission Operator is responsible for conducting analyses to identify where there may be instances of exceeding SOLs, and the Transmission Operator is responsible (under TOP-008-1) for taking actions to either prevent or mitigate instances of exceeding SOLs. Under some circumstances, the Transmission Operator may request the assistance of the Reliability Coordinator in identifying or monitoring SOLs, or in developing action plans to either prevent or mitigate instances of exceeding an SOL.

However, under these circumstances, the responsibility for the SOL remains with the Transmission Operator.

When developing the IRO Standards, the IRO and Facility Ratings Standard Drafting Teams determined that some IROLs must be resolved in a timeframe that is shorter than 30 minutes. FAC-010-1 and FAC-011-1 require that each IROL have an associated  $T_v$  with  $T_v$  defined as follows:

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.

IRO-009-1 Requirement R2 requires that each action plan developed to resolve an IROL must be capable of being executed such that the IROL is relieved within the IROL's  $T_v$ .

#### **Directives Associated with Modification of IRO-005-2 — Reliability Coordination — Current Day Operations**

*Order 693 P951. Accordingly, the Commission approves Reliability Standard IRO-005-1 as mandatory and enforceable. Further, because IRO-005-1 has no Measures or Levels of Non-Compliance, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to IRO-005-1 through the Reliability Standards development process that includes Measures and Levels of Non-Compliance. The Commission further directs that the Measures and Levels of Non-Compliance specific to IROL violations must be commensurate with the magnitude, duration, frequency and causes of the violations and whether these occur during normal or contingency conditions. Finally, the Commission directs the ERO to conduct a survey on IROL practices and actual operating experiences by requiring reliability coordinators to report any violations of IROL, their causes, the date and time, the durations and magnitudes in which actual operations exceeds IROLs to the ERO on a monthly basis for one year beginning two months after the effective date of the Final Rule. We may propose further modifications to IRO-005-1 based on the survey results.*

There are two directives in Order No. 693 Paragraph 951. The IRO drafting team understood the intent of the first directive is to ensure that a violation of an IROL (exceeding an IROL for time greater than the IROL's  $T_v$ ) varies with the potential reliability-related impact associated with that violation. The second directive (to conduct a survey) is outside the scope of work assigned to the IRO drafting team and is not addressed here.

The ERO's Sanctions Guidelines identify that VSLs, in conjunction with the VRF, form the starting point for the determination of a penalty or sanction. The NERC Sanction Guidelines identify 12 factors that the Compliance Enforcement Authority may use to increase or decrease the size of a penalty or sanction, including instances of multiple violations, seriousness of the violation, and the frequency and duration of violations. These factors, in combination with the initial assignment of VRFs and VSLs, result in violations with penalties commensurate with the impact to reliability.

The requirements in IRO-009-1 associated with having action plans are assigned a "Medium" VRF and the requirements associated with acting to prevent or mitigate instances of exceeding an IROL are assigned a "High" VRF.

**A "High" Violation Severity Level is applied for the following:**

- Actual system conditions showed that there was an instance of exceeding an IROL, and there was a delay of five minutes or more before acting or directing others to act to mitigate the magnitude and duration of the instance of exceeding that IROL, however the IROL was mitigated within the IROL  $T_v$ . (R4)

**A "Severe" Violation Severity Level is applied for any of the following:**

- An IROL was identified one or more days in advance and the Reliability Coordinator does not have an Operating Process, Procedure, or Plan that identifies actions to prevent exceeding that IROL. (R1)
- An IROL identified one or more days in advance does not have an Operating Process, Procedure, or Plan that identifies actions to mitigate exceeding that IROL within the IROL's  $T_v$ . (R2)
- An assessment of actual or expected system conditions predicted that an IROL would be exceeded, but no Operating Processes, Procedures, or Plans were implemented. (R3)
- Actual system conditions showed that there was an instance of exceeding an IROL, and that IROL was not resolved within the IROL's  $T_v$ . (R4)

A delay in acting to mitigate an instance of exceeding an IROL but resolving the IROL within its  $T_v$  is assigned a "High" VSL. A total violation of any of these four requirements to have plans or take actions results in a "Severe" VSL. Applying the violation of the requirements to the sanctions table:

- The violation of a Medium VRF with a Severe VSL has a sanction starting point of \$10-\$335k (failure to have action plans)
- The violation of a High VRF with a Medium VSL has a sanction starting point of \$12-\$625k (delay in acting to mitigate but resolved within T<sub>v</sub>)
- The violation of a High VRF with a Severe VSL has a sanction starting point of \$20-\$1,000k (exceeded IROL for time greater than T<sub>v</sub>)

The IRO Standards have VSLs, not levels of non-compliance. However, the combination of VRFs and VSLs, when applied with the Sanction Guidelines, meet the intent of the directive.

### **Directives Associated with Modification of TOP-003-0 — Planned Outage Coordination**

Order 693 P 1626. *Planned outage coordination is a necessary element of reliable operations, and TOP-003-0 promotes that goal. Accordingly, the Commission approves the Reliability Standard as mandatory and enforceable. In addition, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to TOP-003-0 through the Reliability Standards development process that: (1) includes a new requirement to communicate longer term outages well in advance to ensure reliability and accuracy of ATC calculation; (2) makes any facility below the voltage thresholds that, in the opinion of the Transmission Operator, Balancing Authority, or Reliability Coordinator, will have a direct impact on the operation of Bulk-Power System, subject to Requirement R1 for planned outage coordination and (3) incorporates an appropriate lead time for planned outages as discussed above.*

There are three directives. The IRO drafting team determined that only the third directive is associated with a requirement related to the work of the IRO drafting team.

The IRO drafting team understood the intent of the third directive is to require the Reliability Coordinator to specify, in its process or procedure for coordinating planned outages, a requirement that Generator Operators and Transmission Operators provide information on planned outages within identified lead times.

The IRO drafting team did not include a requirement to address this directive. In keeping with the original approach for developing Reliability Standards, the IRO drafting team does not believe that having a process or procedure for coordinating planned outages is the core aspect that should be retained in a mandatory, enforceable Reliability Standard. Rather, the IRO drafting team believes that having a requirement to *coordinate* planned outages such that



specified criteria are met is the desired performance that leads to an adequate level of reliability. Having a process or procedure that identifies how it will coordinate planned outages is a fundamental expectation that is better suited for inclusion in the certification process for the Reliability Coordinator. Having the capability to coordinate is addressed through the required process or procedure in the entity certification process, while the actual coordination manifests itself in the body of the standard requirements. Requiring the entity applying for certification to produce its process or procedure for coordinating planned outages ensures that the procedure exists at the point in time when the entity begins operating as a Reliability Coordinator. Implementation of this practice can be demonstrated through the coordination taking place between entities on a daily basis.

#### **Directives Associated with Modification of TOP-005-1 — Operational Reliability Information**

*Order 693 P 1651. Accordingly, the Commission approves Reliability Standard TOP-005-1. In addition, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to TOP-005-1 through the Reliability Standards development process that: (1) includes information about the operational status of special protection systems and power system stabilizers in Attachment 1 and (2) deletes references to confidentiality agreements, but addresses the issue separately to ensure that necessary protections are in place related to confidential information.*

There are two directives associated with TOP-005-1, and neither of the directives is relative to the proposed modifications the IRO drafting team made to TOP-005. The first directive is associated with Requirement R3, and Requirement R3 is not being revised or retired as a result of approving IRO-008-1, IRO-009-1, or IRO-010-1a. The second directive is associated with Requirement R2, and it is not being revised or retired as a result of approving IRO-008-1, IRO-009-1 or IRO-010-1a.

#### **Directives Associated with Modification of TOP-006-1 — Monitoring System Conditions**

*Order 693 P 1665. Accordingly, the Commission approves Reliability Standard TOP-006-1. In addition, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to TOP-006-1 through the Reliability*

*Standards Development Process that: (1) includes a new requirement related to the provision of minimum capabilities that are necessary to enable operators to deal with real-time situations and to ensure reliable operation of the Bulk-Power System and (2) clarifies the meaning of “appropriate technical information” concerning protective relays.*

There are two directives associated with TOP-006-1, and neither of the directives relates to the proposed modifications the IRO drafting team made to Requirement R4 in TOP-006. The first directive is associated with specifying a set of minimum facility requirements for the Transmission Operator and is outside the scope of the IRO drafting team. The second directive is associated with Requirement R3, and it is not being revised or retired as a result of approving IRO-008-1, IRO-009-1, or IRO-010-1a and is, therefore, also outside the scope of the IRO drafting team.

The second directive is relative to TOP-006-1, Requirement R3 which is not being modified or retired as a result of approving IRO-008-1, IRO-009-1, or IRO-010-1a.

**Comparison of New Requirements and Retired or Revised Requirements**

The following discussion compares the proposed IRO Standards with requirements in approved Version 0 standards, and provides an explanation supporting the decision to modify or retire specific Version 0 requirements that are either redundant with, or would conflict with requirements in the IRO standards if left unchanged.

| New Standard  | Modification to Associated Approved Standards                                    |
|---|--|
| IRO-008-1 — Reliability Coordination Operational Analyses and Real-time Assessments | IRO-004-1 — Reliability Coordination – Operations Planning<br>§ Retire R1 and R2 |

**IRO-004-1**

- R1.** Each Reliability Coordinator shall conduct next-day reliability analyses for its Reliability Coordinator Area to ensure that the Bulk Electric System can be operated reliably in anticipated normal and Contingency event conditions. The Reliability Coordinator shall conduct Contingency analysis studies to identify potential interface and other SOL and IROL violations, including overloaded transmission lines and transformers, voltage and stability limits, etc.

**R2.** Each Reliability Coordinator shall pay particular attention to parallel flows to ensure one Reliability Coordinator Area does not place an unacceptable or undue Burden on an adjacent Reliability Coordinator Area.

### **IRO-008-1**

**R1.** Each Reliability Coordinator shall perform an Operational Planning Analysis to assess whether the planned operations for the next day within its Wide Area, will exceed any of its Interconnection Reliability Operating Limits (IROLs) during anticipated normal and Contingency event conditions.

IRO-008-1 Requirement R1 requires the Reliability Coordinator to look at its “Wide-Area” rather than the “Reliability Coordinator Area” in conducting its Operational Planning Analyses. The definition of “Reliability Coordinator Area” is:

The collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.

The definition of “Wide-Area” is:

The entire Reliability Coordinator Area as well as the critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of Interconnected Reliability Operating Limits.

Thus, the definition of “Wide-Area” encompasses a greater scope of facilities, and because each Reliability Coordinator is looking beyond its own borders into its neighboring Reliability Coordinators’ Areas, provides greater protection for the interconnected bulk power systems because the Reliability Coordinators will be assessing overlapping portions of the bulk power system. With IRO-004-1, Requirement R1, each Reliability Coordinator was assigned to look only at a contiguous portion of the bulk power system, and there was no requirement for one Reliability Coordinator to “look over the shoulder” of its neighboring Reliability Coordinator’s Areas.

The purpose of conducting a day-ahead analysis is not to “ensure” but to “assess” the system, making IRO-004-1 Requirement R1 incorrect. As written, IRO-004-1 seems to focus

primarily on transmission issues, which should be only one aspect of focus for the Reliability Coordinator's analysis.

IRO-008-1, Requirement R1 also does not specify any single application program that all Reliability Coordinators must use. The new requirement assumes that the Reliability Coordinator has a suite of applications, verified either as part of the certification process or through a reliability readiness audit, that it can use to conduct its assessment. Having the *ability* to conduct a day-ahead contingency analysis is a requirement for Reliability Coordinator certification.

IRO-004-1 Requirement R2 stating "to pay particular attention to" is not clear, and is not measurable. The requirement is one facet of real-time monitoring, and impossible to measure objectively. The intent of this requirement is two-fold: to ensure that each Reliability Coordinator acts in the best interests of its interconnection, as a whole, and not based solely on conditions in its own area; and, to ensure that operations between Reliability Coordinator Areas are coordinated. The requirements in IRO-014, IRO-015, and IRO-016 are aimed at ensuring that Reliability Coordinators coordinate their actions with one another and act in the best interest of the interconnection as a whole as follows:

IRO-014-1, Requirement R1 requires the Reliability Coordinators to work together to develop operating processes, procedures and plans to identify what actions they will take when faced with a variety of predictable operating scenarios, including situations where the actions within one Reliability Coordinator Area impact another Reliability Coordinator Area (R1.1.6). Thus, if a particular geographic region has an issue with loop flows or parallel flows that require coordinated action between two or more Reliability Coordinator Areas, IRO-014-1 requires the

involved Reliability Coordinators to have a specific operating process, procedure or plan that identifies what actions each will take when faced with that scenario.

IRO-015-1 requires the Reliability Coordinators to communicate with one another under specified conditions. IRO-015-1, Requirement R1.1 requires the Reliability Coordinator to make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas.

IRO-016-1 was written shortly after the August 2003 blackout and requires that, if Reliability Coordinators are faced with a situation where there is a difference of opinion as to whether there is an operating issue, both Reliability Coordinators must act as though the problem exists (R1.1.2). Similarly, if the Reliability Coordinators cannot agree on the best solution to an operating issue, then the involved Reliability Coordinators must act in accordance with the most conservative of the solutions identified (R1.3). In this manner, the requirements force both Reliability Coordinators to act in a manner that best protects reliability.

In addition, under the Functional Model, it is the Transmission Operator that is responsible for the real-time operation of the transmission system. The Reliability Coordinator provides oversight of the Transmission Operator's actions, directing alternate or additional actions when needed. Under TOP-002-2, each Transmission Operator is required to coordinate its operations with neighboring Transmission Operators (R4), is required to have an accurate system model (R19) for conducting system analyses, and each Transmission Operator is required to share the results of analyses with its neighboring Transmission Operators (R11). Through the use of accurate models and as a result of coordinating real-time operations and conducting and sharing its operational analyses, the Transmission Operators should have an understanding of the impact one system's operations has on its neighbor's system. Because PER-005-1 requires both

the Reliability Coordinator and Transmission Operator to have training focused on the reliability-related tasks assigned to their operating personnel, these Reliability Coordinators and Transmission Operators are required to have evidence that their real-time operating personnel are competent to address issues such as parallel flows.

The new requirements in the IRO standards focus specifically on IROs, in support of the Functional Model division of duties, and are inclusive of any reliability implications due to parallel flows. Under the Functional Model, the Reliability Coordinator is the functional entity with primary responsibility for IROs and the Transmission Operator is the functional entity with primary responsibility for SOLs. The “tasks” associated with the responsibilities for SOLs and the subset of SOLs that are IROs are shared between the Reliability Coordinator and the Transmission Operator. While the Transmission Operator has primary responsibility for developing the SOLs within its Transmission Operator Area, the Transmission Operator may request the assistance of its Reliability Coordinator in developing these SOLs. It is the Reliability Coordinator that is held responsible for ensuring that IROs are developed for its Reliability Coordinator Area in accordance with a methodology developed by the Reliability Coordinator. The Transmission Operator must share its SOLs with its Reliability Coordinator, and the Reliability Coordinator must share any SOLs it develops with its Transmission Operator. The Reliability Coordinator monitors the status of some, but not all, SOLs. The Reliability Coordinator’s visualization tools are not expected to display all SOLs within the Wide-Area that the Reliability Coordinator monitors as this would mix SOLs that have little impact on the bulk power system with those SOLs that are associated with facilities that are important to the bulk power system. The Reliability Coordinator’s visualization tools are expected to display the real-time status of parameters against all IROs that the Reliability Coordinator monitors and also

display the subset of SOLs associated with facilities that are most critical to the portions of the bulk power system that are monitored by the Reliability Coordinator.

These proposed Reliability Standards should not imply that the Reliability Coordinator will not look at its future operations with respect to specific SOLs. Reliability Coordinators must do this to ensure that their Transmission Operators are taking actions at appropriate times, but the primary responsibility for SOLs rests with the Transmission Operators. Having two entities with the same primary responsibility is not supported by the Functional Model. The Reliability Coordinator retains the overall visibility to all operations within its Wide-Area view, including some SOLs, although the Transmission Operator is primarily responsible for actions related to SOLs.

| New Standard   | Modification to Associated Approved Standards            |
|--|--|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | EOP-001-0 — Emergency Operations Planning<br>§ Retire R2 |

**EOP-001-0**

**R2.** The Transmission Operator shall have an emergency load reduction plan for all identified IROLs. The plan shall include the details on how the Transmission Operator will implement load reduction in sufficient amount and time to mitigate the IROL violation before system separation or collapse would occur. The load reduction plan must be capable of being implemented within 30 minutes.

**IRO-009-1 R1.**

**R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs.

EOP-001-0, Requirement R2 should be retired. The Reliability Coordinator, not the Transmission Operator, is responsible for developing plans for mitigating IROLs. Under the Functional Model, the Transmission Operator is not required to have the capability of determining IROLs, a responsibility assigned clearly to the Reliability Coordinator. Mitigation

plans need to be implemented so that the instance of exceeding the IROL is mitigated within the IROL's  $T_v$ , which can be shorter than 30 minutes. Load reduction plans are just one approach to resolving an IROL.

This clarification of assignment to the Reliability Coordinator should not imply that the Transmission Operator is prohibited from having load reduction plans that can be implemented within 30 minutes. Rather, the Reliability Coordinator is responsible for having an action plan for each identified IROL that may include many options for mitigation. If an action plan includes load reductions, then the Reliability Coordinator would identify the actions needed, first, to prevent exceeding the IROL, and also have an action plan to identify actions to relieve that IROL when exceeded before reaching the IROL's  $T_v$ . If the Reliability Coordinator's analysis or assessment demonstrates that it may exceed or has exceeded an IROL, under IRO-008-1, Requirement R3, the Reliability Coordinator is required to share this information with the entities required to take action, and, if needed, the Reliability Coordinator is required to direct those entities to take those actions. The Transmission Operator is required to have load reduction plans that can be executed to meet specific plans under EOP-001-0, Requirements R3 and R4 and under EOP-003-1, Requirement R8 as follows:

**EOP-001-0**

**R3:** Each Transmission Operator and Balancing Authority shall:

- R3.1.** Develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity.
- R3.2.** Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system.
- R3.3.** Develop, maintain, and implement a set of plans for load shedding.
- R3.4.** Develop, maintain, and implement a set of plans for system restoration.



**EOP-001-0**

**R4:** Each Transmission Operator and Balancing Authority shall have emergency plans that will enable it to mitigate operating emergencies. At a minimum, Transmission Operator and Balancing Authority emergency plans shall include:

- R4.1.** Communications protocols to be used during emergencies.
- R4.2.** A list of controlling actions to resolve the emergency. Load reduction, in sufficient quantity to resolve the emergency within NERC-established timelines, shall be one of the controlling actions.
- R4.3.** The tasks to be coordinated with and among adjacent Transmission Operators and Balancing Authorities.
- R4.4.** Staffing levels for the emergency.

**EOP-003-1**

**R8:** Each Transmission Operator or Balancing Authority shall have plans for operator controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.

This combination of requirements results in the Reliability Coordinator having responsibility for developing action plans to prevent exceeding or the mitigating an IROL when exceeded. These plans may include load shedding within the T<sub>v</sub> timeframe that the Reliability Coordinator would coordinate with the Transmission Operators who are obligated to provide such load shedding support.

| New Standard   | Modification to Associated Approved Standards                                    |
|--|--|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | IRO-004-1 — Reliability Coordination – Operations Planning<br>§ Retire R3 and R6 |

**IRO-004-1**

- R3.** Each Reliability Coordinator shall, in conjunction with its Transmission Operators and Balancing Authorities, develop action plans that may be required, including reconfiguration of the transmission system, re-dispatching of generation, reduction or curtailment of Interchange Transactions, or reducing load to return transmission loading to within acceptable SOLs or IROLs.
- R6.** If the results of these studies indicate potential SOL or IROL violations, the Reliability Coordinator shall direct its Transmission Operators, Balancing Authorities and Transmission Service Providers to take any necessary action the Reliability Coordinator deems appropriate to address the potential SOL or IROL violation.

## **IRO-009-1**

- R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs.
- R2.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's Tv.
- R3.** When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures, or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL.

IRO-004-1, Requirement R3 should be retired. The use of the phrase, "in conjunction with" in this requirement is not supported by the responsibilities of the Reliability Coordinator in the Functional Model. Under the Functional Model, the Reliability Coordinator is responsible for "directing" actions. IRO-009-1 Requirements R1 and R2 require the Reliability Coordinator to have plans to prevent and mitigate instances of exceeding IROLs. Under some conditions, the Reliability Coordinator may not have time to 'coordinate' the development of these plans with all of its Transmission Operators and Balancing Authorities. The standard does not "preclude" coordination it just does not "require" coordination.

IRO-004-1, Requirement R6 should be also retired. IRO-009-1 Requirement R3 includes language that is more explicit than the language in IRO-004-1 Requirement R6: The phrase, "results of these studies" is not as specific as "when an assessment of actual or expected system conditions."

| New Standard   | Modification to Associated Approved Standards   |
|--|---|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | IRO-005-2 — Reliability Coordination — Current Day Operations<br>§ Retire R3, R5, R16, and R17;<br>§ Modify R9, R13 and R14 |

### **IRO-005-2**

- R3.** As portions of the transmission system approach or exceed SOLs or IROLs, the Reliability Coordinator shall work with its Transmission Operators and Balancing Authorities to evaluate and assess any additional Interchange Schedules that would violate those limits. If a potential or actual IROL violation cannot be avoided through proactive intervention, the Reliability Coordinator shall initiate control actions or emergency procedures to relieve the violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall ensure all resources, including load shedding, are available to address a potential or actual IROL violation.
- R5.** Each Reliability Coordinator shall identify the cause of any potential or actual SOL or IROL violations. The Reliability Coordinator shall initiate the control action or emergency procedure to relieve the potential or actual IROL violation without delay, and no longer than 30 minutes. The Reliability Coordinator shall be able to utilize all resources, including load shedding, to address an IROL violation.

### **IRO-009-1**

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

IRO-005-2, Requirement R3 should be retired. First, as written, this requirement should not lead the Reliability Coordinator to believe it has up to 30 minutes to relieve an IROL violation – but some IROLs have a  $T_v$  that is much shorter than 30 minutes. Next, the action plans the Reliability Coordinator is required to have under IRO-009-1 Requirement R1 should include consideration of all available actions, including Interchange Schedules, that is contemplated by IRO-005-2 Requirement R3.

IRO-005-2, Requirement R5 may incorrectly lead the Compliance Enforcement Authority to believe that the Reliability Coordinator has information to see all SOLs. Every facility in the Transmission Operator's area has SOLs, and the Transmission Operator provides its SOLs to its Reliability Coordinator, but the Reliability Coordinator is not required to monitor all these limits and may not have information to determine the cause of instances of exceeding these limits. Providing all SOLs to the Reliability Coordinator is not in the best interest of reliability, as some SOLs are associated with facilities that have only a marginal impact to the bulk power system. By maintaining visualization tools that focus on the most critical facilities, the Reliability Coordinator is better able to focus on those tasks that have the greatest impact on the bulk power system.

As written, IRO-005-2, Requirement R5 is unclear regarding whether the 30 minutes is the time the Reliability Coordinator has to take action, or the time the Reliability Coordinator has to return the system to a state where the IROL is no longer violated. In addition, the requirement implies that the Reliability Coordinator must determine the cause of the IROL before taking any action. However, this is not always possible, and in many cases would delay taking action to relieve the instance of exceeding the limit. The new requirement in IRO-009-1 is very clear that

the Reliability Coordinator must act without delay and must return the system to within the IROL in a timeframe that is within the IROL’s T<sub>v</sub>.

While the requirements in IRO-005-2 are “reactive” in nature, the requirements in the proposed IRO standards are “proactive” in that they require the Reliability Coordinator to look ahead and develop specific action plans to “prevent” as well as to “mitigate” any instance of exceeding an IROL that has been identified.

| New Standard   | Modification to Associated Approved Standards   |
|--|---|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | IRO-005-2 — Reliability Coordination — Current Day Operations<br>§ Retire R3, R5, R16, and R17;<br>§ Modify R9, R13 and R14 |

**IRO-005-2**

- R14.** Each Reliability Coordinator shall make known to Transmission Service Providers within its Reliability Coordinator Area, SOLs or IROLs within its wide-area view. The Transmission Service Providers shall respect these SOLs or IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.
- R16.** Each Reliability Coordinator shall confirm reliability assessment results and determine the effects within its own and adjacent Reliability Coordinator Areas. The Reliability Coordinator shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.
- R17.** When an IROL or SOL is exceeded, the Reliability Coordinator shall evaluate the local and wide-area impacts, both real-time and post-contingency, and determine if the actions being taken are appropriate and sufficient to return the system to within IROL in thirty minutes. If the actions being taken are not appropriate or sufficient, the Reliability Coordinator shall direct the Transmission Operator, Balancing Authority, Generator Operator, or Load-Serving Entity to return the system to within IROL or SOL.

**IRO-009-1**

- R3.** When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures, or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL.
- R4.** When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or

direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's  $T_v$ .

IRO-005-2, Requirement R14 should be revised, and the first sentence of IRO-005-2, Requirement R14 should be retired. Notifying the Transmission Service Provider of SOLs and IROLs is already addressed under FAC-014-1, Requirement R5.1. Additionally, the second sentence of Requirement R14 requires modification because the current requirement is not correct. The Transmission Service Provider should comply with **both** SOLs and IROLs. However, Requirement R14 as written implies that the Transmission Service Provider must comply with 'either' SOLs or IROLs. NERC therefore proposes that Requirement R14 be modified as follows:

**R14.** The Transmission Service Providers shall respect ~~these SOLs or~~ and IROLs in accordance with filed tariffs and regional Total Transfer Calculation and Available Transfer Calculation processes.

IRO-005-2, Requirement R16 should be retired. The drafting team determined that, as written, Requirement R16 is too vague to be measured. The intent of this requirement is presented more clearly in the proposed IRO-008-1 and IRO-009-1. The Reliability Coordinator is always obligated to act in the best interests of the interconnection, every day and under all conditions. IRO-014-1, IRO-015-1, and IRO-016-1 were developed to require that Reliability Coordinators act in specific ways that best serve the interests of the interconnection. IRO-014-1 requires Reliability Coordinators to develop operating procedures, processes and plans for a variety of predictable scenarios where the actions in one Reliability Coordinator's Area could impact another Reliability Coordinator's Area. By forcing the Reliability Coordinators to develop these 'joint' operating procedures, the requirement forces the Reliability Coordinators to study and agree to actions that best serve the bulk power system. Similarly, IRO-015-1 requires Reliability Coordinators to share real-time information with each another in support of ensuring

that the Reliability Coordinators have information needed for situational awareness of the bulk power system beyond their own Reliability Coordinator Areas. IRO-016-1 was developed following the August 2003 blackout and it requires Reliability Coordinators to take specific actions aimed at best protecting reliability in situations when those Reliability Coordinators have a difference of opinion regarding an operating scenario.

IRO-005-2, Requirement R17 should also be retired. The requirement assigns the Reliability Coordinator responsibility for operating within SOLs. However, this is the primary responsibility of the Transmission Operator. The Reliability Coordinator is responsible for ensuring that the Transmission Operator takes appropriate actions and will act or direct the Transmission Operator to act if needed. Additionally, the requirement can lead the Reliability Coordinator to believe it has up to 30 minutes to relieve an IROL violation – but some IROLs have a  $T_v$  that is shorter than 30 minutes, so the requirement is not technically sound.

| New Standard   | Modification to Associated Approved Standards   |
|--|---|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | IRO-005-2 — Reliability Coordination — Current Day Operations<br>§ Retire R3, R5, R16, and R17;<br>§ Modify R9, R13 and R14 |

**IRO-005-2**

**R9.** The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.

**IRO-009-1**

**R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs.

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

IRO-005-2, Requirement R9 should be modified. This requirement actually includes two requirements: one for coordinating outages, and one for coordinating the mitigation of IROLs and other limits. The drafting team is not proposing any modifications to the requirement for coordinating outages, but is proposing a change to the requirement for coordinating the mitigation of IROLs. The first sentence of IRO-005-2, Requirement R9 should be modified as shown below to eliminate the reference to "IROL." IRO-009-1 includes requirements to have and execute action plans to prevent and mitigate instances of exceeding IROLs. Therefore, if IRO-005-2, Requirement R9 were left unchanged, there would be two requirements addressing the same performance obligation.

- R9.** The Reliability Coordinator shall coordinate with Transmission Operators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, ~~IROL~~, CPS, or DCS violations. The Reliability Coordinator shall coordinate pending generation and transmission maintenance outages with Transmission Operators, Balancing Authorities, and Generator Operators as needed in both the real time and next-day reliability analysis timeframes.



| New Standard   | Modification to Associated Approved Standards   |
|--|---|
| IRO-009-1 — Reliability Coordination Actions to Operate within IROLs | IRO-005-2 — Reliability Coordination — Current Day Operations<br>§ Retire R3, R5, R16, and R17;<br>§ Modify R9, R13 and R14 |

### **IRO-005-2**

**R13.** Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or non-action in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the Interconnection. In instances where there is a difference in derived limits, the Reliability Coordinator and its Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.

### **IRO-009-1**

- R1.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) that can be implemented in time to prevent exceeding those IROLs.
- R2.** For each IROL (in its Reliability Coordinator Area) that the Reliability Coordinator identifies one or more days prior to the current day, the Reliability Coordinator shall have one or more Operating Processes, Procedures, or Plans that identify actions it shall take or actions it shall direct others to take (up to and including load shedding) to mitigate the magnitude and duration of exceeding that IROL such that the IROL is relieved within the IROL's  $T_v$ .
- R3.** When an assessment of actual or expected system conditions predicts that an IROL in its Reliability Coordinator Area will be exceeded, the Reliability Coordinator shall implement one or more Operating Processes, Procedures, or Plans (not limited to the Operating Processes, Procedures, or Plans developed for Requirements R1) to prevent exceeding that IROL.
- R4.** When actual system conditions show that there is an instance of exceeding an IROL in its Reliability Coordinator Area, the Reliability Coordinator shall, without delay, act or direct others to act to mitigate the magnitude and duration of the instance of exceeding that IROL within the IROL's  $T_v$ .
- R5.** If unanimity cannot be reached on the value for an IROL or its  $T_v$ , all Reliability Coordinators who monitor that Facility (or group of Facilities) shall, without delay, use the most conservative of the values (the value with the least impact on reliability) under consideration.

IRO-005-2, Requirement R13 should be modified. IRO-005-2, Requirement R13 has two requirements – one requirement to direct actions to ensure SOLs and IROLs are not exceeded that impact other Reliability Coordinator Areas, and one requirement to operate to the most limiting parameter in situations where there is disagreement on a limit. The first requirement in IRO-015, Requirement R13 assumes that the Reliability Coordinator can see all SOLs, and this is not always true. The Reliability Coordinator is responsible for seeing IROLs and controlling operations within its Reliability Coordinator Area so as to prevent instances of exceeding IROLs, but is not responsible for seeing all SOLs. Under the Functional Model, operating within SOLs is primarily assigned to the Transmission Operator.

IRO-014-1, Requirement R1 requires the Reliability Coordinators to work together to develop operating processes, procedures, and plans to identify what actions they will take when faced with a variety of predictable operating scenarios, including situations where the actions within one Reliability Coordinator Area impact another Reliability Coordinator Area (R1.1.6).

IRO-015-1 requires the Reliability Coordinators to follow the procedures, processes, and plans specified under IRO-014-1 and to communicate with one another under specified conditions. IRO-015-1, Requirement R1.1 specifically requires the Reliability Coordinator to make notifications to other Reliability Coordinators of conditions in its Reliability Coordinator Area that may impact other Reliability Coordinator Areas.

The second part of IRO-005-2, Requirement R13 requires entities to operate to the most limiting parameter when there is a difference in derived limits. This should be revised so that it is not applicable to the Reliability Coordinator. IRO-009-1, Requirement R5 has a similar requirement that is applicable totally to the Reliability Coordinator and focused solely on IROLs.

If IRO-005-2, Requirement R13 is left unchanged, there will be more than one requirement addressing the same performance expectation.

Accordingly, IRO-005-2 Requirement R13 should be modified as follows:

**R13.** ~~Each Reliability Coordinator shall ensure that all Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities operate to prevent the likelihood that a disturbance, action, or non-action in its Reliability Coordinator Area will result in a SOL or IROL violation in another area of the Interconnection.~~ In instances where there is a difference in derived limits, the ~~Reliability Coordinator and its~~ Transmission Operators, Balancing Authorities, Generator Operators, Transmission Service Providers, Load-Serving Entities, and Purchasing-Selling Entities shall always operate the Bulk Electric System to the most limiting parameter.

| New Standard  | Modification to Associated Approved Standards                    |
|---|--|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | IRO-002-1 — Reliability Coordination — Facilities<br>§ Retire R2 |

**IRO-002-1**

**R2.** Each Reliability Coordinator shall determine the data requirements to support its reliability coordination tasks and shall request such data from its Transmission Operators, Balancing Authorities, Transmission Owners, Generation Owners, Generation Operators, and Load-Serving Entities, or adjacent Reliability Coordinators.

**IRO-010-1a**

**R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:

- R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.
- R1.2.** Mutually agreeable format.
- R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
- R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

**R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator.

IRO-002-1, Requirement R2 should be retired. IRO-010-1a requires the Reliability Coordinator to develop and distribute a data specification to ensure that entities provide data as needed to support monitoring, analyses and assessments. The proposed requirements are more explicit than the associated requirement in IRO-002-1. Therefore, IRO-002-1 should be retired.

| New Standard  | Modification to Associated Approved Standards                                    |
|---|--|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | IRO-004-1 — Reliability Coordination — Operations Planning<br>§ Retire R4 and R5 |

**IRO-004-1**

**R4.** Each Transmission Operator, Balancing Authority, Transmission Owner, Generator Owner, Generator Operator, and Load-Serving Entity in the Reliability Coordinator Area shall provide information required for system studies, such as critical facility status, Load, generation, operating reserve projections, and known Interchange Transactions. This information shall be available by 1200 Central Standard Time for the Eastern Interconnection and 1200 Pacific Standard Time for the Western Interconnection.

**R5.** Each Reliability Coordinator shall share the results of its system studies, when conditions warrant or upon request, with other Reliability Coordinators and with Transmission Operators, Balancing Authorities, and Transmission Service Providers within its Reliability Coordinator Area. The Reliability Coordinator shall make study results available no later than 1500 Central Standard Time for the Eastern Interconnection and 1500 Pacific Standard Time for the Western Interconnection, unless circumstances warrant otherwise.

**IRO-010-1a**

**R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:

**R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

**R1.2.** Mutually agreeable format.

**R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).

**R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

**R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. The data and information is limited to data needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

IRO-004-1, Requirement R4 should be retired. IRO-004-1 only identifies a fraction of the reliability-related data needed by the Reliability Coordinator either for its own purposes or for sharing with other operating entities. By listing some, but not all types of data and information needed, some entities may default to developing a data specification that only includes those items identified in the standard, and not necessarily that providing for an “adequate level of reliability.” When there is a default set of criteria, the Compliance Enforcement Authority is expected to seek evidence limited to that default set of criteria, in effect driving performance to the lowest common denominator. The IRO drafting team considered developing a more comprehensive list of data and information but determined that any list developed would not meet the needs of all Reliability Coordinators.

IRO-010-1a is based on the philosophy that the Reliability Coordinator needs to know, in advance, what data and information it needs and what data and information it needs to share with other reliability entities. The periodicity for collecting the data is addressed in IRO-010-1a, Requirement R1.3.

IRO-004-1, Requirement R5 should also be retired. There are two different requirements in IRO-004-1. Requirement R5 requires that data be shared with other Reliability Coordinators and the Reliability Coordinator to share data with entities in its Reliability Coordinator Area.

The first part of IRO-004-1, Requirement R5 is replaced by the proposed Requirement R3 in IRO-010-1a, requiring Reliability Coordinators to provide data to other Reliability Coordinators. The second part of the requirement in IRO-004-1, Requirement R5 is replaced by IRO-008-1, Requirement R3, requiring the Reliability Coordinator to share the results of its analyses with entities within its Reliability Coordinator Area, if those analyses meet certain conditions. Because the new requirement is more explicit in identifying the specific conditions under which the results of the analyses is mandated, IRO-004-1, Requirements R4 and R5 should be retired.

| New Standard  | Modification to Associated Approved Standards                                |
|---|--|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | IRO-005-2 — Reliability Coordination — Current Day Operations<br>§ Retire R2 |

**IRO-005-2**

**R2.** Each Reliability Coordinator shall be aware of all Interchange Transactions that wheel through, source, or sink in its Reliability Coordinator Area, and make that Interchange Transaction information available to all Reliability Coordinators in the Interconnection.

**IRO-010-1a**

**R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:

- R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.
- R1.2.** Mutually agreeable format.
- R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
- R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

IRO-005-2, Requirement R2 should be retired. IRO-005-2, Requirement R2 mandates that the Reliability Coordinator “be aware of” Interchange Transactions. This requirement, as written, is not measurable as it is not possible to measure how an entity is “aware of” specific information. In addition, the e-tag system that has been implemented no longer requires the Reliability Coordinator to collect and relay interchange information to other entities. Thus, the implementation of the e-tag system replaced the need for this requirement. In addition, if a Reliability Coordinator needs this information, the Reliability Coordinator can add this item to the list of data and information on its data specification under IRO-010-1a Requirement R1.

| New Standard  | Modification to Associated Approved Standards            |
|---|--|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | TOP-003-0 — Planned Outage Coordination<br>§ Modify R1.2 |

**TOP-003-0**

**R1.** Generator Operators and Transmission Operators shall provide planned outage information.

**R1.1.** Each Generator Operator shall provide outage information daily to its Transmission Operator for scheduled generator outages planned for the next day (any foreseen outage of a generator greater than 50 MW). The Transmission Operator shall establish the outage reporting requirements.

**R1.2.** Each Transmission Operator shall provide outage information daily to its Reliability Coordinator, and to affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. The Reliability Coordinator shall establish the outage reporting requirements.

**IRO-010-1a**

**R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:

- R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.
- R1.2.** Mutually agreeable format.
- R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).
- R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.
- R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator.
- R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. The data and information is limited to data needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

TOP-003-0, Requirement R1.2 should be modified. TOP-003-0, Requirement R1.2 includes two distinctly different activities – a requirement for the Transmission Operator to provide other entities with daily outage information, and a requirement for the Reliability Coordinator to establish outage reporting requirements. Both parts of TOP-003-0 Requirement R1.2 are duplicated in the proposed IRO-010-1a standard.

IRO-010-1a, Requirement R1 requires the Reliability Coordinator to specify what data and information it needs, as well as the frequency and format for providing that data and information. Because the Reliability Coordinator needs outage data for modeling and analysis, the specification will include outage data.

IRO-010-1a, Requirement R3 requires entities to provide data and information to the Reliability Coordinator in accordance with that Reliability Coordinator's specifications. Outage data is one of the types of data that is expected to be identified on the Reliability Coordinator's



documented data specification. If TOP-003-0 Requirement R1.2 is not modified, it will be redundant with IRO-010-1a, Requirement R3.

TOP-003-0, Requirement R1.2 should therefore be modified as follows:

**R1.2** Each Transmission Operator shall provide outage information daily to ~~its Reliability Coordinator, and to~~ affected Balancing Authorities and Transmission Operators for scheduled generator and bulk transmission outages planned for the next day (any foreseen outage of a transmission line or transformer greater than 100 kV or generator greater than 50 MW) that may collectively cause or contribute to an SOL or IROL violation or a regional operating area limitation. ~~The Reliability Coordinator shall establish the outage reporting requirements.~~

| New Standard  | Modification to Associated Approved Standards  |
|---|--|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | TOP-005-1 — Operational Reliability Information<br>§ Retire R1 and R1.1<br>§ Modify Attachment 1 |

**TOP-005-1**

**R1.** Each Transmission Operator and Balancing Authority shall provide its Reliability Coordinator with the operating data that the Reliability Coordinator requires to perform operational reliability assessments and to coordinate reliable operations within the Reliability Coordinator Area.

**R1.1** Each Reliability Coordinator shall identify the data requirements from the list in Attachment 1<sup>13</sup>-TOP-005-0 “Electric System Reliability Data” and any additional operating information requirements relating to operation of the bulk power system within the Reliability Coordinator Area.

**IRO-010-1a**

**R1.** The Reliability Coordinator shall have a documented specification for data and information to build and maintain models to support Real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to prevent instability, uncontrolled separation, and cascading outages. The specification shall include the following:

**R1.1.** List of required data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

**R1.2.** Mutually agreeable format.

<sup>13</sup> This Attachment lists the types of data that Reliability Coordinators, Balancing Authorities, and Transmission Operators are expected to provide, and are expected to share with each other.

**R1.3.** Timeframe and periodicity for providing data and information (based on its hardware and software requirements, and the time needed to do its Operational Planning Analyses).

**R1.4.** Process for data provision when automated Real-Time system operating data is unavailable.

**R2.** The Reliability Coordinator shall distribute its data specification to entities that have Facilities monitored by the Reliability Coordinator and to entities that provide Facility status to the Reliability Coordinator.

**R3.** Each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner shall provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship. The data and information is limited to data needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

TOP-005-1, Requirement R1 and R1.1 should be retired. The intent of TOP-005-1, Requirement R1 is for the Transmission Operator to provide the Reliability Coordinator with the data and information the Reliability Coordinator needs to perform its reliability-related tasks. The intent of TOP-005-1, Requirement R1.1 is for the Reliability Coordinator to have a specification for the data and information it needs to perform its reliability-related tasks. Combining these two very different activities in a single requirement is not appropriate as the requirements occur in different timeframes and involve different operating entities. In addition, TOP-005-1, Requirement R1, as written, implies that the Reliability Coordinator will limit its use of the data and information it collects to operations within the Reliability Coordinator Area. This does not support the Functional Model which requires the Reliability Coordinator to monitor the “Wide-Area” – an area much bigger than the Reliability Coordinator Area. Each Reliability Coordinator is expected to coordinate the activities within its Reliability Coordinator Area with other Reliability Coordinators. This coordination includes exchange of data. IRO-014-1 and IRO-015-1 are just two examples of standards with requirements for Reliability Coordinators to share data and information with other Reliability Coordinators. IRO-014-1 requires Reliability

Coordinators to develop operating procedures, processes, and plans for a minimum of six types of activities where coordination between Reliability Coordinators is required. These topics include, among other things, identification of the information to be exchanged between Reliability Coordinators under specified conditions (R1.1.1) and coordination of information needed for reliability assessments (R1.1.5).

Similarly, IRO-015-1, Requirement R1 requires Reliability Coordinators to follow the procedures, plans, and process specified in IRO-014-1 by exchanging reliability-related information with other Reliability Coordinators. This requirement was aimed at ensuring that the Reliability Coordinators have information needed for situational awareness of the bulk power system beyond their own Reliability Coordinator Areas.

Under IRO-010-1a each Reliability Coordinator must document what data and information it needs and which entities must provide that data. The data needed by the Reliability Coordinator is required for reliability assessments and for real-time monitoring. Several entities, beyond the Transmission Operator and Balancing Authority (the only responsible entities identified in TOP-005-1 identified as having a requirement to provide the Reliability Coordinator with data) need to provide data to the Reliability Coordinator. Under the Functional Model, the Reliability Coordinator collects data and information not just from Transmission Operators and Balancing Authorities, but also from Generator Operators, Load-Serving Entities, Transmission Owners, and Generator Owners.

TOP-005-1 has other requirements that are not recommended for retirement. These requirements and TOP-005-0 Attachment 1 are used to support these other requirements. The first paragraph of Attachment 1 for TOP-005-1 includes a statement that the attachment identifies data that the Reliability Coordinator is expected to provide and share with others. This

should be modified as shown below to clarify that the intent of the information sharing, pertaining to the retained requirements in TOP-005-1, is between Balancing Authorities and Transmission Operators. The Reliability Coordinator’s requirement to share data with other Reliability Coordinators is addressed in IRO-010-1a Requirement R3.

This Attachment lists the types of data that ~~Reliability Coordinators~~, Balancing Authorities, and Transmission Operators are expected to provide, and are expected to share with ~~each other~~ **Balancing Authorities and Transmission Operators.**

| New Standard  | Modification to Associated Approved Standards           |
|---|---|
| IRO-010-1a — Reliability Coordination Data Specification and Collection | TOP-006-1 — Monitoring System Conditions<br>§ Modify R4 |

**TOP-006-1**

- R4.** Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system’s near-term load pattern.

**IRO-010-1a**

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

needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments.

TOP-006-1, Requirement R4 should be modified. The information identified in TOP-006-1 Requirement R4 is not inclusive, and is addressed more globally for the Reliability Coordinator in IRO-010-1a Requirements R1 and R3. The modification should be limited to removal of the Reliability Coordinator as a responsible entity.

#### **TOP-006-1**

- R4.** Each ~~Reliability Coordinator~~, Transmission Operator, and Balancing Authority shall have information, including weather forecasts and past load patterns, available to predict the system's near-term load pattern.

## **VI. SUMMARY OF THE RELIABILITY STANDARD DEVELOPMENT PROCEEDINGS**

### **a. Development History**

The project that resulted in the development of the IRO-008-1 — Reliability Coordinator Operational Analyses and Real-time Assessments, IRO-009-1 — Reliability Coordinator Actions to Operate Within IROs, and IRO-010-1 — Reliability Coordinator Data Specification and Collection was initiated through a Standards Authorization Request in April 2002, well before the development of “Version 0” Reliability Standards. Notably, ten drafts of the standards were prepared and posted in the development of the proposed standards, which were balloted and approved by stakeholders and approved by the NERC Board of Trustees in October 2008.

From 2005 to 2007, the drafting team was on hold due to the linkages of the IRO standards with the FAC-010-1, FAC-011-1, and FAC-014-1 standards that were under development at that time. Upon completion and subsequent approval of the aforementioned FAC standards in 2007, the team re-engaged to finalize the IRO standards. As such, development activity pre-dating 2007 is acknowledged, but the discussion on the development of

the IRO standards contained herein focuses on that occurring from 2007 forward, after the team re-engaged.

Draft seven of the proposed IRO standards was posted for a 45-day comment period from January 2, 2007 to February 15, 2007, just prior to the issuance of FERC Order No. 693. There were 15 sets of comments, including comments from more than 59 individuals, representing over 39 companies, and 8 of the 10 industry segments.

The IRO Standard Drafting Team made conforming changes to the drafted standards and believed they had achieved the industry consensus needed to process through a ballot. The team requested, and the Standards Committee approved, the standards (draft 8) for a 30-day pre-ballot posting that began March 22, 2007. However, Order No. 693 was issued and resulted in the need for the team to evaluate the impacts of FERC's directives. The proposed standards were therefore removed from the pre-ballot window. In addition, the team was interested in FERC's then pending ruling on the FAC standards as these are complementary standard sets to the IRO standards. FERC ruled on the FAC standards in December 2007.

After making additional improvements for clarity that resulted from considering this "new" information available in 2007, the drafting team posted the standards (draft 9) for a 30-day comment period from March 26, 2008 through April 25, 2008. During this last posting for comments, there were 15 sets of comments, including comments from more than 100 individuals, representing over 40 companies, and 7 of the 10 industry segments.

Based on the comments received from stakeholders and FERC staff, and the drafting team's consideration of those comments, the drafting team made the following modifications to the standards:

### **IRO-008-1**

- Added clarifying language to the definition of Operational Planning Analysis to clarify the analysis may be performed a day ahead or as much as 12 months ahead of real time.
- Added clarifying language to the VSLs for R2 to identify the VSLs are based on the review of a specific sample size.

### **IRO-009-1**

- The drafting team removed 4.2 from the Applicability Section (limited applicability to the IROLs associated with contingencies identified in FAC-010 and FAC-014) of the standard because it duplicated information already included in the requirements.
- Modified R1–R5 and associated measures and VSLs to clarify the action plans and actions in this standard are limited to those associated with IROLs in the Reliability Coordinator’s own Reliability Coordinator Area. IRO-016 addresses coordination when there is an IROL in another Reliability Coordinator’s Area, or when there is a need to coordinate development and execution of action plans involving more than one Reliability Coordinator.
- Added a parenthetical phrase to R3 to clarify the Reliability Coordinator may use any action plan at its disposal to prevent or mitigate an instance of exceeding an IROL.
- Added a parenthetical phrase to R5 to clarify “the most conservative value” is the value that has the least impact on reliability.
- Eliminated the “high” VSL for R3 in support of stakeholder comments indicating the requirement is aimed at actions, not at preventing an instance of exceeding an IROL.
- Eliminated one of the two “severe” VSLs for R5 in support of stakeholder comments indicating the two VSLs were redundant.

### **IRO-010-1**

- Modified R1 and R1.1 (in support of comments from FERC staff and stakeholders) by adding words from the purpose and from R3 to clarify the intent of the requirement is to collect data and information needed by the Reliability Coordinator to support Real-Time Monitoring, Operational Planning Analyses, and Real-Time Assessments to prevent instability, uncontrolled separation, and cascading outages.
- Added a data retention period for R3 based on stakeholder comments. This data retention period matches the period recommended by the Compliance Program.
- Revised the VSLs for R1 by reversing the VSLs for “Lower” and “Moderate” based on stakeholder comments indicating missing the “mutually agreeable format” was less severe than missing the process for data provision when automated Real-Time system operating data is unavailable.

### **Implementation Plan:**

- Removed the recommendation to retire Attachment 1 in TOP-005-2 because stakeholders identified the attachment is still needed to support R3 in TOP-005-2.

### **Definition of Operational Planning Analysis**

- Added language to clarify the Operational Planning Analysis can be performed a day ahead or as much as 12 months ahead.

The drafting team did not adopt the following proposed modifications from stakeholders or from FERC staff:

- Some commenters, who agreed monitoring is a supporting activity, indicated a concern that removing the monitoring requirement may impact other requirements in other standards that rely upon monitoring. The drafting team did not return the monitoring requirements to the standards. Entities that do not have real-time system operators actively monitoring the status of the bulk power system cannot achieve the performance-related requirements in this standard and in other standards.
- Some commenters wanted the “Severe” VSL for failing to resolve an IROL within the IROL’s  $T_v$  to be a “High” VSL when the Reliability Coordinator took action to resolve the IROL but was not successful. The drafting team believes this change would violate the guidelines for setting VSLs. The intent of the requirement is not met if the IROL is not resolved within the IROL  $T_v$ . The guidelines for setting VSLs indicate if the intent of the requirement is mostly or totally unmet, then the VSL should be “Severe.”
- FERC staff interpreted one of the directives in Order No. 693 as requiring the Reliability Coordinator to have action plans to implement if a contingency occurs during the system adjustment period following an instance of exceeding an IROL, but before the IROL  $T_v$  has been reached and before the system has been returned to a stable state. The drafting team did not interpret the directive (paragraph 1601 of Order No. 693) in this manner. The IRO standards require an action plan for all IROLs identified a day or more ahead of the current day for all IROLs within the Reliability Coordinator’s Reliability Coordinator Area. The drafting team does not think it is practical to develop action plans for all possible contingencies that could occur during the adjustment period while the system is being returned to a stable state.
- There were several commenters who indicated the VRFs for requirements associated with having action plans should be modified from “Medium” to “High.” The drafting team had posted the VRFs for comment, and the same commenters had earlier agreed the VRFs should be “Medium.” Because the drafting team had achieved what appeared to be consensus on the VRFs in the earlier posting, the drafting team did not make the requested change. Failure to have an action plan should not, by itself, cause or contribute to uncontrolled separation, instability, or cascading.



The proposed standards (final draft 10) and associated definition were moved to a 30-day pre-ballot review period that commenced on June 20, 2008. Initial ballots were conducted from July 21 to July 30, 2008 and recirculation ballots were conducted from August 12, 2008 to August 21, 2008. As listed below, all ballots achieved a quorum and a high-weighted affirmative-approval percentage. For all three standards, the initial ballots included some negative ballots submitted with comments, which initiated the need for recirculation ballots. Some balloters listed more than one reason for their negative ballot. A small number of balloters changed votes from the initial to recirculation ballots; votes moved in both directions but led to a slightly decreased approval percentage.

| Standard  | Initial Ballots |          |           | Recirculation Ballots |          |           |
|-----------|-----------------|----------|-----------|-----------------------|----------|-----------|
|           | Quorum          | Approval | Negatives | Quorum                | Approval | Negatives |
| IRO-008-1 | 92.67           | 91.71    | 16        | 93.72                 | 89.49    | 22        |
| IRO-009-1 | 92.63           | 89.44    | 19        | 93.68                 | 86.53    | 27        |
| IRO-010-1 | 92.71           | 88.40    | 23        | 93.75                 | 85.95    | 30        |

The reasons cited for the negative ballots include the following:

**IRO-008-1, IRO-009-1 and IRO-010-1**

- One commenter mentioned the standards introduce new terms that are not defined in the NERC Glossary: “Operations Planning,” “Same Day Operations,” and “Real-time Operations.”

**IRO-008-1**

- Two balloters suggest instead of retiring IRO-004-1, Requirement R2, it should be moved to IRO-008-1; balloters indicated this may clarify the “unacceptable or undue burden” criteria.
- One balloter indicated the revised IRO-008-1, Requirement R1 language does not adequately address the need for the Reliability Coordinator to pay attention to how the actions it takes for its area can affect neighboring Reliability Coordinator areas; the balloter recommends language addressing this be added back to the standard.
- Five balloters indicated “the SDT has taken away the ability of entities to obtain study data from the Reliability Coordinator unless the entities area is specifically expected to take actions for an IROL. The current standard says that we may obtain this data upon

request at any time. Entities should be allowed to obtain data from the Reliability Coordinator upon request as they have now.”

- One balloter believes allowing next-day analyses of the expected system conditions to take place as many as 12 months ahead is too long.

#### **IRO-009-1**

- Three balloters believe the references directing the Transmission Operator, Balancing Authority, and Transmission Service Provider to take actions should remain.
- One balloter agreed with R4 that the operator should act without delay to mitigate the event but was concerned that this five-minute documentation requirement could distract the operator.
- Seven balloters did not agree with the removal of the references to coordinating with the Transmission Operator and Balancing Authority; one balloter recommended that language be added acknowledging coordination must take place during the Operations Planning Time Horizon.
- One balloter believed the revised language does not make it sufficiently clear the Balancing Authority and Transmission Operator in conjunction with the Reliability Coordinator need to be involved in the development of IROL mitigation plans for their systems.
- Two balloters indicated the standard does not direct the Reliability Coordinator to inform or communicate with facilities that may be part of plans or procedures for an IROL violation forecast, which could invalidate the plans or procedures the Reliability Coordinator is putting in place.
- One balloter indicated Requirements R1 and R2 contradict each other, implying that Requirement R2 allows for a violation of Requirement R1. “R1 states ‘to prevent exceeding those IROLs,’ while R2 states ‘to mitigate the magnitude and duration of exceeding that IROL’.”
- Two balloters disagreed with the revisions to Requirement R3.

#### **IRO-010-1**

- Seven balloters believe the proposed replacement requirements (IRO-010-1, Requirements R1, R2, and R3; IRO-008-1, Requirement R3) take away the ability of entities to obtain study data from the Reliability Coordinator unless entities are specifically expected to take actions for an IROL. The balloters state the current standard allows a data request at any time and believe this provision should remain.
- Four balloters believe TOP-003-0 should remain as it stands, stating that having the requirement to report outage data to the Reliability Coordinator in two places is better than not having it in TOP-003-0.
- Five balloters suggested interchange transaction data should be added to the new IRO-010-1, Requirement R1.

- Nine balloters indicated, either generally or specifically to standards and requirements, the Reliability Coordinator should still be required to share data with the Transmission Operators and Balancing Authorities.
  - § Four balloters agree data requirements will be more detailed in the new standard, but stated information should not be lost by removing the Reliability Coordinator from TOP-005-1, Attachment 1.
  - § Four balloters disagree with removing the Reliability Coordinator from TOP-006-1, Requirement R4.
- Three balloters do not believe the IRO-010-1, Section C.M3 text is sufficient to be able to know what is adequate to confirm data were provided, particularly continually updated ICCP data used for situational awareness and online reliability tools.
- Three balloters suggested IRO-010-1 tie the specification of data and information requirements solely to the needs for monitoring and analyzing the control of IROLs.
- One balloter indicated the proposed standard allows for the Reliability Coordinator to ask for the addition of a significant amount of SCADA installations at the expense of the Transmission Owners in transmission areas that are not pertinent to the purpose of IRO-010-1.
- One balloter indicated the phrase “with which it has a reliability relationship” lacks clarity.
- Two balloters indicated the wording change in Requirement R1 from Real-Time Monitoring to Real-time monitoring is inconsistent with other references in the standard.
- AESO indicated it was “concerned the data the RC may decide to be required to be provided may be deemed to be confidential as per laws in Alberta, and hence the AESO will not be allowed by law to provide those to the RC.”

In response to these comments, the drafting team made the following clarifying changes to the standards before the recirculation ballot:

- The drafting team corrected the typographical error in the red line version of IRO-004 — it showed “R7” instead of “R1”.
- The drafting team also updated the references in the measures for IRO-005 to ensure they reference the correct requirements, using the new requirement numbers.

The drafting team did not make any other modifications based on comments submitted with the initial ballot for this standard. The standards proceeded through the recirculation ballot with the results as provided above.

## **VII. SUMMARY OF PROCEEDINGS FOR INTERPRETATION OF IRO-010-1a**

All persons who are directly or materially affected by the reliability of the North American bulk power system are permitted to request an interpretation of the Reliability Standard, as discussed in NERC's *Reliability Standards Development Procedure*. When requested, NERC will assemble a team with the relevant expertise to address the interpretation request and, within 45 days, present a formal interpretation for industry ballot. If approved by the ballot pool and the NERC Board of Trustees, the interpretation is appended to the Reliability Standard and filed with the applicable governmental authorities, to be made effective when approved. When the affected Reliability Standard is next revised using the Reliability Standards Development Process, the interpretation will then be incorporated into the Reliability Standard. In this case, because the interpretation for IRO-010-1 was completed before the filing of IRO-010-1, NERC includes the development discussion of the interpretation in this section and requests approval of the IRO-010-1 standard as interpreted, labeled as IRO-010-1a in **Exhibit E**.

The formal interpretation set out in **Exhibit E** has been developed and approved by industry stakeholders using NERC's *Reliability Standards Development Procedure*; and approved by the NERC Board of Trustees on August 5, 2009. IRO-010-1 — Reliability Coordinator Data Specification and Collection is designed to prevent instability, uncontrolled separation, or cascading outages that adversely impact the reliability of the interconnection by mandating that the Reliability Coordinator have the data it needs to monitor and assess the operation of its Reliability Coordinator Area. In Requirement R1, the Reliability Coordinator shall have a documented specification for data and information in a mutually agreeable format (as required by Requirement R1.2) to build and maintain models to support real-time monitoring, Operational Planning Analyses, and Real-time Assessments of its Reliability Coordinator Area to

prevent instability, uncontrolled separation, and cascading outages. Requirement R3 requires each Balancing Authority, Generator Owner, Generator Operator, Interchange Authority, Load-serving Entity, Reliability Coordinator, Transmission Operator, and Transmission Owner to provide data and information, as specified, to the Reliability Coordinator(s) with which it has a reliability relationship.

The WECC Reliability Coordination Subcommittee requested clarification on:

1. the type of data to be supplied to the Reliability Coordinator;
2. which entities are ultimately responsible for ensuring data are provided; and,
3. what actions are expected of the Reliability Coordinator regarding a “mutually acceptable format.”

The interpretation team provided the following clarifications:

- The data to be supplied in Requirement R3 applies to the documented specification for data and information referenced in Requirement R1.
- The intent of Requirement R3 is for each responsible entity to ensure that its data and information (as stated in the documented specification in Requirement R1) are provided to the Reliability Coordinator. Another entity may provide that data or information to the Reliability Coordinator on behalf of the Responsible Entity, but the responsibility remains with the Responsible Entity. There is neither intent nor obligation for any entity to compile information from other entities and provide it to the Reliability Coordinator.
- Requirement R1.2 mandates that the parties will reach a mutual agreement with respect to the format of the data and information. If the parties can not mutually agree on the format, it is expected that they will negotiate to reach agreement or enter into dispute resolution to resolve the disagreement.

The initial ballot on the interpretation was conducted from April 22, 2009 to May 1, 2009, and achieved a quorum of 88.64 percent with a weighted affirmative approval of 84.77 percent. There were 24 negative ballots submitted for the initial ballot, and 16 of those ballots included a comment, which initiated the need for a recirculation ballot. The recirculation ballot was conducted from May 26, 2009 to June 5, 2009, and achieved a quorum of 90.45 percent with

a weighted affirmative approval of 85.76 percent. There were 22 negative ballots submitted for the recirculation ballot, and 14 of those ballots included a comment.

The primary reasons cited for the negative ballots included the following:

- All balloters who voted negative listed an increased workload as a concern.
- Eleven balloters indicated the language of the interpretation could be read to mean there could be as many different negotiated methods as there are entities providing data to the Reliability Coordinator, or it could be read as requiring one agreement describing what constitutes a “mutually agreeable” format with all parties in the region.
- Six balloters did not support the “dispute resolution” suggestion, indicating these processes are time consuming and do not support reliability objectives of NERC standards.
- Four balloters indicated that Question 2, though it provides clarity, may result in an increased number of entities that perceive an obligation to provide data directly to Reliability Coordinators. The balloters cited duplicative reporting and increased burden on the WECC Reliability Coordinator department as concerns.
- Two balloters indicated the WECC Reliability Coordinator staff believes the current formats are reasonable and work with the current processes and tools; the balloters suggested one agreement with entities under its jurisdiction.

In response to the comments, the IRO standards drafting team that responded to the request stated it did not intend for the interpretation to dictate there be only one mutually agreeable format for all data and information exchange. If the Reliability Coordinator has a current data exchange format or formats with any entity or entities with which they have a reliability relationship, then that is acceptable. Many formats for data exchange exist today. The standard is designed to require “what” an entity must do, not “how” to do it. The statement that the “WECC RC staff believes that the current formats are reasonable and that they work with the current processes and tools” is the intent of the interpretation.

Others offering comments asked for clarification on the dispute resolution process. The drafting team did not think it appropriate to dictate a dispute resolution process in the interpretation. In many cases, the entities in dispute will be from the same Region; therefore,

that Region's dispute resolution process will be appropriate. However, some disputes will cross Regions or even involve more than two Regions. In those cases, the parties could agree to abide by any involved Region's dispute resolution process.

## **VIII. CONCLUSION**

For the reasons stated above, NERC requests approval of three new Reliability Standards, IRO-008-1, IRO-009-1, and IRO-010-1a as set out in **Exhibit A**. NERC also requests that the herein described revisions to TOP-003-0 — Planned Outage Coordination, Requirement R1.2; TOP-005-1 — Operational Reliability Information, Attachment 1; TOP-006-1 — Monitoring System Conditions, Requirement R4; and IRO-005-2 — Reliability Coordination — Current Day Operations, Requirements R9, R13, and R14 be approved. Additionally, NERC requests that the proposed retirement of EOP-001-0 — Emergency Operations Planning, Requirement R2; IRO-002-1 — Reliability Coordination — Facilities, Requirement R2; IRO-004-1 — Reliability Coordination — Operations Planning Requirements R1 through R6; and IRO-005-2 — Reliability Coordination — Current Day Operations Requirements R2, R3, and R5, R16 and R17; and TOP-005-1 — Operational Reliability Information, Requirements R1 and R1, as also set forth in **Exhibit A**, be approved as part of this filing. NERC requests that approvals be made effective in accordance with the effective date provisions set forth in the proposed Reliability Standards. NERC also requests approval of two new definitions: Operational Planning Analysis and Real-time Assessment. Finally, NERC requests approval of the interpretation to the IRO-010 standard, which is designated as IRO-010-1a in this filing.

Respectfully submitted,

Gerry W. Cauley  
President and Chief Executive Officer  
David N. Cook  
Vice President and General Counsel  
North American Electric Reliability Corporation  
116-390 Village Boulevard  
Princeton, NJ 08540-5721  
(609) 452-8060  
(609) 452-9550 – facsimile  
[david.cook@nerc.net](mailto:david.cook@nerc.net)

/s/ Holly A. Hawkins  
Rebecca J. Michael  
Assistant General Counsel  
Holly A. Hawkins  
Attorney  
North American Electric Reliability  
Corporation  
1120 G Street, N.W.  
Suite 990  
Washington, D.C. 20005-3801  
(202) 393-3998  
(202) 393-3955 – facsimile  
[rebecca.michael@nerc.net](mailto:rebecca.michael@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)



**Exhibits A – E**

(Available on the NERC Website at

[http://www.nerc.com/fileUploads/File/Filings/IRQL\\_Attachments.pdf](http://www.nerc.com/fileUploads/File/Filings/IRQL_Attachments.pdf))