NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

# Reliability Standards Development Plan: 2008–2010

# Volume I
# Work Plan and Schedule

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## Acknowledgement

The NERC Reliability Standards Program would like to thank all the individuals who invest their time and expertise into the development of NERC Reliability Standards and in this installment of the *Reliability Standards Development Plan*. The plan reflects comments and input from stakeholders, staff, the NERC technical community, and government agencies with oversight for electric reliability. Through collaboration and industry consensus, we expect to develop NERC Reliability Standards that are technically accurate, clear, enforceable, and improve reliability for the North American bulk power systems. We know the results will support our overall goal of ensuring electric reliability.

# Table of Contents

Volume I: Work Plan and Schedule

Acknowledgement ..... i
Table of Contents ..... ii
Introduction ..... 1
Purpose ..... 1
Summary of Modifications ..... 1
Changes to the Scope of Projects within the Work Plan: ..... 1
Realignment of Projects Between Years ..... 2
Changes to the Scope of Work Within Each Project ..... 2
Other modifications: ..... 3
Organization of Work Plan ..... 3
Goal ..... 4
Objectives as Part of the Goal ..... 4
Considerations for Meeting Objectives ..... 5
Background ..... 5
Authority ..... 5
Standards Filings and Approvals ..... 6
Standards Development Process ..... 6
Background on Standards Development ..... 7
Work Plan Description ..... 8
Overview ..... 8
Strategy for Project Resources ..... 12
Global Improvements ..... 13
Statutory Criteria ..... 13
Quality Objectives ..... 13
Issues Related to the Applicability of a Standard ..... 18
Issues Related to Regional Entities and Reliability Organizations ..... 20
Issues Related to Ambiguity ..... 21
Issues Related to Technical Adequacy ..... 21
Issues Related to Compliance Elements ..... 21
Fill-in-the-Blank Standards ..... 24
Coordination with NAESB ..... 25
Additional Considerations ..... 27
Resource Documents Used ..... 27
Appendix A — Work Plan Schedule ..... 1

Volume II: Project Descriptions (provided separately)

Volume III: Regional Reliability Standards Projects (provided separately)

# Introduction

## *Purpose*

The *Reliability Standards Development Plan: 2008-2010* is the second installment of the plan and serves to make current the 2007-2009 plan that was published in December 2006. This work plan is a management tool to guide and coordinate the development of reliability standards and provide benchmarks for assessing progress. The work plan serves as a communications tool for coordinating standards development work with applicable governmental agencies in the United States and Canada, and for engaging stakeholders in standards development. The plan provides a basis for developing annual work plans and budgets for the standards program.

## *Summary of Modifications*

This revised work plan for 2008-2010 defines 36 standards development projects. The work plan allocates resources to begin six new, as yet unidentified, high-priority projects (two for each year). Experience over the past few years demonstrates that important new projects will emerge each year because of industry need or unforeseen circumstances. This version of the work plan is different in scope from the initial version of the work plan issued in 2006 in several respects. Significant changes are categorized as follows:

- Changes to the scope of projects within the plan
- Realignment/reprioritization of projects between years
- Changes to the scope of work within each project

### Changes to the Scope of Projects within the Work Plan:

The list of projects included in this work plan is larger than the list in the original version of the work plan. There are three reasons for the expansion:

- The completion of several projects has taken longer than originally anticipated;
- Several important projects that were not anticipated were initiated in 2007 and will be carried over into 2008:
    - Project 2007-12 – Frequency Response
    - Project 2007-14 – Permanent Changes to Timing Table in Coordinate Interchange Standards
    - Project 2007-17 – Protection System Maintenance and Testing
    - Project 2007-18 – Reliability-based Control
    - Project 2007-23 – Violation Severity Levels
- NERC reached out to the technical committees and the industry at large to seek input into the work plan. NERC's technical committees indicated that various activities underway may result in additional standards projects. As these are not as well-defined in terms of timing or scope, they are considered variables that could ultimately impact the future

work plan schedule. Therefore, they have not been included as specific projects in the work plan. These topics include:

- Operating Committee:
  - Real-Time Tools Best Practices
  - Operating Limits Definition
  - Definition of "Adequate Level of Reliability"
- Planning Committee:
  - Definition of "Adequate Level of Reliability"
  - Coordination of generator backup protection white paper
  - Reclosing practice white paper
  - Protection system redundancy
  - Technical papers from System Protection and Control Task Force on unaddressed issues

Due to the impact on the industry's technical resources and based on the level of requests, the work plan acknowledges up to ten requests for formal interpretation of existing standard requirements in 2008 and seven in 2009. These interpretations require a formal ballot as outlined in the Reliability Standards Development Procedure after a team of industry experts formulates the response to the request for interpretation.

### Realignment of Projects Between Years

The standards staff reached out to all stakeholders asking for input to the work plan. Several stakeholders indicated a concern that too many projects were under development concurrently and recommended that the work plan focus industry resources on the projects having the greatest impact on reliability in the near-term, while deferring those of less immediate reliability benefit.

Accordingly, this version of the work plan defers one project from 2007 to 2008, another from 2007 to 2009, and also defers several projects from 2008 into 2009.

- Project 2007-08 — Emergency Operations was deferred to 2008 as Project 2008-03. This project has not started as a result of the addition of the five unanticipated projects in 2007.
- Project 2007-10 — Modeling Data was deferred to 2009 as new Project 2009-04 to better align with the expected completion of the requisite technical study.
- Projects 2008-03 through 2008-07 were deferred to 2009 to recognize the significant number of carryover projects and the desire to focus efforts on the key reliability projects of most benefit to reliability.

### Changes to the Scope of Work Within Each Project

The scope of work within each project was changed to incorporate revised compliance elements based on recently approved compliance documents, to reflect the latest Commission orders, to

add conforming modifications based on stakeholder comments, and to coordinate with other projects underway. These modifications include the following:

- Updated the timelines and schedules for each individual project have based on project team schedule expectations. Each project summary sheet now includes a target completion date.
- Added language from Commission Order No. 693 in place of language pertaining to the Commission's staff assessment and notice of proposed rule making.
- Added language from Commission Order No. 890 and the notice of proposed rule making (NOPR) on NERC's cyber security standards to the affected projects.
- Incorporated approved formal interpretations into the projects that include the affected standards.
- Incorporated stakeholder input received during the public comment period on the work plan.

**Other modifications:**

Other modifications to the work plan include the following:

- Added Operate Within Interconnection Reliability Operating Limits project (not numbered). This is an active project that began prior to 2006 and which was dependent on the Commission's decision on the FAC-010-1, FAC-011-1, and FAC-014-1 reliability standards. This project is expected to conclude in early 2008.
- Removed Project 2006-05 — Phase III/IV Field Tests as this project was absorbed into Project 2007-09.
- Modified new Project 2009–05 — Protection Systems to remove the protection system maintenance and testing aspects of the project. These elements are addressed in Project 2007–17.
- Introduced new *Volume III — Regional Reliability Standards Projects* that replaces in total, the previous *Volume III — Work Plan for Regional "Fill-in-the-Blank" Standards.* Important information from the original Volume III was totally incorporated into the continent-wide standards projects in Volume II.

This version of the work plan also has an increased focus on development of the compliance elements of standards. Several of the compliance-related documents that were, 'works in progress' during 2006 have been approved for use by the FERC and must be fully considered when revising or developing reliability standards. The electric reliability organization's (ERO) Sanctions Guidelines, the NERC Compliance Registry Criteria, and the Uniform Compliance and Enforcement Program as they have been amended and approved from time to time must be considered when revising and developing any standard. These are discussed in more detail in the "Global Improvements" section of this revised work plan.

## *Organization of Work Plan*

The *Reliability Standards Development Plan: 2008–2010* is organized into three sections. The first section, called Volume I, provides a summary overview of the entire plan and includes the

history to the current status of standards development activities related to the development and approval of standards. The second section, called Volume II, details the specific standards development projects. The third section, called Volume III, represents the expected regional standards activity during the three years contemplated by the plan.

The Reliability Standards Development Plan: 2008–2010 is organized as follows:

Volume I

- Work plan overview:
  - Introduction explaining the purpose of the work plan and background.
  - Work plan description.
  - Issues to be addressed in improving standards.
- Appendix A — Schedule and milestones

Volume II

- Appendix B — Project descriptions and preliminary standards requests:
  - Preliminary outline of a request for each project, describing purpose and scope of project.
  - Work sheets identifying specific issues to be addressed for each standard.

Volume III

- Regional Reliability Standards Projects

## *Goal*

**The goal of the work plan is to ensure that the entire set of standards provides an adequate level of reliability to the North American bulk power system, and is enforceable upon all bulk power system users, owners, and operators in accordance with applicable statutes and regulations in the United States and Canada.**

### Objectives as Part of the Goal

To meet the goal, NERC has several specific objectives that include:

- Addressing remaining blackout recommendations requiring new or revised standards.
- Addressing comments from industry, FERC, and others suggesting improvements to each standard, including those received from industry stakeholders during a public comment period.
- Addressing quality issues to ensure each standard has a clear statement of purpose, and has outcome-focused requirements that are clear and measurable.
- Ensuring measures and compliance elements are aligned to support the requirements within the standard and follow definitions outlined in the standards template.

- Reorganizing the standards more logically based on topic and removing redundancies.
- Addressing other pending proposals for new standards.
- Improving standard requirements by incorporating approved interpretations.
- Identifying less-defined issues ("variables") that could lead to standard development activities in the work plan timeframe.
- Satisfying the requirement for a five-year review of all standards.

### Considerations for Meeting Objectives

Developing excellent reliability standards is a long-term effort. The work plan best supports this effort when it is flexible and can be continuously adapted to circumstances and changing priorities, as demonstrated in this updated work plan. In this regard, the work plan includes five active projects in 2007 that were not contemplated in the previous version of the work plan for 2007, as well as recognition of the industry resources needed to prepare responses to the increasing number of formal interpretations. Furthermore, the plan shifts one 2007 project into 2008 and one into 2009, and five 2008 projects into 2009 to focus the industry resources on projects that most impact reliability. This action recognizes and addresses the current carryover workload. This work plan will be reviewed and maintained by the NERC Standards Committee and program staff, and will be updated on an annual basis, more frequently if needed.

Another purpose of this plan is for NERC to communicate annually or more frequently as necessary, in a review its standards development plan with applicable governmental authorities in the United States and Canada so as to coordinate work priorities and expectations with them. In addition to approving the standards, the regulatory authorities will be able to direct the development of standards and to remand standards to the ERO for additional work if needed.

## *Background*

### Authority

Through the enactment of the Energy Policy Act of 2005, Congress created Section 215 of the Federal Power Act (FPA). Section 215 assigns to the Commission the responsibility and authority for overseeing the reliability of the bulk power systems in the United States, including the setting and enforcing of mandatory reliability standards. In February 2006, the Commission issued Order No. 672 establishing its requirements for certifying an industry, self-regulating ERO, as envisioned in the legislation. On the basis of that order, NERC filed its application to become the ERO in the United States on April 4, 2006. NERC concurrently filed for similar recognition with the federal and provincial governments in Canada.

On July 20, 2006, the Commission issued its *Order Certifying the North American Electric Reliability Corporation as the Electric Reliability Organization and Ordering Compliance Filing*, finding that NERC met the requirements of Order No. 672. Since then, NERC has provided the requisite compliance filings and the Commission has issued several orders as a

result to address the remaining issues with NERC's application and certification. NERC's filings with FERC[1] and the Commission's orders[2] can be found on the NERC Web site.[3]

On September 15, 2006, the National Energy Board of Canada announced a Memorandum of Understanding (MOU) recognizing NERC as the ERO in Canada. NERC also signed MOUs with Ontario, Quebec, and Nova Scotia in 2006. NERC is working with the remaining Canadian provinces to accomplish the same understanding.

### Standards Filings and Approvals

NERC has filed with the Commission petitions to approve numerous reliability standards that were proposed as new, modified, or retired reliability standards, and the Commission has taken action on a majority of these standards. NERC has filed petitions for approval of 118 standards as mandatory and enforceable in the United States. On March 16, 2007, the Commission issued Order No. 693, *Mandatory Reliability Standards for the Bulk Power System*. In its final rule, the Commission approved 83 reliability standards and directed improvements to 56 of these standards. The work plan addresses these improvements as well as the 24 standards that the Commission neither approved nor remanded, which are referred to as the "fill-in-the-blank" regional standards.

In August 2007, the Commission issued notices of proposed rulemaking (NOPRs), proposing to approve with modification the Cyber Security (CIP-002-1 through CIP-009-1) and Facilities Design, Connections, and Maintenance (FAC-010-1, FAC-011-1, and FAC-014-1) reliability standards. NERC provided responses to the issues raised in these NOPRs and is awaiting final action by the Commission.

At the regional level, the Commission also approved eight regional standards submitted by the Western Electricity Coordinating Council and approved by NERC for filing with the Commission and the Canadian regulatory authorities.

Detail on these and all filings and orders are found as links on the home page of NERC's Web site.

### Standards Development Process

NERC uses a process for refining, developing, and approving reliability standards, which has received national, formal accreditation and approval by federal regulators. A key element of the work plan is to review and upgrade all the existing standards based on the directives in the Commission's final rule, previous industry comments, and actual experience gathered from using the standards. Additionally, NERC's rules, and a condition of accreditation by the ANSI[4] require that each standard be reviewed at least every five years. NERC received ANSI

[1] NERC filings to FERC, http://www.nerc.com/~filez/nerc_filings_ferc.html
[2] Commission orders, http://www.nerc.com/~filez/ferc_orders.html
[3] NERC Web site, http://www.nerc.com/

[4] ANSI accreditation, http://www.nerc.com/~filez/ansi.html

accreditation on March 24, 2003. NERC anticipates completing its review and upgrade of standards identified in this work plan over several years in support of these accreditation requirements.

The *Reliability Standards Development Procedure*[5] provides a systematic approach to improve the standards and to document the basis for those improvements, and it will serve as the mechanism for achieving the improvements detailed in this plan. The standards development process includes active involvement of industry experts and stakeholders tasked with developing excellent standards.

In its April 2006 application to be certified as the ERO, NERC proposed to develop reliability standards in accordance with Section 300 (Reliability Standards Development) of its Rules of Procedure[6] and the *Reliability Standards Development Procedure*[7], which was incorporated into the Rules as Appendix A. In its June 2006 ERO Certification Order, the Commission found that 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 Commission noted that NERC's procedure calls for notifying and involving the public in developing a reliability standard. 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 is required to approve a reliability standard before it is submitted for Commission approval.

Furthermore, NERC also coordinates its reliability standards development activities with the business practices developed by the North American Energy Standards Board[8] (NAESB) and with the ISO/RTO Council. The three organizations coordinate their activities through a Joint Interface Committee (JIC)[9].

### Background on Standards Development

The initial stage in the establishment of mandatory reliability standards began with the translation of the historical operating policies, planning standards, and compliance templates into a baseline set of working standards, referred to as Version 0 reliability standards. That work was augmented by the addition of missing compliance elements in 2006 and Violation Risk Factors in mid-2007. Further work continues with the development of Violation Severity Levels requiring completion by March 2008.

This iteration of the work plan continues to focus attention on improving the baseline set of Version 0 reliability standards. Since the inaugural installation of the work plan was published, the Commission approved 83 reliability standards as mandatory and enforceable in the United States, although it directed modifications to 56 of those standards. The Commission held an additional 24 reliability standards as pending and proposed to approve 11 others with modification as discussed earlier.

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[5] Reliability Standards Development Procedure, http://www.nerc.com/standards/newstandardsprocess.html
[6] NERC Rules of Procedure, http://www.nerc.com/~filez/rules_of_procedure.html
[7] Reliability Standards Development Procedure, http://www.nerc.com/standards/newstandardsprocess.html
[8] NAESB http://www.nerc.com/naesb.html
[9] JIC http://www.nerc.com/committees/jic.html

In Orders No. 693 and 693-A, *Mandatory Reliability Standards for the Bulk Power System*, and Order No. 890, *Preventing Undue Discrimination and Preference in Transmission Service*, the Commission built upon the information it provided in May 11, 2006 *Federal Energy Regulatory Commission Staff Preliminary Assessment of Proposed Reliability Standards* and the October 20, 2006 *Notice of Proposed Rulemaking — Mandatory Reliability Standards for the Bulk Power System*. In that Staff report, and then in the Commission's proposed rule, the FERC Staff initially, and then the Commission, stated that certain proposed standards are (1) ambiguous; (2) insufficient to ensure an adequate level of reliability; (3) fail to contain adequate "measures and compliance;" (4) may have an undue impact on competition; and (5) are "fill-in-the-blank" standards. The report and NOPR also pointed out that NERC has not completed standards addressing all recommendations made following the August 2003 Northeast blackout. The work plan enclosed here is intended to address these issues, as well as previous comments and issues noted by industry in the initial development of the standards.

Order No. 672[10] provides guidance on the factors the Commission will consider when determining whether proposed reliability standards meet the statutory criteria. For example, the Commission states that a proposed reliability standard must be designed to achieve a specified reliability goal and be clear and unambiguous regarding what is required and who is required to comply. In addition, while a proposed reliability standard does not have to reflect the "best practice," it cannot be based on the "lowest common denominator," if such a standard would not efficiently and effectively achieve its reliability goal.

# Work Plan Description

## *Overview*

***The Projects***: A significant portion of the work plan is dedicated to reopening the existing reliability standards to incorporate improvements. The plan groups the existing standards into projects based on content. Standards with related content are grouped together into a single project to allow a team of experts to consolidate the requirements, to eliminate redundancies, and to ensure consistency of all the requirements in all the standards. This approach makes the most efficient use of industry experts.

A total of 36 different projects are defined in Appendix B (Volume II). Some of the projects address revising a single standard, such as FAC-003. One of the largest projects includes revising nine standards focusing on related topics: transmission operator performance standards TOP-001 to TOP-008 and the transmission operator authority standard PER-001. Managing the projects in this manner will provide an opportunity to clearly separate certification requirements (the capability to be a competent transmission operator) from the requirements measuring ongoing reliability performance. Those requirements are co-mingled in the existing standards.

[10] Order 672, ftp://www.nerc.com/pub/sys/all_updl/docs/ferc/final_rule_reliability_Order_672.pdf

One standards project, Relay Loadability, is expected to conclude by the end of 2007. As such, it is not addressed in the work plan.

The plan includes all other projects to be completed after the end of 2007. Note that the project number indicates the year the project was or will be initiated and the sequence within the year, adjusted according to the reprioritization discussed earlier.

***The Drafting Teams:*** The size and makeup of the drafting teams will be determined according to the project scope. Some drafting teams may choose to subdivide the work. The teams will focus on effectively integrating the scope of the work within the project to ensure that the standards are consistent and comprehensive across the subject area.

Each drafting team will be provided a preliminary outline of the project scope, which is provided in Appendix B (Volume II) and then will prepare a Standard Authorization Request for industry review and comment. A unique development aspect of the projects included in the work plan, which is different from the development of the Version 0 translation, is that the drafting teams will not be inhibited from addressing at one time all necessary improvements to the standards, or from even proposing new changes to the standard, as long as the changes are within the content area of the standard. The goal is for the drafting team to develop the best possible standard within the defined subject area, as supported by a consensus of stakeholders.

The following list details the projects in the work plan:

**Projects initiated prior to 2005:**
Operate Within Interconnection Reliability Operating Limits (IRO-007 through IRO-010)

**Projects initiated in 2006:**
2006-01 System Personnel Training (PER-002 and PER-004)
2006-02 Transmission Assessments and Plans (TPL-001 to TPL-006)
2006-03 System Restoration and Blackstart (EOP-005 to EOP-007, and EOP-009)
2006-04 Backup Facilities (IRO-002 and EOP-008)
2006-06 Reliability Coordination (COM-001, COM-002, IRO-001, IRO-002, IRO-005, IRO-014, IRO-015, and IRO-016,)
2006-07 Transfer Capabilities: ATC, TTC, CBM, and TRM (FAC-012, FAC-013, and MOD-001 to MOD-009)
2006-08 Transmission Loading Relief (IRO-006)
2006-09 Facility Ratings (FAC-008 and FAC-009)

**Projects initiated in 2007:**
2007-01 Underfrequency Load Shedding (PRC-006, PRC-007, and PRC-009)
2007-02 Operating Personnel Communications Protocols (COM-002)
2007-03 Real-time Transmission Operations and Balancing of Load and Generation (TOP-001 to TOP-008, and PER-001)
2007-04 Certifying System Operators (PER-003)
2007-05 Balancing Authority Controls (BAL-002, and BAL-004 to BAL-006)
2007-06 System Protection (PRC-001)
2007-07 Vegetation Management (FAC-003)
2007-09 Generator Verification (MOD-024, MOD-025, MOD-026, MOD-027, PRC-019, PRC-024)
2007-11 Disturbance Monitoring (PRC-002 and PRC-018)
2007-12 Frequency Response (EOP-005 to EOP 007, and EOP-009)
2007-14 Permanent Changes to Timing Table in Coordinate Interchange Standards (INT-005, INT-006, and INT-008)
2007-17 Protection System Maintenance and Testing (PRC-005, PRC-008, PRC-011, and PRC-017)
2007-18 Reliability-based Control (BAL-001, BAL-003, EOP-002, and IRO-005)
2007-23 Replace Levels of Non-Compliance with Violation Severity Levels (83 standards approved by FERC)

**Projects starting in 2008:**
2008-01 Voltage and Reactive Control (VAR-001 and VAR-002)
2008-02 Undervoltage Load Shedding (PRC-010 and PRC-022)
2008-03 Emergency Operations (EOP-001 to EOP-003, and IRO-001)

**Projects starting in 2009 and beyond:**
2009-01 Disturbance and Sabotage Reporting (CIP-001 and EOP-004)
2009-02 Connecting New Facilities to the Grid (FAC-001 and FAC-002)
2009-03 Interchange Information (INT-001, and INT-003 to INT-010)

2009-04 Modeling Data (MOD-010 to MOD-015, PRC-013, PRC-015, PRC-020, and PRC-021)
2009-05 Demand Data (MOD-016 to MOD-021)
2009-06 Protection Systems (PRC-003,PRC-004, PRC-012, PRC-014, and PRC-016)
2009-07 Cyber Security (CIP-002 to CIP-009)
2009-08 Phasor Measurement Units (new)
2009-09 Resource Adequacy Assessments (new)
2010-01 Support Personnel Training (new)

***Regional Standards:*** Work on the regional standards will be coordinated with the NERC projects. The work plan to address regional "fill-in-the-blank" standards is already incorporated into the project list in Volume II of the work plan. The work plan includes a new Volume III *Regional Reliability Standards Projects* to identify those regional standard development activities that are currently underway. These are provided as a reference and to identify development activities that will further require industry resources to accomplish.

***Project Schedules:*** Several of the identified projects require studies to develop the technology or methods that need to be used in the standards. The studies are identified within the project descriptions and the schedules of the projects allow time to complete the studies. The studies have been requested of the NERC Operating and Planning Committees, as well as other groups with the appropriate expertise to complete the study. In some cases, the project schedules and timelines have been adjusted to reflect the expected completion date of the companion study as identified in the committee work plans.

The project timelines have been developed with a certain set of base assumptions regarding the number of postings of each Standard Authorization Request and draft standard and the time needed to complete underlying studies. The project schedule is intended to estimate milestones and provide feedback regarding progress on the projects. However, in most instances NERC believes it will be more important to focus on ensuring that the standards are correct, rather than to rush them through a process. Therefore, NERC anticipates that schedules could change over time. The Standards Committee and NERC staff will oversee the work of the drafting teams to ensure that any delays maintain a productive and necessary pace, and avoid inefficiency. Where project teams are active, this second edition of the work plan includes the projected timeline from the teams that, in some cases, are different than those initially postulated in the first edition of the plan. As this plan is dynamic, work schedules will continue to be updated in future versions of this plan. To ensure the latest status is available, the work plan includes the hyperlinks to the project Web page.

The overall schedule for the work plan is shown in Appendix A. Detailed project descriptions are shown in Appendix B (Volume II).

***Anticipated New Projects:*** The work plan includes placeholders for two high-priority projects per year that are unknown at this time. Experience demonstrates that requests will come in for high-priority work on a continual basis and the resources must be available to handle such requests. As a basis for comparison, five new high priority projects were added to the 2007 work

plan that were not included in the original edition of the plan. This resulted in the need to defer the initiation of other projects in the work plan for 2007.

## Strategy for Project Resources

The work plan has been designed to recognize the reality of limited staff and industry resources to complete the projects immediately and completely. While the volume of work and the schedule are aggressive, they are manageable because the work is being extended over several years, and because much of the work is revising and improving existing standards for which the issues are already well-defined. However, the development of regional standards, the influx of formal interpretation requests, and the progress of the existing projects has impacted the deliverables noted in the plan and has been reflected in the revised project plan for 2008 and 2009.

The sequence of projects has been adjusted to spread the use of industry expertise over several years in the project. For example, system protection experts are a limited resource, as such each project requiring that expertise was spread out from the other for that reason. This same approach was used in sequencing most of the projects. A NERC project facilitator can effectively facilitate up to four average-sized projects, another constraint also accounted for in the development of the work plan.

The drafting teams will be formed through the regular nominations process and appointed by the Standards Committee. Smaller projects may be staffed with only a few experts to preserve resources for larger projects. Even the larger projects will be scaled down in size compared to past projects such as the Version 0 effort or the Phase III-IV standards. Larger projects are expected to be staffed with up to 15 industry representatives. The smaller teams will allow efficient coverage of the numerous projects without over-committing industry resources. Stakeholder input is preserved through the public commenting and voting on standards.

NERC has also established a program to make more extensive use of conference calls and WebEx meetings to cut down on travel time associated with meetings.

# Global Improvements

## *Statutory Criteria*

In accordance with Section 215 of the Federal Power Act, FERC may approve, by rule or order, a proposed reliability standard or modification to a reliability standard if it determines that "the standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest."

The first three of these criteria can be addressed in large part by the diligent adherence to NERC's *Reliability Standards Development Procedure*, which has been certified by the American National Standards Institute (ANSI) as being open, inclusive, balanced, and fair. Users, owners, and operators of the bulk power system that must comply with the standards, as well as the end-users who benefit from a reliable supply of electricity and the public in general, gain some assurance that standards are just, reasonable, and not unduly discriminatory or preferential because the standards are developed through an ANSI-accredited procedure.

The remaining portion of the statutory test is whether the standard is "in the public interest." Implicit in the public-interest test is that a standard is technically sound and ensures a level of reliability that should be reasonably expected by end-users of electricity. Additionally, each standard must be clearly written, so that bulk power system users, owners, and operators are put on notice of the expected behavior. Ultimately, the standards should be defensible in the event of a governmental authority review or court action that may result from enforcing the standard and applying a financial penalty.

The standards must collectively provide a comprehensive and complete set of technically sound requirements that establish an acceptable threshold of performance necessary to ensure the reliability of the bulk power system. "An adequate level of reliability" would argue for both a complete set of standards addressing all aspects of bulk power system design, planning, and operation that materially affect reliability, and for the technical efficacy of each standard. The Commission has directed that NERC define the term, "adequate level of reliability" as part of its January 18, 2007 Order on Compliance Filing. NERC's Operating and Planning Committees are projected to provide this definition for approval at the February 2008 Board of Trustees meeting and subsequent filing with the Commission and appropriate Canadian authorities.

## *Quality Objectives*

To achieve the goals outlined above, NERC has developed 10 quality objectives for the development of reliability standards. Drafting teams working on assigned projects are charged to ensure their work adheres to the following quality objectives:

1. **Applicability** — Each reliability standard shall clearly identify the functional classes of entities responsible for complying with the reliability standard, with any specific additions or exceptions noted. Such functional classes[11] include: NERC, regional

[11] These functional classes of entities are derived from NERC's Reliability Functional Model. When a standard identifies a class of entities to which it applies, that class must be defined in the Glossary of Terms Used in Reliability Standards.

entities, reliability coordinators, balancing authorities, transmission operators, transmission owners, generator operators, generator owners, interchange authorities, transmission service providers, market operators, planning coordinators, transmission planners, resource planners, load-serving entities, purchasing-selling entities, and distribution providers. Each reliability standard shall also identify the geographic applicability of the standard, such as the entire North American bulk power system, an interconnection, or within a regional entity area.

2. **Purpose** — Each reliability standard shall have a clear statement of purpose that shall describe how the standard contributes to the reliability of the bulk power system.
3. **Performance Requirements** — Each reliability standard shall state one or more performance requirements, which if achieved by the applicable entities, will provide for a reliable bulk power system, consistent with good utility practices and the public interest. Each requirement is not a "lowest common denominator" compromise, but instead achieves an objective that is the best approach for bulk power system reliability, taking account of the costs and benefits of implementing the proposal.
4. **Measurability** — Each performance requirement shall be stated so as to be objectively measurable by a third party with knowledge or expertise in the area addressed by that requirement. Each performance requirement shall have one or more associated measures used to objectively evaluate compliance with the requirement. If performance results can be practically measured quantitatively, metrics shall be provided within the requirement to indicate satisfactory performance.
5. **Technical Basis in Engineering and Operations** — Each reliability standard shall be based upon sound engineering and operating judgment, analysis, or experience, as determined by expert practitioners in that particular field.
6. **Completeness** — Each reliability standard shall be complete and self-contained. The standards shall not depend on external information to determine the required level of performance.
7. **Consequences for Noncompliance** — Each reliability standard shall make clearly known to the responsible entities the consequences of violating a standard, in combination with guidelines for penalties and sanctions, as well as other ERO and regional entity compliance documents.
8. **Clear Language** — Each reliability standard shall be stated using clear and unambiguous language. Responsible entities, using reasonable judgment and in keeping with good utility practices, are able to arrive at a consistent interpretation of the required performance.
9. **Practicality** — Each reliability standard shall establish requirements that can be practically implemented by the assigned responsible entities within the specified effective date and thereafter.
10. **Consistent Terminology** — Each reliability standard, to the extent possible, shall use a set of standard terms and definitions that are approved through the NERC reliability standards development process.

In addition to these factors, standard drafting teams also contemplate the following factors the Commission uses to approve a proposed reliability standard as outlined in Order No. 672. A standard proposed to be approved:

**1. Must be designed to achieve a specified reliability goal (P 321 and 324)**

"321. The proposed Reliability Standard must address a reliability concern that falls within the requirements of section 215 of the FPA. That is, it must provide for the reliable operation of bulk power system facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to cyber security protection."

"324. The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal. Although any person may propose a topic for a Reliability Standard to the ERO, in the ERO's process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons."

**2. Must contain a technically sound method to achieve the goal (P 324)**

"324. The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal.

Although any person may propose a topic for a Reliability Standard to the ERO, in the ERO's process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons."

**3. Must be applicable to users, owners, and operators of the bulk power system, and not others (P 322)**

"322. The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others."

**4. Must be clear and unambiguous as to what is required and who is required to comply (P 325)**

"325. The proposed Reliability Standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the Bulk-Power System must know what they are required to do to maintain reliability."

**5. Must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation (P 326)**

"326. The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply."

**6. Must identify clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner (P 327)**

"327. There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner."

**7. Should achieve a reliability goal effectively and efficiently - but does not necessarily have to reflect "best practices" without regard to implementation cost (P 328)**

"328. The proposed Reliability Standard does not necessarily have to reflect the optimal method, or "best practice," for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently."

**8. Cannot be "lowest common denominator," i.e., cannot reflect a compromise that does not adequately protect bulk power system reliability (P 329)**

"329. The proposed Reliability Standard must not simply reflect a compromise in the ERO's Reliability Standard development process based on the least effective North American practice — the so-called "lowest common denominator"—if such practice does not adequately protect Bulk-Power System reliability. Although the Commission will give due weight to the technical expertise of the ERO, we will not hesitate to remand a proposed Reliability Standard if we are convinced it is not adequate to protect reliability."

**9. Costs to be considered for smaller entities but not at consequence of less than excellence in operating system reliability (P 330)**

"330. A proposed Reliability Standard may take into account the size of the entity that must comply with the Reliability Standard and the cost to those entities of implementing the proposed Reliability Standard. However, the ERO should not propose a "lowest common denominator" Reliability Standard that would achieve less than excellence in operating system reliability solely to protect against reasonable expenses for supporting this vital national infrastructure. For example, a small owner or operator of the Bulk-Power System must bear the cost of complying with each Reliability Standard that applies to it."

**10. Must be designed to apply throughout North American to the maximum extent achievable with a single reliability standard while not favoring one area or approach (P 331)**

"331. A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard."

**11. No undue negative effect on competition or restriction of the grid (P 332)**

"332. As directed by section 215 of the FPA, the Commission itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another."

**12. Implementation time (P 333)**

"333. In considering whether a proposed Reliability Standard is just and reasonable, the Commission will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability."

**13. Whether the reliability standard process was open and fair (P 334)**

"334. Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO's Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by the Commission."

**14. Balance with other vital public interests (P 335)**

"335. Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to

explain any such balancing in its application for approval of a proposed Reliability Standard."

**15. Any other relevant factors (P 323 and 337)**

"323. In considering whether a proposed Reliability Standard is just and reasonable, we will consider the following general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed."

"337. In applying the legal standard to review of a proposed Reliability Standard, the Commission will consider the general factors above. The ERO should explain in its application for approval of a proposed Reliability Standard how well the proposal meets these factors and explain how the Reliability Standard balances conflicting factors, if any. The Commission may consider any other factors it deems appropriate for determining if the proposed Reliability Standard is just and reasonable, not unduly discriminatory or preferential, and in the public interest. The ERO applicant may, if it chooses, propose other such general factors in its ERO application and may propose additional specific factors for consideration with a particular proposed reliability standard."

## *Issues Related to the Applicability of a Standard*

In Order No. 672, the Commission states that a proposed reliability standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the bulk power system must know what they are required to do to maintain reliability. Section 215(b) of the FPA requires all "users, owners and operators of the bulk power system" to comply with Commission-approved reliability standards.

The term "users, owners, and operators of the bulk power system" defines the statutory applicability of the reliability standards. NERC's Reliability Functional Model (Functional Model) further refines the set of users, owners, and operators by identifying categories of functions that entities perform so the applicability of each standard can be more clearly defined. Applicability is clear if a standard precisely states the applicability using the functions an entity performs. For example, "Each generator operator shall verify the reactive power output capability of each of its generating units" states clear applicability compared with a standard that states "a bulk power system user shall verify the reactive power output capability of each generating unit." The use of the Functional Model in the standards narrows the applicability of the standard to a particular class or classes of bulk power system users, owners, and operators. A standard is more clearly enforceable when it narrows the applicability to a specific class of entities than if the standard simply references a wide range of entities, e.g., all bulk power system users, owners, and operators.

In determining the applicability of each standard and the requirements within a standard, the drafting team should follow the definitions provided in the NERC Glossary of Terms Used in Reliability standards and should also be guided by the Functional Model.

In addition to applying definitions from the Functional Model, the revised standards must address more specific applicability criteria that identify only those entities and facilities that are material to bulk power system reliability with regard to the particular standard.
In determining the applicability of each standard, the drafting team should review the registration criteria provided in the NERC Statement of Compliance Registry Criteria, which is the criteria for applicability. The registration criteria identify the criteria NERC uses to identify those entities responsible for compliance to the reliability standards. Any deviations from the criteria used in the Statement of Compliance Registry Criteria must be identified in the applicability section of the standard and must include a reliability-related reason for the deviation from the default criteria. It is also important to note that standard drafting teams cannot set the applicability of reliability standards to extend to entities beyond the scope established by the criteria for inclusion on NERC's Compliance Registry. This is expressly prohibited by Commission Order No. 693-A.

The goal is to place obligations on the entities whose performance will impact the reliability of the bulk power system, but to avoid painting the applicability with such a broad brush that entities are obligated even when meeting a requirement will make no material contribution to bulk power system reliability.

Every entity class described in the Functional Model performs functions that are essential to the reliability of the bulk power system. This point is best highlighted with the example that might be the most difficult to understand, the inclusion of distribution providers. Section 215 of the FPA specifically excludes facilities used in the local distribution of electric energy. Nonetheless, some of the NERC standards apply to a class of entities called distribution providers. Distribution providers are covered because, although they own and operate facilities in the local distribution of electric energy, they also perform functions affecting and essential to the reliability of the bulk power system. With regard to these facilities and functions that are material to the reliability of the bulk power system, a distribution provider is a bulk power system user. For example, requirements for distribution providers in the reliability standards apply to the underfrequency load shedding relays that are maintained and operated within the distribution system to protect the reliability of the bulk power system. There are also requirements for distribution providers to provide demand forecast information for the planning of reliable operations of the bulk power system.

A similar line of thinking can apply to every other entity in the Functional Model, including load-serving entities and purchasing-selling entities, which are users of the bulk power system to the extent they transact business for the use of transmission service or to transfer power across the bulk power system. NERC has specific requirements for these entities based on how these uses may impact the reliability of the bulk power systems. Other functional entities are more obviously bulk power system owners and operators, such as reliability coordinators, transmission owners and operators, generator owners and operators, planning coordinators, transmission planners and resource planners. It is the extent to which these entities provide for a reliable bulk power system or perform functions that materially affect the reliability of the bulk power system that these entities fall under the jurisdiction of Section 215 of the FPA and the reliability standards. The use of the Functional Model simply groups these entities into logical functional areas to enable the standards to more clearly define the applicability.

## *Issues Related to Regional Entities and Reliability Organizations*

Because of the transition from voluntary reliability standards to mandatory reliability standards, confusion has occurred over the distinction between Regional Entities and Regional Reliability Organizations. The regional councils have traditionally been the owners and members of NERC. They have been referred to as Regional Reliability Organizations in the Functional Model and in the reliability standards. In an era of voluntary standards and guides, it was acceptable that a number of the standards placed requirements on Regional Reliability Organizations to develop regional criteria, procedures, and plans, and that entities within the region would be expected to follow those requirements. Section 215 of the FPA introduced a new term, called regional entities. Regional entities have specific delegated authorities, under agreement with NERC, to propose and enforce reliability standards within the region, and to perform other functions in support of the electric reliability organization. The former Regional Reliability Organizations have entered into delegation agreements with NERC to become Regional Entities for this purpose.

With regard to distinguishing between the terms Regional Reliability Organizations and Regional Entities, the following guidance should be used. The corporations that provide regional reliability services on behalf of their members are Regional Reliability Organizations. NERC may delegate to these entities a set of regional entity functions. The Regional Reliability Organizations perform delegated regional entity functions much like NERC is the organization that performs the ERO function. Regional Reliability Organizations may do things other than their statutory or delegated regional entity functions.

With the regions having responsibility for enforcement, it is no longer appropriate for the regions to be named as responsible entities within the standards. The work plan calls for removing requirements from the standards that refer to Regional Reliability Organizations, either by deleting the requirements or redirecting the responsibilities to the most applicable functions in the Functional Model, such as planning coordinators, reliability coordinators, or resource planners. In instances where a regional standard or criteria are needed, the ERO may direct the regional entities to propose a regional standard in accordance with ERO Rule 312.2, which states NERC may "direct regional entities to develop regional reliability standards." There is no need to have a NERC standard that directs the regions to develop a regional standard. NERC standards should only include regional entities or RROs in the rare instance the region has a specific operational, planning, or security responsibility. In this case, regional entities (or NERC) may be noted as the applicable entity. However, these Regional Entities (or NERC) are held accountable for compliance to these requirements through NERC's rules of procedure that, by delegation agreement, extend to the regional entities. The Regional Entities are therefore not responsible for compliance through the compliance monitoring and enforcement program and are thus, not under the possibility of sanction through the ERO Sanctions Guidelines. However, NERC and the regional entities can be held by the Commission to be in violation of its rules of procedure for failing to comply with the standards requirements to which it is assigned.

Many of the so-called regional "fill-in-the-blank" standards can be rewritten as North American standards, without diluting the requirements to a least-common-denominator solution. The "fill-in-the-blank" work plan included in Volume III of the first edition of the work plan addressed specific examples of standards that will become North American standards as a result of the

projects in this work plan. These have been incorporated in total in this updated work plan. In those few cases where Regional Entities are required to develop regional standards, such as in underfrequency load shedding, NERC can direct the regions to propose such standards and may, if necessary develop a uniform North American standard to serve as a default.

## *Issues Related to Ambiguity*

Drafting teams should strive to remove all potential ambiguities in the language of each standard, particularly in the performance requirements. Redundancies should also be eliminated.

Specifically, each performance requirement must be written to include four elements:

- **Who** — defines which functional entity or entities are responsible for the requirements, including any narrowing or qualifying limits on the applicability to or of an entity, based on material impact to reliability.
- **Shall do what —** describes an action the responsible entity must perform.
- **To what outcome** — describes the expected, measurable outcome from the action.
- **Under what conditions** — describes specific conditions under which the action must be performed. If blank, the action is assumed to be required at all times and under all conditions.

Drafting teams should focus on defining measurable outcomes for each requirement, and not on prescribing *how* a requirement is to be met. While being more prescriptive may provide a sense of being more measurable, it does not add reliability benefits and may be inefficient and restrict innovation.

## *Issues Related to Technical Adequacy*

In May 2006, the Commission Staff issued an assessment on the then proposed reliability standards. The Staff noted under a "technical adequacy" section that requirements specified in some standards may not be sufficient to ensure an adequate level of reliability. While Order No. 672 notes that "best practice" may be an inappropriately high standard, it also warns that a "lowest common denominator" approach will not be acceptable if it is not sufficient to ensure system reliability.

Each standard should clearly meet the statutory test of providing an adequate level of reliability to the bulk power system. Each requirement should be evaluated and the bar raised as needed, consistent with good practice and as supported by consensus.

## *Issues Related to Compliance Elements*

Each reliability standard includes a section to address measures and a section to address compliance. Most of the major changes made to the template for reliability standards over the past year have been focused on re-aligning the content of standards to include the various elements needed to support mandatory compliance. The Uniform Compliance Enforcement Guidelines, ERO Sanctions Guidelines, and Compliance Registry Criteria have been modified and have been approved by the Commission. As each standard is revised, or as new standards are developed, drafting teams need to familiarize themselves with these documents to ensure that

each standard proposed for ballot is in a format that includes all the elements needed to support reliability and to ensure that the standard can be enforced for compliance.

The compliance-related elements of standards that may need to be modified to meet the latest approved versions of the various compliance documents noted above include the following:

- Each requirement must have an associated Violation Risk Factor.
- Each requirement must have an associated Time Horizon.
- The term, "Compliance Monitor" has been replaced with the term, "Compliance Enforcement Authority." Either the regional entity or the ERO may serve as the compliance enforcement authority. For most standards, the regional entity will serve as the compliance enforcement authority. In the situation where a regional entity has authority over a reliability coordinator, for example, the ERO will serve as the compliance enforcement authority to eliminate any conflict of interest.
- The eight processes used to monitor and enforce compliance have been assigned new names.
    - Compliance Audits
    - Self-Certifications
    - Spot Checking
    - Compliance Violation Investigations
    - Self-Reporting
    - Periodic Data Submittals
    - Exception Reporting
    - Complaints
- The audit cycles for various entities have been standardized so that the Reliability Coordinator, Transmission Operator and Balancing Authority will undergo a routine audit to assess compliance with each applicable requirement once every three years while all other responsible entities will undergo a routine audit once every six years.
- Levels of Non-compliance have been replaced with "Violation Severity Levels."

All requirements are subject to compliance audits, self-certification, spot checking, compliance violation investigations, self-reporting and complaints. Only a subset of requirements is subject to monitoring through periodic data submittals and exception reporting.

***Measures:*** While a measure can be used for more than one requirement, there must be at least one measure for each requirement. A measure states what a responsible entity must have or do to demonstrate compliance to a third party, i.e., the compliance enforcement authority. Measures are proxies, or "yardsticks" used to evaluate whether required performance or outcomes have been achieved. Measures do not add new requirements or expand the details of the requirements. Each measure shall be tangible, practical, and objective. A measure should be written so that achieving full compliance with the measure provides the compliance monitor with the necessary

and sufficient information to demonstrate that the associated requirement was met by the responsible entity. Each measure should clearly refer to the requirement(s) to which it applies.

***Violation Severity Levels:*** The Violation Severity Levels (formerly known as Levels of Non-Compliance) indicate how severely an entity violated a requirement. For example, in the Commission-approved standard on vegetation management (FAC-003-1 Vegetation Management Program), there are three Levels of Non-Compliance. The levels range from whether or not a respective program has all necessary documentation to meet the requirements, to the number of transmission outages due to tree contacts. Historically, there has been confusion about Levels of Non-Compliance. Some of the existing Levels of Non-Compliance incorporate risk impacts or consequences. Going forward, the risk or consequences component should be addressed only by the Violation Risk Factor, while the Violation Severity Levels should only be used to categorize how badly the requirement was violated. (Violation risk factors for each of the 83 Commission-approved standards were submitted for approval in various filings in the first half of 2007.)

The Commission directed NERC to submit Violation Severity Levels for each of these 83 standards by March 1, 2008. Project 2007-23 in this updated work plan is the project team tasked with this effort. The drafting team should indicate a set of Violation Severity Levels that can be applied for the requirements within a standard. Violation Severity Levels replace the existing Levels of Non-Compliance. The Violation Severity Levels may be applied for each requirement or combined to cover multiple requirements, as long as it is clearly embedded within the compliance section of a standard which requirements are included.

***Violation Risk Factors:*** Each drafting team is also instructed to develop a Violation Risk Factor for each requirement in a standard in accordance with the following definitions:

- **High Risk Requirement** — A requirement that, if violated, could directly cause or contribute to bulk power system instability, separation, or a cascading sequence of failures, or could place the bulk power 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 power system instability, separation, or a cascading sequence of failures, or could place the bulk power 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 power system, or the ability to effectively monitor and control the bulk power 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 power system, or the ability to effectively monitor, control, or restore the bulk power system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk power system

instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

- **Lower Risk Requirement** — A requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk power system, or the ability to effectively monitor and control the bulk power system. A requirement that is administrative in nature; or 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 power system, or the ability to effectively monitor, control, or restore the bulk power system. A planning requirement that is administrative in nature.

***Time Horizons:*** The drafting team must also indicate the time horizon available for mitigating a violation to the requirement:

- **Long-term planning** — a planning horizon of one year or longer.
- **Operations planning** — operating and resource plans from day-ahead up to and including seasonal.
- **Same-day operations** — routine actions required within the timeframe of a day, but not real-time.
- **Real-time operations** — actions required within one hour or less to preserve the reliability of the bulk electric system.
- **Operations assessment** — follow-up evaluations and reporting of real time operations.

Note that some requirements occur in multiple time horizons, and it is acceptable to have more than one time horizon for a single requirement.

The drafting team should seek input and review of all measures and compliance information from the compliance elements drafting team members assigned to support each standard drafting team or from the NERC compliance staff.

## *Fill-in-the-Blank Standards*

The phrase “fill-in-the-blank” standards has been coined to refer to those standards that require a bulk power system user, owner, or operator to follow regional criteria that are not part of a NERC Reliability Standard. These “fill-in-the-blank” standards have been identified and discussed earlier in these comments. The practice of using “fill-in-the-blank” standards was acceptable historically when standards were voluntary, but not with standards that are mandatory and enforceable under statutory authority.

NERC recognized this issue early in the process of developing its application to become the ERO. NERC formed and staffed a program to coordinate the development of regional standards and to address the “fill-in-the-blank” issue. A team with representation from each region was formed and reviewed these particular standards to prepare recommendations for a course of action. The action plan and schedule to resolve each “fill-in-the-blank” standard were provided

in Volume III of the original plan and has been wholly incorporated into the projects identified in Volume II of the updated work plan.

There are several possible outcomes with regard to each of these particular standards. The work team completed a review to verify which standards are in fact "fill-in-the-blank," i.e., they require the responsible entity to perform in accordance with regional criteria that are outside the NERC Reliability Standards. There are several options to address each standard on a case-by-case basis:

| Analysis Results | Recommended Action |
|---|---|
| Insufficient justification for regional differences. | Replace the standard with a uniform North American standard. |
| Mandatory enforcement is necessary for reliability but regional differences are justified. | Direct the regions to develop their regional criteria as consistent standards to be filed with NERC, FERC, and the applicable authorities in Canada for approval as ERO standards. |
| Mandatory enforcement is not necessary for reliability. | Retire the NERC standards and allow the regions to maintain voluntary criteria and procedures as needed to coordinate reliability in the region. No enforcement mechanism is provided under the FPA. |

NERC supports the strong preference of the Commission for consistency with regard to regional standards, with statutory deference for regions organized on an interconnection-wide basis as required by statute. NERC will work to achieve such consistency and to provide sufficient justification for regional standards or variations to the NERC standards that are filed for Commission approval.

## *Coordination with NAESB*

Many of the existing NERC standards are related to business practices, although their primary purpose is reliability. Reliability standards, business practices, and commercial interests are inextricably linked. An example of an existing standard that is both a reliability standard and a business practice is the Transmission Loading Relief (TLR) Procedure currently used as an interconnection-wide congestion management method in the Eastern Interconnection.

It would be safe to conclude that every reliability standard has some degree of commercial impact and therefore impacts competition. The statutory test to be applied by the Commission is whether the reliability standard has an "undue adverse effect" on competition.

NERC has taken several steps to ensure its reliability standards do not have any undue, adverse impact on business practices or competition. First, NERC coordinates the development of all standards with the North American Energy Standards Board (NAESB) and the ISO/RTO Council through a memorandum of understanding and the work of the Joint Interface Committee. In addition to this formal process, drafting teams work with NAESB groups to ensure effective coordination of wholesale electric business practice standards and reliability standards. NERC and NAESB follow their procedure for the joint development of standards in areas that have both

reliability and business practice elements. This procedure is being implemented for all standards in which the reliability and business practice elements are closely related, thereby making joint development a more efficient approach.

This work plan includes several projects that require close coordination and joint development with NAESB:

- Projects 2006-07 and 2006-08 address the short and long-term direction for the series of standards dealing with the development of Available Transfer Capability (ATC) and congestion management procedures, such as TLR.
- Project 2007-05 addresses key issues relative to time error correction and inadvertent interchange.
- Project 2007-14 pertains to the permanent revisions to the Coordinate Interchange standards' timing tables; and
- Project 2009-03 addresses the interchange standards and will include any changes required as a result of the update to e-Tag, Version 1.8.

To ensure each reliability standard does not have an undue adverse effect on competition, NERC requires that each standard meet the following criteria:

- Competition — A reliability standard shall not give any market participant an unfair competitive advantage.
- Market Structures — A reliability standard shall neither mandate nor prohibit any specific market structure.
- Market Solutions — A reliability standard shall not preclude market solutions to achieve compliance with that standard.
- Commercially Sensitive Information — A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.

During the standards development process, each SAR drafting team asks the following question to determine if there is a need to develop a business practice associated with the proposed standard:

- Are you aware of any associated business practices that we should consider with this SAR?

Each standard drafting team also asks the following question to determine if there is a potential conflict between a reliability standard and business practice:

- Are you aware of any conflicts between the proposed standard and any regulatory function, rule order, tariff, rate schedule, legislative requirement or agreement? If yes, please identify the conflict.

## *Additional Considerations*

Drafting teams should consider the following in reviewing and revising their assigned standards:

- **Title**: In general, the title should be concise and to the point. Care should be taken not to try to fully describe a standard through its title. The title should fit a single line in both the header and in the body of the standard.
- **Purpose**: Current purpose statements are inconsistent. The purpose should clearly state a benefit to the industry (value proposition) in fulfilling the requirements. The purpose should not simply state "the purpose is to develop a standard to…" The purpose should be tied to one or more of the reliability principles.
- **References**: A new section (F) has been added to the standards template for a listing of associated references that support implementation of the standard. Drafting teams may develop or reference supporting documents and provide a link in this section.
- **Version histories**: Version histories should be expanded to include complete listings of what has been changed from version to version so that end-users can easily keep track of changes to standards. This will also serve as a type of audit trail for changes.

## *Resource Documents Used*

NERC used several references when preparing this work plan. These references provide detailed descriptions of the issues and comments that need to be considered by the drafting teams, and which are included in the second volume of the work plan, as they work on the standards projects defined in the work plan. The references include:

- FERC NOPR on Reliability Standards, October 20, 2006.
- FERC Staff Preliminary Assessment of Proposed Reliability Standards, May 11, 2006.
- FERC Order No. 693 Mandatory Reliability standards for the Bulk Power System, March 16, 2007.
- FERC Order No. 693-A Mandatory Reliability Standards for the Bulk Power System, July 19, 2007.
- FERC Order No. 890 Preventing Undue Discrimination and Preference in Transmission Service, February 16, 2007.
- Comments of the North American Electric Reliability Council and North American Electric Reliability Corporation on Staff Preliminary Assessment of Reliability Standards, June 26, 2006.
- Comments of the North American Electric Reliability Corporation on Staff Preliminary Assessment of NERC Standards CIP-002 through CIP-009, February 12, 2007.

- Comments of the North American Electric Reliability Corporation on the Notice of Proposed Rulemaking for Facilities Design, Connections and Maintenance Reliability standards, September 19, 2007.
- Comments received during the development of Version 0 reliability standards.
- Consideration of comments of the Missing Compliance Elements drafting team.
- Consideration of comments of the Violation Risk Factors drafting team.
- Consideration of comments in the Phase III–IV standards.
- Comments received during industry comment period on work plan.
- Q&A for Standards and Compliance.

A summary of comments received on each standard is included in the individual work sheets provided in Appendix B (Volume II) for use by the drafting teams.

# Appendix A — Work Plan Schedule

## Reliability Standards Development Plan - 2008-2010
### Milestone Schedule

| Project # | Name | Applicable Standards |
|---|---|---|
| Pre 2006 | Operate Within Interconnection Operating Reliabilit | IRO-007, IRO-008, IRO-009, and IRO-010 |
| 2006-01 | System Personnel Training | PER-002 and PER-004 |
| 2006-02 | Transmission Assessments and Plans | TPL-001 through TPL-006 |
| 2006-03 | System Restoration and Blackstart | EOP-005, EOP-006, EOP-007, and EOP-009 |
| 2006-04 | Back-up Facilities | IRO- 002 and EOP-008 |
| 2006-06 | Reliability Coordination | COM-001, COM-002, IRO-001, IRO-002, IRO-005, IRO-014, IRO-015, and IRO-016 |
| 2006-07 | Transfer Capabilities (ATC,TTC,CBM, and TRM) | MOD-001 through MOD-009, FAC-012, and FAC-013 |
| 2006-08 | Transmission Loading Relief | TLR Split joint with NAESB (IRO-006) |
| 2006-09 | Facility Ratings | FAC-008 and FAC-009 |
| 2007-01 | Under Frequency Load Shed | PRC-006, PRC-007, and PRC-009 |
| 2007-02 | Operating Personnel Communication Protocols | COM-002 |
| 2007-03 | Real-time Transmission Operations & Balancing of Load and Generation | TOP-001 through TOP-008 and PER-001 |
| 2007-04 | Certifying System Operators | PER-003 |
| 2007-05 | Balancing Authority Controls | BAL-002, BAL-004, BAL-005, and BAL-006 |
| 2007-06 | System Protection | PRC-001 |
| 2007-07 | Vegetation Management | FAC-003 |
| 2007-09 | Generator Verification | MOD-024, MOD-025, MOD-026, MOD-027, PRC-019, and PRC-024 |
| 2007-11 | Disturbance Monitoring | PRC-002 and PRC-018 |
| 2007-12 | Frequency Response | EOP-005, EOP-006, EOP-007, and EOP-009 |
| 2007-14 | Permanent Changes to Timing Table in Coordinate | INT-005, INT-006, and INT-008 |
| 2007-17 | Protection System Maintenance and Testing | PRC-005, PRC-008, PRC-011, and PRC-017 |
| 2007-18 | Reliability Based Control | BAL-001, BAL-003, EOP-002, and IRO-005 |
| 2007-23 | Violation Severity Levels | All 83 Regulatory Approved Standards |
| 2008-01 | Voltage & Reactive Control | VAR-001 and VAR-002 |
| 2008-02 | Under Voltage Load Shed | PRC-010 and PRC-022 |
| 2008-03 | Emergency Operations | EOP-001 to EOP-003, and IRO-001 |
| 2008-A | Unplanned Project | Unplanned |
| 2008-B | Unplanned Project | Unplanned |
| 2009-01 | Disturbance and Sabotage Reporting | CIP-001 and EOP-004 |
| 2009-02 | Connecting New Facilities to the Grid | FAC-001 and FAC-002 |
| 2009-03 | Interchange Information | INT-001 and INT-003 through INT-010 |
| 2009-04 | Modeling Data | MOD-010 to MOD-015, PRC-013, PRC-015, PRC-020, and PRC-021 |
| 2009-05 | Demand Data | MOD-016 through MOD-021 |
| 2009-06 | Protection Systems | PRC-003, PRC-004, PRC-012, PRC-014, and PRC-016 |
| 2009-07 | Cyber Security | CIP-002 through CIP-009 |
| 2009-08 | Phasor Measuring Units | New Standard |
| 2009-09 | Resource Adequacy Assessments | New Standard |
| 2009-A | Unplanned Project | Unplanned |
| 2009-B | Unplanned Project | Unplanned |
| 2010-01 | Support Personnel Training | New Standard |
| 2010-A | Unplanned Project | Unplanned |
| 2010-B | Unplanned Project | Unplanned |

Page 1

NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

# Reliability Standards Development Plan: 2008–2010

# Volume II
# List of Projects

**October 5, 2007**

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## Introduction

There are 36 projects in this plan. Each project has a description which provides a general overview of the scope of improvements to be considered in conjunction with the project.

Each project description includes a cover page that provides an overview of the project, including the project number, title, list of affected reliability standards, hyperlinks to associated portions of the NERC standards web pages, and a brief description of the project. The cover page is followed by one or more standard review forms associated with the specific project.

The standard drafting team for each of these projects will be expected to review the assigned standards and modify the standards to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure including, but not limited to:

- Ensure the title is not excessively long or is not accurate as a descriptor for the requirements.
- Ensure the purpose identifies the reliability-related reason for having the standard.
- Ensure the applicability section identifies the functional entities that are required to comply with one or more of the requirements in the standard. The drafting team should review the registration criteria provided in the NERC Statement of Compliance Registry Criteria, which is considered the 'default' criteria for applicability. The registration criteria identifies the criteria NERC uses to determine, for example, which generator owners must register for compliance. For generator owners, size (gross nameplate rating) is just one of several criteria used. Any deviations from the criteria used in the Statement of Compliance Registry Criteria must be identified in the applicability section of the standard and must include a reliability-related reason for the deviation from the default criteria.
- Ensure the requirements specify the conditions under which the requirement is applicable, identify the responsible entity, identify the required performance and identify the outcome of the desired performance.
- Ensure there is a measure for each requirement and the measure is written objectively.

Each standard review form also includes an "Issues" list. The list includes all FERC directives from Order 693 and 890 and the comments identified in the FERC Cyber NOPR in addition to comments identified by:

- The team working on identifying the "fill-in-the-blank" characteristics of the NERC reliability standards,
- Stakeholders, and
- Version 0, Phase III & IV, Violation Risk Factors (VRFs), and Missing Measures and Compliance Elements drafting teams.

The full set of comments provided by these constituencies is identified below and can be accessed:

- FERC Order 693 Mandatory Reliability Standards for the Bulk-Power System
- FERC Order 693 — A, Order on Rehearing
- FERC Order 890 Preventing Undue Discrimination and Preference in Transmission Service
- FERC NOPR Mandatory Reliability Standards for Critical Infrastructure Protection
- FERC NOPR – Mandatory Reliability Standards for the Bulk-Power System, dated October 20, 2006 - *Explanatory comments from NERC staff's discussion with FERC personnel on the NOPR are indicated in italic text contained within parenthesis*
- Summary of Comments for Addressing Fill-in-the-Blank Aspects of Reliability Standards, October 24, 2006
- Comments received during the development of Version 0 reliability standards
- Consideration of comments of the Missing Compliance Elements drafting team.
- Consideration of comments of the Violation Risk Factors drafting team
- Consideration of comments in the Phase III-IV standards
- SAR on Planning Authority (The requester agreed to not proceed with this SAR.) SAR on Applicability

Note that no value judgments have been made about the technical merits of any of the items included on the Issues list. Each standard drafting team for the specific project will be required to further investigate the issues listed.

Also please note that the NERC Standards staff had previously met with FERC staff to discuss the October 20, 2006 FERC NOPR on Mandatory Reliability Standards for the Bulk-Power System in Docket No. RM06-16-000 — and drew the following conclusions from that discussion:

- The location of a requirement (which standard includes the recommended requirement) is not a concern — so if a requirement is recommended as an addition to one standard, but is actually added to another standard, that should be acceptable to FERC.
- When the term, 'performance metrics' is used, it can mean a measure of bulk power system performance, functional entity performance, or performance of a person in a position or a combination of all of these metrics.
- FERC does not have a set of proposed definitions for terms such as 'emergency' or 'critical facilities' and is relying on the drafting teams to develop and refine these terms, where needed, through the stakeholder consensus process.
- Where testing periodicity is proposed, the intent is to have a requirement that includes a technically-sound minimum testing interval.
- Where the intent of a proposed requirement can be accomplished by an alternate requirement, the alternate requirement should be acceptable to FERC. For example, proposals to add requirements for 'facilities,' can be met with requirements that specify that entities have the 'capabilities' of those facilities.

**Index to Project Descriptions:**


| | | |
|---|---|---|
| Pre-2006 | Operate Within Interconnection Reliability Operating Limits | 5 |
| 2006-01 | System Personnel Training | 7 |
| 2006-02 | Transmission Assessments and Plans | 10 |
| 2006-03 | System Restoration and Blackstart | 20 |
| 2006-04 | Backup Facilities | 27 |
| 2006-06 | Reliability Coordination | 29 |
| 2006-07 | Transfer Capabilities — (ATC, TTC, CBM, TRM) | 38 |
| 2006-08 | Transmission Loading Relief | 61 |
| 2006-09 | Facility Ratings | 65 |
| 2007-01 | Underfrequency Load Shedding | 68 |
| 2007-02 | Operating Personnel Communications Protocols | 72 |
| 2007-03 | Real-time Transmission Operations and Balancing of Load and Generation | 74 |
| 2007-04 | Certifying System Operators | 85 |
| 2007-05 | Balancing Authority Controls | 87 |
| 2007-06 | System Protection | 94 |
| 2007-07 | Vegetation Management | 96 |
| 2007-09 | Generator Verification | 99 |
| 2007-11 | Disturbance Monitoring | 107 |
| 2007-12 | Frequency Response | 110 |
| 2007-14 | Permanent Changes to CI Time Table | 111 |
| 2007-17 | Protection System Maintenance & Testing | 115 |
| 2007-18 | Reliability-based Control | 120 |
| 2007-23 | Violation Severity Levels | 125 |
| 2008-01 | Voltage and Reactive Control | 126 |
| 2008-02 | Undervoltage Load Shedding | 130 |
| 2008-03 | Emergency Operations | 133 |
| 2009-01 | Disturbance and Sabotage Reporting | 138 |
| 2009-02 | Connecting New Facilities to the Grid | 141 |
| 2009-03 | Interchange Information | 145 |
| 2009-04 | Modeling Data | 155 |
| 2009-05 | Demand Data | 167 |
| 2009-06 | Protection Systems | 175 |
| 2009-07 | Cyber Security | 181 |
| 2009-08 | Phasor Measurement Units | 202 |
| 2009-09 | Resource Adequacy Assessments | 203 |
| 2010-01 | Support Personnel Training | 205 |

| Pre-2006 | Operate Within Interconnection Reliability Operating Limits |
|---|---|

## Standards Involved:

IRO-007 — Monitoring the Reliability Coordinator Wide Area
IRO-008 — Reliability Coordinator Operational Analyses and Real-time Assessments
IRO-009 — Reliability Coordinator Actions to Operate Within IROLs
IRO-010 — Reliability Coordinator Data Specification and Collection

## Research Needed:

None

## Brief Description:

This set of standards require adherence to established operating limits identified to prevent instability, uncontrolled separation or cascading outages that adversely impact the reliability of the bulk transmission system. Requirements shall address:

- Real time monitoring of system parameters against operating limits
- Performing short-term and real-time transmission reliability analyses relative to the identified operating limits
- Performing corrective actions to mitigate exceeding operating limits
- Keeping records and filing reports

This project also addresses the Commission's Order No-693 directives regarding IRO-004 in proposed standard IRO-009.

## Conforming Changes to Requirements in Already Approved Standards:

Many elements contained in the set of proposed 'Operate within IROL Standards' address the same or similar performance objectives as requirements in already approved standards. To eliminate duplication and minimize confusion, the following requirements in Version 0 Standards should be revised or retired when the proposed standards are implemented.

EOP-001-0 — Emergency Operations Planning
- Retire R2

IRO-002-1 — Reliability Coordination — Facilities
- Retire R2 and R6

IRO-003-2 — Reliability Coordination — Wide Area View
- Retire entire standard (R1 and R2)

IRO-004-1 — Reliability Coordination — Operations Planning
- Retire entire standard (R1 through R6)

IRO-005-2 — Reliability Coordination — Current Day Operations
- Retire R1, convert most of R1 into a reference; retire R2, R3, and R5; modify R9, R13 and R14; retire R16 and R17

TOP-003-0 — Planned Outage Coordination
- Modify R1.2

TOP-005-1 — Operational Reliability Information
- Retire R1 and R1.1
- Convert Attachment 1 into a reference

TOP-006-1 — Monitoring System Conditions Voltage and Reactive Control

- Modify R2 and R4

### Standards Development Status:

Operate Within Interconnection Reliability Operating Limits Web page

### Project Schedule:

IROL Schedule

### Target Completion Date:

First quarter of 2008

### Related Links:

IROL Roster

## 2006-01 System Personnel Training

### Standards Involved:

PER-002-0 — Operating Personnel Training
PER-004-1 — Reliability Coordination – Staffing
1200 — Urgent Action Standard — Cyber Security – 1211 Training

### Research Needed:

None

### Brief Description:

The standard requires the use of a systematic approach to determining training needs of the real-time system operators who work for the Reliability Coordinator, Balancing Authority and Transmission Operator. The standard requires each Reliability Coordinator, Balancing Authority and Transmission Operator to:

- Identify the desired performance for each real-time, reliability-related task performed by its real-time system operators.
- Measure the mismatch between actual and desired performance, and
- Use the results of the mismatch between desired and actual performance as the basis for determining training needs, developing, delivering and evaluating training.

The standard requires that entities have evidence that this systematic approach is used and requires that each responsible entity have evidence that each of its real-time system operators is competent to perform each assigned task that is on its company-specific list of reliability-related tasks.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2006-01 System Personnel Training Web page

### Project Schedule:

Project 2006-01 Schedule

### Target Completion Date:

Third quarter of 2008

### Related Links:

Project 2006-01 Roster

| Standard Review Form<br>Project 2006-1 — System Personnel Training | | |
|---|---|---|
| **Standard #** | **Title** | |
| **PER-002-0** | Operating Personnel Training | |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Identify the expectations of the training for each job function.<br>• Develop training programs tailored to each job function with consideration to the individual training needs.<br>• Expand the applicability section to include reliability coordinators, local transmission control center operating personnel, generator operators centrally-located at a generator control center with direct impact on the reliable operation of the bulk power system, and operations planning and operations support staff that carry out outage planning and assessments and those who develop SOLs, IROLs, or operating nomograms.<br>• Use the systematic approach to training methodology in the development of new training programs.<br>• Include the use of simulators by reliability coordinators, transmission operators, and balancing authorities that have operational control over a significant portion of load and generation.<br>• Determine the feasibility of developing meaningful performance metrics associated with the effectiveness of the training programs.<br>• Consider whether personnel that support EMS applications should be included in the mandatory training requirements.<br>• Consider FirstEnergy's comments regarding the nuclear plant operators' training program as part of the standards development process.<br><br>Fill-in-the-Blank Team Comments<br>• R3.1 has regional text but it is unnecessary and could be removed<br><br>V0 Industry Comments<br>• Measure is weak<br>• Other entities should be included<br>• Replace 5 days with 32 contact hours as per agreement<br>• Specify calendar year time increment<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-01 — System Personnel Training | |
|---|---|
| **Standard #** | **Title** |
| **PER-004-1** | Reliability Coordination – Staffing |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Include formal training requirements for reliability coordinators similar to those addressed under PER-002.<br>• Include requirements pertaining to personnel credentials for reliability coordinators similar to PER-003.<br>• Consider the suggestions of FirstEnergy and Xcel as part of the standards development process.<br><br>V0 Industry Comments<br>• Calendar year timing increment<br>• Other training needs to be defined<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2006-02 Transmission Assessments and Plans

### Standards Involved:

TPL-001-0 — System Performance under Normal Conditions
TPL-002-0 — System Performance Following Loss of a Single BES Element
TPL-003-0 — System Performance Following Loss of Two or More BES Elements
TPL-004-0 — System Performance Following Extreme BES Events
TPL-005-0 — Regional and Interregional Self-Assessment Reliability Reports
TPL-006-0 — Assessment Data from Regional Reliability Organizations

### Research Needed:

None

### Brief Description:

The proposed work effort will establish requirements where requirements do not exist, and verify and clarify the existing standards for assessing and reporting the performance of planned bulk electric systems and the requirements for documenting plans to remedy any inadequacies identified in the process of conducting such assessments.

Consideration will be given to the many proposed improvements identified in the 'Issues' list for each of the above standards.

The drafting team will also work to incorporate the interpretation on TPL-002 Requirement R1.3.12 and Requirement R1.32 and the interpretation on TPL-003 Requirement R1.3.12 and Requirement R1.32.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2006-02 Transmission Assessments and Plans Web Page

### Project Schedule:

Project 2006-02 Schedule

### Target Completion Date:

Third quarter of 2008

### Related Links:

Project 2006-02 Roster

| Standard Review Form<br>Project 2006-02 — Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-001-0** | | System Performance Under Normal (No Contingency) Conditions (Category A) |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Determine critical system conditions and study years by conducting sensitivity analysis with due consideration of the factors outlined by the Commission.<br>• Require a peer review of planning assessments with neighboring entities.<br>• Modify requirement R1.3 to substitute the reference to regional reliability organization with regional entity.<br>• Require assessments of outages of critical long lead time equipment, consistent with an entity's spare equipment strategy<br>• Address concerns with footnote (a) of Table 1 with regard to applicability of emergency ratings and consistency of normal ratings and voltages with values obtained from other reliability standards and concerns raised by International Transmission with regard to the footnotes in Table 1.<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>V0 Industry Comments<br>• Several semantic issues<br>• Clarify timing for submittal of corrective plan<br>• Clarify use of applicable ratings in Table 1, note 'a'<br>• Need to address deliverability to load<br>• Define critical system conditions<br>• Allow for engineering judgment in setting conditions for power flow<br>• Do planned facilities include just those under construction?<br>• Need to include multiple time frames<br>• What is a major load center?<br>• Table 1 – C.5 goes beyond double circuit outage criteria<br>• Table 1, items 6, 7, 8 & 9 need footnote stating that they do not apply to generator breaker failure | |

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| | • Table 1, note 'b' – clarify when to curtail firm deliveries<br><br>Phase III/IV comments<br>• Add a requirement to verify that there are sufficient reactive resources<br>• Add a requirement to identify where UVLS should be installed<br><br>VRF comment<br>• R1 – time horizon should be long-term planning<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-02 — Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-002-0** | | System Performance Following Loss of a Single Bulk Electric System Element (Category B) |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Determine critical system conditions in the same manner as proposed in TPL-001.<br>• Requires assessment of planned outages of long lead time critical equipment consistent with the entity's spare equipment strategy.<br>• Requires all generators to ride through the same set of category B and C contingencies as required by wind generators in Order No. 661, or to simulate without this capability as tripping.<br>• Document the load models used in system studies and the rationale for their use.<br>• Clarify the phrase "permit operating steps necessary to maintain system control" in the footnote (a) and the use of emergency ratings.<br>• Clarifies footnote (b) in regard to load loss following a single contingency specifying the amount and duration of consequential load loss and system adjustments permitted after the first contingency to return the system to a normal operating state. NERC should consider this through its standard development process.<br>• Footnote (b) should not allow for firm load shedding or curtailment of firm transfers as part of the system adjustments.<br>• Consider NRC's comments regarding clarifying the N-1 state as being always applicable to the current conditions as part of the standards development process.<br>• Standard should be clarified to not allow an entity to plan for the loss of non-consequential load in the event of a single contingency.<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>V0 Industry Comments<br>• Define critical system conditions<br>• Clarify timing for corrective plan<br>• Address deliverability of generation to load | |

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|---|---|
| | • Clarify applicable ratings in Table 1, note 'a'<br>• Don't include generation runback or redispatch<br>• Must study all contingencies and multiple demand levels & time frames<br>• Don't include planning outage<br>• Single terminals are not included<br><br>Phase III/IV comments<br>• Add a requirement to verify that there are sufficient reactive resources<br>• Add a requirement to identify where UVLS should be installed<br><br>VRF comments<br>• Time horizon should be long-term planning and R2.2 – redundant with R1.3.8<br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-02 — Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-003-0** | | System Performance Following loss of Two or More Bulk Electric System Elements (Category C) |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Determine critical system conditions in the same manner as proposed in TPL-001.<br>• Modify footnote © of Table 1 to clarify the term "controlled load interruption".<br>• Applicable entities must define and document the proxies necessary to simulate cascading outages.<br>• Tailor the purpose statement to reflect the specific goal of the standard.<br>• Address LPPA's concerns on changes to footnotes of Table 1 through the standard development process.<br>• Address NRC concerns as described in TPL-002 through the standards development process.<br>• Consider the comments on major load pockets as part of the standards development process.<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>V0 Industry Comments<br>• Same as TPL-001 & 002<br>• TO should provide plan of action<br>• Don't base penalties on low probability, low consequence events<br>• Use NERC Compliance Reporting Process<br>• Clearly identify outages<br><br>Phase III/IV comments<br>• Add a requirement to verify that there are sufficient reactive resources<br>• Add a requirement to identify where UVLS should be installed<br><br>VRF comment<br>• Time horizon should be long-term planning | |

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| | • R2 – lack of consistency with TPL-001 & TPL-002<br>• R2.1 - lack of consistency with TPL-001<br>• R2.1.1 - lack of consistency with TPL-001 & TPL-004<br>• R2.1.2 - lack of consistency with TPL-001 & TPL-005<br>• R2.1.3 - lack of consistency with TPL-001 & TPL-006<br>• R2.2 - lack of consistency with TPL-001 & TPL-007<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-02— Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-004-0** | | System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk Electric System Elements (Category D) |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Determine critical system conditions in the same manner as proposed in TPL-001.<br>• Identify options for reducing the probability or impacts of extreme events that cause cascading.<br>• Expand the list of category D events to include recent actual events.<br>• Tailor the purpose statement to reflect the specific goal of the standard.<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>V0 Industry Comments<br>• Same as TPL-001<br>• Perform analysis on credible contingency<br>• R1.3.9 – remove from extreme events<br>• TO should determine which events to study<br><br>Phase III/IV comments<br>• Add a requirement to verify that there are sufficient reactive resources<br>• Add a requirement to identify where UVLS should be installed<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-02 — Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-005-0** | | Regional and Interregional Self-Assessment Reliability Reports |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br>• Encourages NERC to utilize input from the Commission's technical conferences on regional planning as directed in Order No. 890 to improve this standard.<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>Fill-in-the-Blank Team Comments<br>• New SAR needed<br><br>V0 Industry Comments<br>• Define fuel adequacy<br>• An RRO can't make a mandatory request for another RRO to perform a study<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-02 — Transmission Assessments and Plans | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TPL-006-0** | | Assessment Data from Regional Reliability Organizations |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br><br>FERC Order 693 – TPL General Comments<br>• Consider integrating TPL-001 through TPL-004 into one standard.<br>• Submit an informational filing, in addition to regional criteria, all utility and RTO/ISO differences in transmission planning criteria that are more stringent than those specified by the TPL standards.<br>• Consider the full range of variables when determining critical system conditions but only those deemed to be significant need to be assessed and documentation provided that explain the rational for selection.<br>• System performance should be assessed based on contingencies that mimic what happens in real-time.<br>• Entities that have planned and designed their systems on the basis of a different approach to single contingencies should work with NERC in developing plans to transition to this new approach.<br>• Consider appropriate revisions to the reliability standards to deal with cyber security events.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2006-03 System Restoration and Blackstart

### Standards Involved:

EOP-005-1 — System Restoration Plans
EOP-006-1 — Reliability Coordination - System Restoration
EOP-007-0 — Establish, Maintain, and Document a Regional Blackstart Capability Plan
EOP-009-0 — Documentation of Blackstart Generating Unit Test Results

### Research Needed:

None

### Brief Description:

This project involves reviewing and revising the four referenced standards including:

- Resolving the issue of associating compliance measures with Attachment 1-EOP-005 elements,
- EOP-005 only requires the TOP and the BA to have a system restoration plan. The role of these and other entities, especially the Reliability Coordinator, needs to be defined.
- Both EOP-005 and EOP-006 contain a mix of requirements that address advance planning and real-time operations. The Standards Drafting Team (SDT) should consider the need to clearly delineate the two processes within the standards requirements.
- The elimination of 'fill-in-the-blank' components in EOP-007-0 and EOP-009.
- Other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable standards and consistent with establishing technically sufficient bulk power system blackstart and restoration standards.

Work is not to be limited to the 'To Do Lists'. Those items shall be considered but are not mandatory revisions**.** Consideration will also be given to the comments on the appropriate EOP standards in FERC Order #693, issued March 16, 2007.

Throughout the process, the SDT should identify any conflicts that are found with other existing standards and bring them to the attention of the Standards Committee for resolution.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2006-03 System Restoration and Blackstart Web page

### Project Schedule:

Project 2006-03 Schedule

### Target Completion Date:

Second quarter of 2008

**Related Links:**

Project 2006-03 Roster

| Standard Review Form<br>Project 2006-03 — System Restoration and Blackstart | |
|---|---|
| **Standard #** | **Title** |
| **EOP-005-1** | System Restoration Plans |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Identify time frames for training and review of restoration plan requirements to simulate contingencies and prepare operators for anticipated and unforeseen events.<br>• NERC shall gather data from simulations and drills of system restoration on the time it takes to restore power to the auxiliary power systems of nuclear power plants under its data gathering authority and report the information to the Commission on a quarterly basis.<br>• Consider commenters concerns in future modifications of the reliability standard, including those that refer to Attachment 1.<br><br>Fill-in-the-Blank Team Comments<br>• Address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently.<br>• References in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific.<br>• See "Issues" for EOP-007<br><br>V0 Industry Comments<br>• Priority to integrity of interconnection<br>• BA does not have all required information<br>• Interdependency of planning and implementation missing as well as between functional entities<br>• LSE & GO should have plans<br>• Additional element consideration<br>• Can't really test plan<br><br>Phase III/IV comments<br>• Add LSEs to Applicability<br>• Add a requirement for a blackstart agreement between the transmission operator and the generator owner - include items such as identification of generator owner/operator facilities required to participate in the blackstart plan; when and how quickly a blackstart unit must respond; and what cranking path requires energization<br>• Add a requirement for a cranking path agreement between the transmission operator and the generator owner/operator<br>• Condense the requirements and measures - R1 the requirement to develop the restoration plan and all the components required of that plan; and R2 the requirement to prove and document that the plan works. Then, two measurements would follow: one to assess the contents of the plan and one to assess the simulation or testing of the plan.<br>• Need to resolve the issue of the elements on the Attachment – are these mandatory or not – there is a mismatch between R1 and levels |

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| | of non-compliance<br>• R3 – revise to place emphasis for TOP on restoring local transmission system as preparation for restoring the integrity of the Interconnection.<br>• R4 – Add LSEs<br>• R5 – replace 'periodic' with a specific periodicity for testing<br>• R6 – add specificity to frequency and scope of required training<br>• R11.5 - replace the word, 'may' with: The affected Transmission Operators shall not resynchronize the isolated area(s) with the surrounding area(s) until the following conditions are met: the voltage, frequency, and phase angle permit, the affected reliability coordinator(s) and the adjacent areas are notified, and reliability coordinator approval is given.<br>• Delete R11.5.4. It does not seem reasonable or logical for a control area to be required to shed 5,000 MWs of load, for example, in order for their neighbor to reconnect 1,000 MWs of their own load.<br>• R11.5. Should exclude islands within a system that do not affect surrounding areas<br><br>VRF comments<br>• R1, 5 & 8 – Does not just apply to local restoration<br>• R2 – Could be broken up into 2 requirements<br>• R11.4 – Ambiguous<br>• R11.5 - This needs to be looked at for 30 days - should be done prior to access being granted.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-03 — System Restoration and Blackstart | |
|---|---|
| **Standard #** | **Title** |
| **EOP-006-1** | Reliability Coordination – System Restoration |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Ensure the reliability coordinator is involved in the development and approval of system restoration plans.<br><br>Fill-in-the-Blank Team Comments<br>• Address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently<br>• References in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific<br>• See "Issues" for EOP-007<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-03 — System Restoration and Blackstart | | |
|---|---|---|
| **Standard #** | | **Title** |
| **EOP-007-0** | | Establish, Maintain, and Document a Regional Blackstart Capability Plan |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br>• Until the changes to EOP-006-1 are implemented, the regional reliability organization should continue to perform this role (approval).<br>• Consider EEI, FirstEnergy and MRO's suggestions in future revisions to the standard.<br><br>Fill-in-the-Blank Team Comments<br>• Address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently<br>• References in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific.<br>• This is currently a fill-in-the-blank standard tied to EOP-005, EOP-006, and EOP-009; every region should have procedures currently in place required by EOP-007-0; question why this is even an RRO function; they are not operating entities, should be RCs and operating entities that have the black start plan; black start plans need to be coordinated regionally.<br>• Consider retiring EOP-007 and moving these elements to EOP-005; EOP-006; and EOP-009. That would remove fill-in-blank elements. Still may need to evaluate role of RRO.R1 & R2 considerations<br>• Consider rewording of references in EOP-005, EOP-006, and EOP-009 to RRO/regional requirements and<br>• Define the specific requirements for R 1.2, R 1.3, etc. and either clearly define in EOP-007 or retire EOP-007 and place specific requirements in EOP-005, EOP-006, and EOP-009.<br>• Consider developing testing requirements on a national basis – this is already well established across the regions. The harder task is isolating the restoration issues in the various standards as described in the EOP-007 write-up to merge into a new NERC standard which then establishes which units are designated Blackstart units. This standard could be written independent of the units' identity and focus on testing of any Blackstart unit.<br><br>V0 Industry Comments<br>• Clarify testing requirements<br><br>Other<br>• 0Modify standard to conform with the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-03 — System Restoration and Blackstart | | |
|---|---|---|
| **Standard #** | | **Title** |
| **EOP-009-0** | | Documentation of Blackstart Generating Unit Test Results |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Consider suggestions for improvements in future revisions of the standards.<br><br>Fill-in-the-Blank Team Comments<br>• Address EOP-005, EOP-006 EOP-007 and EOP-009 concurrently.<br>• References in EOP-005, EOP-006, and EOP-009 to meet RRO/Regional requirements need to be modified and EOP-007 needs to be more specific.<br>• See "Issues" for EOP-007<br><br>V0 Industry Comments<br>• Distinction between RA & TO vs. RRO for test results<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2006-04 Backup Facilities

### Standards Involved:

EOP-008-0 — Plans for Loss of Control Center Functionality

### Research Needed:

A study of backup capabilities needed to support reliable operations is required.

### Brief Description:

The requirements in EOP-008 need additional specificity. The development revision to EOP-008 may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards. In addition, the efforts of the OC Backup Control Center Task Force will be used as one of the inputs to the revision of EOP-008. Also, there may be backup facility requirements in some other standards, and those requirements should be considered for movement into this standard.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2006-04 Backup Facilities Web page

### Project Schedule:

Project 2006-04 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2006-04 Roster

| Standard Review Form<br>Project 2006-04 — Backup Facilities | |
|---|---|
| **Standard #** | **Title** |
| **EOP-008-0** | Plans for Loss of Control Center Functionality |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>Include a requirement that provides for backup capabilities that, at a minimum, must:<br>• Be independent of the primary control center<br>• Be capable of operating for a prolonged period of time, generally defined by the time it takes to restore the primary control center.<br>• Provide for a minimum functionality to replicate the critical reliability functions of the primary control center.<br>• Provides that the extent of the backup capability be consistent with the impact of the loss of the entity's primary control center on the reliability of the bulk power system.<br>• Includes a requirement that all reliability coordinators have full backup control centers;<br>• Requires transmission operators and balancing authorities that have operational control over significant portions of generation and load to have minimum backup capabilities discussed above but may do so through contracting for these services instead of through dedicated backup control centers.<br><br>V0 Industry Comments<br>• How does staff know control center is lost? (Note – A system health monitor concept or equivalent functionality is what is desired here.)<br>• How is backup control achieved?<br>• Max. time to restore capabilities<br><br>VRF comments<br>• R1 - Not having a written plan does not 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<br>• R1.1 - Not having a written plan 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.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2006-06 Reliability Coordination

### Standards Involved:

COM-001-1 — Telecommunications
COM-002-2 — Communications and Coordination
IRO-001-1 — Reliability Coordination – Responsibilities and Authorities
IRO-002-1 — Reliability Coordination – Facilities
IRO-005-2 — Reliability Coordination – Current-Day Operations
IRO-014-1 — Procedures to Support Coordination between Reliability Coordinators
IRO-015-1 — Notifications and Information Exchange Between Reliability Coordinators
IRO-016-1 — Coordination of Real-time Activities between Reliability Coordinators

### Research Needed:

Operating Committee study of IROLs and situational awareness tools

### Brief Description

Most of the requirements in this set of standards were translated from Operating Policies as part of the Version 0 process. There have been suggestions for improving these requirements, and the drafting team will consider comments submitted by stakeholders, drafting teams and FERC in determining what changes should be proposed to stakeholders.

The drafting team will review all of the requirements in this set of standards and make a determination, with stakeholders, on whether to:

- Modify the requirement to improve its clarity and measureability while removing abiguity Move the requirement (into another SAR or Standard or to the certification process or standards)
- Eliminate the requirement (either because it is redundant or because it doesn't support bulk power system reliability).

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2006-06 Reliability Coordination Web page

### Project Schedule:

Project 2006-06 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2006-06 Roster

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **COM-001-1** | | Telecommunications |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Include generator operators and distribution providers in the list of applicable entities and create appropriate requirements for them.<br>• Address TAPS, Entergy, Six Cities, and FirstEnergy concerns through the standard development process.<br>• Specify requirements for using telecommunication facilities during normal and emergency conditions that reflect the roles of the applicable entities and their impact of reliable operation, and include adequate flexibility.<br><br>V0 Industry Comments<br>• Redundant with Policy 5A, R1<br>• Many players missing<br>• Apply R1 to all but smallest entities<br><br>VRF comments<br>• R6 – administrative requirement<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **COM-002-2** | | Communications and Coordination |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Include distribution providers in the list of applicable entities.<br>• Address APPA's concern through the standard development process.<br>• Include a requirement for the reliability coordinator to assess and approve only those actions that have impacts beyond the area views of the transmission operators and balancing authorities. Include how to determine whether an action needs to be assessed by the reliability coordinator.<br>• Consider Xcel's suggestion that the entity taking operating actions should not be held responsible for the delays caused by the reliability coordinator's assessment and approval.<br>• Address Santa Clara, FirstEnergy, and Six Cities concerns in the reliability standards development process.<br>• Include APPA's suggestions to complete the measures and levels of non-compliance.<br><br>V0 Industry Comments<br>• Voice with generators not required<br>• R1 – include reliability authority<br>• R2 – include sabotage and security<br>• R4 – clarify repeat back requirement with regard to emergency<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-001-1** | | Reliability Coordination – Responsibilities and Authorities |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Eliminate the references to the regional reliability organization as an applicable entity.<br>• Consider commenters' suggestions as part of the standards development process.<br>• Consider adding measures and levels of non-compliance<br><br>V0 Industry Comments<br>• Inability to perform needs to be communicated<br>• What is meant by 'interest of other entity'?<br><br>VRF comments<br>• R6 - Since the RC must be NERC certified, it stands to reason that anyone performing RC tasks should be certified. However, since the RC still retains the accountability for actions, and requirement 4 handles the agreements, this requirement is a medium risk.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-002-1** | | Reliability Coordination – Facilities |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Require a minimum set of tools that must be made available to the reliability coordinator.<br><br>V0 Industry Comments<br>• R5 – define synchronized information system<br>• R7 – define 'adequate' tools and 'wide-area'<br>• Words such as 'easily understood' and 'particular emphasis' need to be tightened<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-005-2** | | Reliability Coordination – Current-Day Operations |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br>• Provide further clarification that reliability coordinators and transmission operators direct control actions, not LSEs as part of the standard development process.<br>• Include measures and levels of non-compliance.<br>• 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.<br>• Conduct a survey on IROL practices and actual operating experiences by requiring reliability coordinators to report any violations of IROLS, their causes, the date and time, the durations and magnitudes in which actual operations exceeds IROLs to NERC on a monthly basis for one year beginning August 2, 2007.<br><br>Fill-in-the-Blank Team Comments<br>• R14 has regional reference<br><br>V0 Industry Comments<br>• R10, 11 & 12 – RA not empowered to do this<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-014-1** | | Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-015-1** | | Notifications and Information Exchange Between Reliability Coordinators |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-06 — Reliability Coordination | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-016-1** | | Coordination of Real-Time Activities Between Reliability Coordinators |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>VRF comments<br>• R1.2.1 & R2 – ambiguous<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2006-07 Transfer Capabilities — (ATC, TTC, CBM, TRM)

### Standards Involved:

FAC-012-1 — Transfer Capabilities Methodology
FAC-013-1 — Establish and Communicate Transfer Capabilities
MOD-001-0 — Documentation of TTC and ATC Calculation Methodologies
MOD-002-0 — Review of TTC and ATC Calculations and Results
MOD-003-0 — Procedure for Input on TTC and ATC Methodologies and Values
MOD-004-0 — Documentation of Regional CBM Methodologies
MOD-005-0 — Procedure for Verifying CBM Values
MOD-006-0 — Procedures for Use of CBM Values
MOD-007-0 — Documentation of the Use of CBM
MOD-008-0 — Documentation and Content of Each Regional TRM Methodology
MOD-009-0 — Procedure for Verifying TRM Values

### Research Needed:

None

### Brief Description:

Most of the requirements in this set of standards were translated from the former Planning Standards as part of the Version 0 process. There have been suggestions for improving these requirements, and the drafting team will consider comments submitted by stakeholders, drafting teams and FERC in determining what changes should be proposed to stakeholders.

The drafting team will review all of the requirements in this set of standards and make a determination, with stakeholders, on whether to:

- Modify the requirement to improve its clarity and measureability while removing abiguity Move the requirement (into another SAR or Standard or to the certification process or standards)
- Eliminate the requirement (either because it is redundant or because it doesn't support bulk power system reliability).

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2006-07 Transfer Capabilities — (ATC, TTC, CBM, and TRM)

### Project Schedule:

Project 2006-07 Schedule

### Target Completion Date:

Fourth quarter of 2007[1]

**Related Links:**

Project 2006-07 Roster

[1] The project team is reviewing its delivery schedule and will provide an update in a subsequent filing to the Commission and appropriate Canadian authorities when available. We expect this to take place in October.

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | |
|---|---|
| **Standard #** | **Title** |
| **FAC-012-1** | Transfer Capability Methodology |
| **Issues** | FERC Order 890<br>• 223. With respect to a timeline for completion, the Commission concurs with NERC that a significant amount of work remains to be done on ATC-related reliability standards development. We also agree with the many commenters who state that the NOPR's proposed six-month timeline is too short for such a complex assignment. Although NERC projects that it may be able to complete the process by the summer of 2007 (which is approximately six months from the date of the Final Rule), we believe NERC should have additional flexibility with respect to its timeline. Accordingly, we direct public utilities, working through NERC, to modify the ATC-related reliability standards within 270 days after the publication of the Final Rule in the Federal Register. We also direct public utilities to work through NAESB to develop business practices that complement NERC's new reliability standards within 360 days after the publication of the Final Rule in the Federal Register. Finally, we direct NERC and NAESB to file, within 90 days of publication of the Final Rule in the Federal Register, a joint status report on standards and business practices development and a work plan for completion of this task within the timeframe established above.160<br>• 237. The Commission adopts the NOPR proposal and directs public utilities, working through NERC, to develop consistent practices for calculating TTC/TFC. We direct public utilities, working through NERC, to address, through the reliability standards process, any differences in developing TTC/TFC for transmission provided under the pro forma OATT and for transfer capability for native load and reliability assessment studies.<br><br>FERC Order 693<br>Disposition: Not approved or remanded<br>• Should provide a framework for transfer capability calculation methodology, including data inputs and modeling assumptions.<br>• Should be an umbrella organization within the Eastern Interconnection and others to assure consistency. This is best done by NERC as the ERO.<br>• Process used to determine transfer capabilities should be transparent to the stakeholders. The results of those calculations should be available to qualified entities on a confidential basis.<br>• The process and criteria used to determine transfer capabilities for use in calculating ATC must be identical to those used in planning and operating the system.<br><br>Fill-in-the-Blank Team Comments<br>• Remove "required by its Regional Reliability Organization to establish inter-regional and intra-regional Transfer Capabilities "from Applicability section (4.1 and 4.2) of both FAC-012 and FAC-013.<br>• Comment from draft SAR on Planning Authority |

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| | • Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | |
|---|---|
| **Standard #** | **Title** |
| **FAC-013-1** | Establish and Communicate Transfer Capabilities |
| **Issues** | FERC Order 890<br>• 223. With respect to a timeline for completion, the Commission concurs with NERC that a significant amount of work remains to be done on ATC-related reliability standards development. We also agree with the many commenters who state that the NOPR's proposed six-month timeline is too short for such a complex assignment. Although NERC projects that it may be able to complete the process by the summer of 2007 (which is approximately six months from the date of the Final Rule), we believe NERC should have additional flexibility with respect to its timeline. Accordingly, we direct public utilities, working through NERC, to modify the ATC-related reliability standards within 270 days after the publication of the Final Rule in the Federal Register. We also direct public utilities to work through NAESB to develop business practices that complement NERC's new reliability standards within 360 days after the publication of the Final Rule in the Federal Register. Finally, we direct NERC and NAESB to file, within 90 days of publication of the Final Rule in the Federal Register, a joint status report on standards and business practices development and a work plan for completion of this task within the timeframe established above.160<br>• 237. The Commission adopts the NOPR proposal and directs public utilities, working through NERC, to develop consistent practices for calculating TTC/TFC. We direct public utilities, working through NERC, to address, through the reliability standards process, any differences in developing TTC/TFC for transmission provided under the pro forma OATT and for transfer capability for native load and reliability assessment studies.<br><br>FERC Order 693<br>Disposition: Approved with modifications<br>• Make the standard applicable to reliability coordinators.<br><br>Fill-in-the-Blank Team Comments<br>• Remove "required by its Regional Reliability Organization to establish inter-regional and intra-regional Transfer Capabilities "from Applicability section (4.1 and 4.2) of both FAC-012 and FAC-013.<br><br>V0 Industry Comments<br>• Not reviewed<br>• Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-001-0** | | Documentation of Total Transfer Capability and Available Transfer Capability Calculation Methodologies |
| **Issues** | FERC Order 890<br>• 211. As TDU Systems note, there is neither a definition of AFC in NERC's Glossary nor an existing reliability standard that discusses the AFC method. In order to achieve consistency in each component of the ATC calculation (discussed below), we direct public utilities, working through NERC, to develop an AFC definition and requirements used to identify a particular set of transmission facilities as a flowgate. However, we remind transmission providers that our regulations require the posting of ATC values associated with a particular path, not AFC values associated with a flowgate. Transmission providers using an AFC methodology must therefore convert flowgate (AFC) values into path (ATC) values for OASIS posting. In order to have consistent posting of the ATC, TTC, CBM, and TRM values on OASIS, we direct public utilities, working through NERC, to develop in the MOD-001 standard a rule to convert AFC into ATC values to be used by transmission providers that currently use the flowgate methodology.<br>• 212. The Commission also believes that further clarification is necessary regarding the calculation algorithms for firm and non-firm ATC.150 Currently, NERC has no standards for calculating non-firm ATC. We find that the same potential for discrimination exists for non-firm transmission service as for firm service and that greater uniformity in both firm and non-firm ATC calculations will substantially reduce the remaining potential for undue discrimination. Therefore, we direct public utilities, working through NERC, to modify related ATC standards by implementing the following principles for firm and non-firm ATC calculations: (1) for firm ATC calculations, the transmission provider shall account only for firm commitments; and (2) for non-firm ATC calculations, the transmission provider shall account for both firm and non-firm commitments, postbacks of redirected services, unscheduled service, and counterflows. We understand that these principles are currently followed by most transmission providers and believe they should be clearly set forth in the ATC-related reliability standards. As described below, each transmission provider's Attachment C must include a detailed formula for both firm and non-firm ATC, consistent with the modified ATC-related reliability standards.<br>• 223. With respect to a timeline for completion, the Commission concurs with NERC that a significant amount of work remains to be done on ATC-related reliability standards development. We also agree with the many commenters who state that the NOPR's proposed six-month timeline is too short for such a complex assignment. Although NERC projects that it may be able to complete the process by the summer of 2007 (which is approximately six months from the date of the Final Rule), we believe NERC should have additional flexibility with respect to its timeline. Accordingly, we direct public utilities, working | |

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| | through NERC, to modify the ATC-related reliability standards within 270 days after the publication of the Final Rule in the Federal Register. We also direct public utilities to work through NAESB to develop business practices that complement NERC's new reliability standards within 360 days after the publication of the Final Rule in the Federal Register. Finally, we direct NERC and NAESB to file, within 90 days of publication of the Final Rule in the Federal Register, a joint status report on standards and business practices development and a work plan for completion of this task within the timeframe established above.160<br>• 237. The Commission adopts the NOPR proposal and directs public utilities, working through NERC, to develop consistent practices for calculating TTC/TFC. We direct public utilities, working through NERC, to address, through the reliability standards process, any differences in developing TTC/TFC for transmission provided under the pro forma OATT and for transfer capability for native load and reliability assessment studies.<br>• 243. To achieve greater consistency in ETC calculations and further reduce the potential for undue discrimination, the Commission adopts the NOPR proposal and directs public utilities, working through NERC and NAESB, to develop a consistent approach for determining the amount of transfer capability a transmission provider may set aside for its native load and other committed uses. We expect that NERC will address ETC through the MOD-001 reliability standard rather than through a separate reliability standard. 169 By using MOD-001, the ETC calculation can be adjusted to be applicable to each of the three ATC methodologies under development by NERC.<br>• 244. In order to provide specific direction to public utilities and NERC, we determine that ETC should be defined to include committed uses of the transmission system, including (1) native load commitments (including network service), (2) grandfathered transmission rights, (3) appropriate point-to-point reservations, 170 (4) rollover rights associated with long-term firm service, and (5) other uses identified through the NERC process. ETC should not be used to set aside transfer capability for any type of planning or contingency reserve, which are to be addressed through CBM and TRM.171 In addition, in the short-term ATC calculation, all reserved but unused transfer capability (non-scheduled) shall be released as non-firm ATC.<br>• 245. We agree with TDU Systems that inclusion of all requests for transmission service in ETC would likely overstate usage of the system and understate ATC. We therefore find that reservations that have the same point of receipt (POR) (generator) but different point of delivery (POD) (load), for the same time frame, should not be modeled in the ETC calculation simultaneously if their combined reserved transmission capacity exceeds the generator's nameplate capacity at POR. This will prevent overly unrealistic utilization of transmission capacity associated with power output from a generator identified as a POR. We direct public utilities, working through NERC, to develop requirements in MOD-001 that lay out clear instructions on how these reservations should be accounted. One approach that could be used is examining historical patterns of actual reservation use during a particular season, month, or time of day.<br>• 292. The Commission also adopts the NOPR proposal to require |

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| | transmission providers to use data and modeling assumptions for the short- and long-term ATC calculations that are consistent with that used for the planning of operations and system expansion, respectively, to the maximum extent practicable. This includes, for example: (1) load levels, (2) generation dispatch, (3) transmission and generation facilities maintenance schedules, (4) contingency outages, (5) topology, (6) transmission reservations, (7) assumptions regarding transmission and generation facilities additions and retirements, and (8) counterflows. We find that requiring consistency in the data and modeling assumptions used for ATC calculations will remedy the potential for undue discrimination by eliminating discretion and ensuring comparability in the manner in which a transmission provider operates and plans its system to serve native load and the manner in which it calculates ATC for service to third parties. The Commission directs public utilities, working through NERC, to modify ATC standards to achieve this consistency.<br>• 293. With regard to EPSA's request for the standardization of additional data inputs, we believe they are already captured in the Commission's proposal as adopted in this Final Rule. Xcel asks the Commission to require consistency in the determination of counterflows in the calculation of ATC. Counterflows are included in the list of assumptions that public utilities, working through NERC, are required to make consistent. We believe that counterflows, if treated inconsistently, can adversely affect reliability and competition, depending on how they are accounted for. Accordingly, we reiterate that public utilities, working through NERC and NAESB, are directed to develop an approach for accounting for counterflows, in the relevant ATC standards and business practices. We find unnecessary Xcel's request that we require a date certain for specific issues in the Western Interconnection to be addressed. Above we require public utilities, working through NERC, to modify the ATC standards within 270 days after the publication of the Final Rule in the Federal Register.<br>• 295. We offer the following clarifications. In response to Southern, we clarify that we require consistent use of assumptions underlying operational planning for short-term ATC and expansion planning for long-term ATC calculation. We also clarify that there must be a consistent basis or approach to determining load levels. For example, one approach may be for transmission providers to calculate load levels using an on- and off-peak model for each month when evaluating yearly service requests and calculating yearly ATC. The same (peak- and off-peak) or alternative approaches may be used for monthly, weekly, daily and hourly ATC calculations. Regardless of the ultimate choice of approach, it is imperative that all transmission providers use the same approach to modeling load levels to enable the meaningful exchange of data among transmission providers. Accordingly, we direct public utilities, working through NERC, to develop consistent requirements for modeling load levels in MOD-001 for the services offered under the pro forma OATT.<br>• 296. With respect to modeling of generation dispatch, we direct public utilities, working through NERC, to develop requirements in NERC's MOD-001 reliability standard specifying how transmission providers shall determine which generators should be modeled in service, including guidance on how independent generation should be |

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| | considered. We agree with Ameren that any modeling of base generation dispatch must model generators, including merchant generators, as they are expected to run. Accordingly, we direct public utilities, working through NERC, to revise reliability standard MOD-001 by specifying that base generation dispatch will model (1) all designated network resources and other resources that are committed or have the legal obligation to run, as they are expected to run and (2) uncommitted resources that are deliverable within the control area, economically dispatched as necessary to meet balancing requirements.<br>• 297. Regarding transmission reservations modeling, we direct public utilities, working through NERC, to develop requirements in reliability standard MOD-001 that specify (1) a consistent approach on how to simulate reservations from points of receipt to points of delivery when sources and sinks are unknown and (2) how to model existing reservations.<br>• 301. The Commission adopts the NOPR proposal and requires the development of reliability standards that ensure ATC is calculated at consistent intervals among transmission providers. The Commission thus directs public utilities, working through NERC and NAESB, to revise reliability standard MOD-001 to require ATC to be recalculated by all transmission providers on a consistent time interval and in a manner that closely reflects the actual topology of the system, e.g., generation and transmission outages, load forecast, interchange schedules, transmission reservations, facility ratings, and other necessary data. This process must also consider whether ATC should be calculated more frequently for constrained facilities. ATC-related requirements for OASIS posting are discussed below.<br>• 310. The Commission adopts the NOPR proposal and directs public utilities, working through NERC, to revise the related MOD reliability standards to require the exchange of data and coordination among transmission providers and, working through NAESB, to develop complementary business practices. The following data shall, at a minimum, be exchanged among transmission providers for the purposes of ATC modeling: (1) load levels; (2) transmission planned and contingency outages; (3) generation planned and contingency outages; (4) base generation dispatch; (5) existing transmission reservations, including counterflows; (6) ATC recalculation frequency and times; and (7) source/sink modeling identification. The Commission concludes that the exchange of such data is necessary to support the reforms requiring consistency in the determination of ATC adopted in this Final Rule. As explained above, transmission providers are required to coordinate the calculation of TTC/TFC and ATC/AFC with others and this requires a standard means of exchanging data.<br>• 338. We adopt EEI's proposal that the Commission revise Attachment C, section 3(f) to replace the word "prove" with the word "demonstrate." The word "demonstrate" more accurately describes the showing we expect the transmission provider to make. We agree that the word "prove" implies a standard of proof that we did not intend to impose. We also acknowledge TVA's comments that the NERC standards drafting team is developing standards that should address "double counting" in ATC calculations in general. However, we require that the information in Attachment C be sufficient to demonstrate that a transmission provider is not double counting CBM in its ATC |

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| | calculation.<br>• 389. We affirm our statement in the NOPR proposal acknowledging that transfer capability associated with transmission reservations that are not scheduled in real time is required to be made available as non-firm, and posted on OASIS.<br>• 486. The Commission adopts the information exchange principle as to both network and point-to-point transmission customers. Accordingly, we will require transmission providers, in consultation with their customers and other stakeholders, to develop guidelines and a schedule for the submittal of information. In order for the Final Rule's planning process to be as open and transparent as possible, the information collected by transmission providers to provide transmission service to their native load customers must be transparent and, to that end, equivalent information must be provided by transmission customers to ensure effective planning and comparability. We clarify that the information must be made available at regular intervals to be identified in advance. Information exchanged should be a continual process, the frequency of which should be addressed in the transmission provider's compliance filing required by the Final Rule. However, we expect that the frequency and planning horizon will be consistent with ERO requirements.<br><br>FERC Order 693<br>Disposition: Not approved or remanded<br>• Tied to Order No. 890, in which Commission developed policies to lessen, if not eliminate, opportunities to discriminate against competitive power suppliers in access to the transmission system.<br>• Industry-wide consistency and transparency of all ATC components and methodology. This includes modeling load levels, transmission reservations, and generation dispatch scenarios consistently.<br>• Provide a framework for ATC, TTC, and ETC calculation, developing industry-wide consistency of all ATC components. Three methodologies are expected: contract path ATC, network ATC, and network AFC.<br>• Require disclosure of algorithms for both firm and non-firm ATC and processes used in the calculation.<br>• Identify a detailed list of information to be exchanged among transmission providers for the purposes of ATC modeling.<br>• Include a requirement that assumptions used in the ATC and AFC calculations should be consistent with those used for planning the expansion of or operation of the bulk power system.<br>• Require ATC to be updated on a consistent time interval.<br>• Provides predictable and sufficiently accurate, consistent, equivalent, and replicable ATC calculations.<br>• Provides for the conversion of AFC to ATC.<br>• Applicable entities must make available their assumptions and contingencies underlying ATC and TTC calculations.<br>• Focus of ATC/AFC with this standard; FAC-012-1 should focus on TTC/TFC.<br>• Identify applicable entities in terms of users, owners, and operators of the bulk power system.<br><br>Fill-in-the-Blank Team Comments |

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| | • R1 contains regional reference<br><br>V0 Industry Comments<br>• Delete – NAESB business<br>• Delete 'in conjunction with members' as not part of NERC's concern<br>• List those not required to post ATC<br>• Need to include BA<br>• Clarify R.1.7<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
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| **Standard #** | | **Title** |
| **MOD-002-0** | | Review of Transmission Service Provider Total Transfer Capability and Available Transfer Capability Calculations and Results |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br><br>V0 Industry Comments<br>• Should be with NAESB<br>• Should be in conjunction with BA<br>• Evidence = mail receipt<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
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| **Standard #** | | **Title** |
| **MOD-003-0** | | Regional Procedure for Input on Total Transfer Capability and Available Transfer Capability Methodologies and Values |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br>• Consider APPA's suggestion that MOD-003 may be redundant and should be eliminated through the standards development process if certain reporting requirements are included in MOD-001.<br><br>V0 Industry Comments<br>• Need to include BA<br>• Recourse needs to be specified<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-07 Transfer — Capabilities (TC, ATC, TTC, CBM, TRM) | |
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| **Standard #** | **Title** |
| **MOD-004-0** | Documentation of Regional Reliability Organization Capacity Benefit Margin Methodologies |
| **Issues** | FERC Order 890<br>• 212. The Commission also believes that further clarification is necessary regarding the calculation algorithms for firm and non-firm ATC.150 Currently, NERC has no standards for calculating non-firm ATC. We find that the same potential for discrimination exists for non-firm transmission service as for firm service and that greater uniformity in both firm and non-firm ATC calculations will substantially reduce the remaining potential for undue discrimination. Therefore, we direct public utilities, working through NERC, to modify related ATC standards by implementing the following principles for firm and non-firm ATC calculations: (1) for firm ATC calculations, the transmission provider shall account only for firm commitments; and (2) for non-firm ATC calculations, the transmission provider shall account for both firm and non-firm commitments, postbacks of redirected services, unscheduled service, and counterflows. We understand that these principles are currently followed by most transmission providers and believe they should be clearly set forth in the ATC-related reliability standards. As described below, each transmission provider's Attachment C must include a detailed formula for both firm and non-firm ATC, consistent with the modified ATC-related reliability standards.<br><br>• 256. The Commission concludes that it is appropriate to allow LSEs to retain the option of setting aside transfer capability in the form of CBM to maintain their generation reliability requirement. We agree with commenters that, without CBM, LSEs would have to increase their generation reserve margins by contracting for generation capacity, which may result in higher costs without additional reliability benefits. We require, however, the development of standards for how CBM is determined, allocated across transmission paths, and used in order to limit misuse of transfer capability set aside as CBM. Transmission providers also must reflect the set-aside of transfer capability as CBM in the development of the rate for point-to-point transmission service to ensure comparable treatment for point-to-point to customers.<br><br>• 257. The Commission therefore adopts a combination of the NOPR options one and two, and declines to adopt option three. First, we require public utilities, working through NERC and NAESB, to develop clear standards for how the CBM value shall be determined, allocated across transmission paths, and used. We understand that NERC has already begun the process of modifying several of the CBM-related reliability standards and that the drafting process is a joint project with NAESB. Second, we require transmission providers to reflect the set-aside of transfer capability as CBM in the development of the rate for point-to-point transmission service. |

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| | • 259. To ensure CBM is used for its intended purpose, CBM shall only be used to allow an LSE to meet its generation reliability criteria. Consistent with Duke's statement, we clarify that each LSE within a transmission provider's control area has the right to request the transmission provider to set aside transfer capability as CBM for the LSE to meet its historical, state, RTO, or regional generation reliability criteria requirement such as reserve margin, loss of load probability (LOLP), the loss of largest units, etc.<br><br>• 260. We direct public utilities, working through NERC, to develop clear requirements for allocating CBM over transmission paths and flowgates. While we do not mandate a particular methodology for allocating CBM to paths and flowgates, one approach could be based on the location of the outside resources or spot market hubs that an LSE has historically relied on during emergencies resulting from an energy deficiency.<br><br>• 261. We concur with TAPS' proposal that all LSEs should have access to CBM and meaningful input into how much transfer capability is set aside as CBM. In the transparency section below, we provide detailed requirements regarding availability of documentation used to determine the amount of transfer capability to be set aside as CBM and the posting of CBM values and narratives. Access to this documentation will enable LSEs to validate how much transfer capability is set aside as CBM on each system and provide them with information to question whether the set-aside is consistent with the reliability standards and this Final Rule.<br><br>• 262. Concerning TAPS' proposal to remove the reservation decision from the sole discretion of transmission providers, we determine that LSEs should be permitted to call for use of CBM, if they do so pursuant to conditions established in the reliability standards development process. We direct public utilities working through NERC to modify the CBM-related standards to specify the generation deficiency conditions during which an LSE will be allowed to use the transfer capability reserved as CBM. In addition, we direct that transmission set aside as CBM shall be zero in non-firm ATC calculations. Finally, we order public utilities to work with NAESB to develop an OASIS mechanism that will allow for auditing of CBM usage.<br><br>• 273. The Commission also adopts the NOPR proposal to establish standards specifying the appropriate uses of TRM to guide NERC and NAESB in the drafting process. Transmission providers may set aside TRM for (1) load forecast and load distribution error, (2) variations in facility loadings, (3) uncertainty in transmission system topology, (4) loop flow impact, (5) variations in generation dispatch, (6) automatic sharing of reserves, and (7) other uncertainties as identified through the NERC reliability standards development process. Because load, facility loading and other uncertainties constantly deviate, we will not require that TRM set aside capacity be set at zero in the non-firm ATC calculation. In other words, we will not require transfer capability that is set aside as TRM to be sold on a non-firm basis. We find that clear |

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| | specification in this Final Rule of the permitted purposes for which entities may reserve CBM and TRM will virtually eliminate double-counting of TRM and CBM.<br><br>• 354. The Commission adopts the CBM posting requirements proposed in the NOPR. In doing so, we amend our OASIS regulations to incorporate the directives established in the CBM Order. Accordingly, we require transmission providers to post (and update) the CBM amount for each path. In addition, the Commission requires transmission providers to make any transfer capability set aside for CBM but unused for such purpose available on a non-firm basis and to post this availability on OASIS. Furthermore, the Commission requires transmission providers to post (and update) the TRM values for the paths on which the transmission provider already posts ATC, TTC, and CBM.<br><br>• 358. The Commission incorporates into its regulations the requirement in the CBM Order for a transmission provider to periodically reevaluate its transfer capability set aside for CBM. With respect to TAPS' concerns over the effort involved in the reevaluation process, we will require CBM studies to be performed at least every year. This requirement is consistent with the CBM Order, in which the Commission stated that the level of ATC set aside for CBM should be reevaluated periodically to take into account more certain information (such as assumptions that may not have, in fact, materialized).204 While changes requiring a reevaluation of CBM are longer-term in nature (e.g., installation of a new generator or a long-term outage), quarterly may be too frequent, though two years may be too long and may prevent a portion of the CBM set aside from being released as ATC. Moreover, annual reevaluation is consistent with the current NERC standard being developed in MOD-005.205 The requirement to evaluate CBM at least every year also is consistent with the CBM Order in that the Commission directed transmission providers to periodically reevaluate their generation reliability needs so as to make known the need for CBM and to post on OASIS their practices in this regard.<br><br>FERC Order 693<br>Disposition: Not approved or remanded<br>• Clarify that CBM shall be set aside upon request of any LSE within a balancing area to meet its verifiable historical, state, RTO, or regional generation reliability criteria.<br>• Develop requirements regarding transparency of the generation planning studies used to determine CBM values.<br>• Make clear the process for how CBM is allocated across transmission paths or flowgates.<br>• Add LSE as an applicable entity.<br>• Ensure that CBM, TRM, and ETC cannot be used for the same purpose, e.g. loss of the identical generating unit.<br>• Coordinate with NAESB business practices.<br>• Consider APPA's suggestion that MOD-004 may be redundant and could be eliminated is MOD-002 is modified to include reporting requirements. |

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| | V0 Industry Comments<br>• Regional coordination missing<br>• RRO members not a NERC issue<br>• Gen. planning criteria not available<br>• Restrictions on TSP unfair<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
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| **Standard #** | | **Title** |
| **MOD-005-0** | | Procedure for Verifying Capacity Benefit Margin Values |
| **Issues** | FERC Order 693<br>• Consider APPA's comment to incorporate MOD-004 and MOD-005 into MOD-006 through the standards development process.<br><br>V0 Industry Comments<br>• Some systems are exempt and aren't noted here<br>• Relationship between shared reserves & CBM<br>• Remove reference to members<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
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| **Standard #** | | **Title** |
| **MOD-006-0** | | Procedures for the Use of Capacity Benefit Margin Values |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Include a requirement that CBM and TRM will not be used for the same purpose.<br>• CBM should be used for emergency generation deficiencies.<br>• Modify requirement R1.2 to define generation deficiency based on a specific energy emergency alert level.<br>• CBM should be zero in the calculation of non-firm ATC.<br>• Expand applicability section to include entities that use CBM, such as LSEs.<br><br>V0 Industry Comments<br>• CBM is import only<br>• CBM restrictions unfair and could lead to unreliability<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | |
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| **Standard #** | **Title** |
| **MOD-007-0** | Documentation of the Use of Capacity Benefit Margin |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Expand applicability section to include entities that use CBM, such as LSEs.<br>• Expand applicability section to include balancing authorities as well.<br><br>V0 Industry Comments<br>• Definition required as to who and when to report to<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | |
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| **Standard #** | **Title** |
| **MOD-008-0** | Documentation and Content of Each Regional Transmission Reliability Margin Methodology |
| **Issues** | FERC Order 890<br>• 272. The Commission adopts the NOPR proposal and requires public utilities, working through NERC, to complete the ongoing process of modifying TRM standards MOD-008 and MOD-009. We understand that the standard drafting process is underway as a joint project with NAESB.<br>• 273. The Commission also adopts the NOPR proposal to establish standards specifying the appropriate uses of TRM to guide NERC and NAESB in the drafting process. Transmission providers may set aside TRM for (1) load forecast and load distribution error, (2) variations in facility loadings, (3) uncertainty in transmission system topology, (4) loop flow impact, (5) variations in generation dispatch, (6) automatic sharing of reserves, and (7) other uncertainties as identified through the NERC reliability standards development process. Because load, facility loading and other uncertainties constantly deviate, we will not require that TRM set aside capacity be set at zero in the non-firm ATC calculation. In other words, we will not require transfer capability that is set aside as TRM to be sold on a non-firm basis. We find that clear specification in this Final Rule of the permitted purposes for which entities may reserve CBM and TRM will virtually eliminate double-counting of TRM and CBM.<br>• 275. In addition, we direct public utilities, working through NERC, to establish an appropriate maximum TRM. One acceptable method may be to use a percentage of ratings reduction, i.e., model the system assuming all facility ratings are reduced by a specific percentage. This is a relatively simple method and, if adopted as the reliability standard's method, should not restrict a transmission provider from using a more sophisticated method that may allow for greater ATC without reducing overall reliability.<br><br>FERC Order 693<br>Disposition: Not approved or remanded<br>• Include clear requirements for how TRM should be calculated, including a methodology for determining maximum TRM values, and allocated across paths.<br>• Clear requirements for permitted purposes for which TRM can be set aside and used.<br>• Clear requirements for availability of documentation that supports TRM determination.<br>• Expand the applicability to include planning authorities and reliability coordinators.<br><br>V0 Industry Comments<br>• Exemptions missing<br>• RRO in conjunction with its members is not NERC subject matter |

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| | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2006-07 — Transfer Capabilities (TC, ATC, TTC, CBM, TRM) | | |
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| **Standard #** | | **Title** |
| **MOD-009-0** | | Procedure for Verifying Transmission Reliability Margin Values |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br><br>V0 Industry Comments<br>• Margin values not provided to users<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2006-08 Transmission Loading Relief

### Standards Involved:

IRO-006-3 — Reliability Coordination – Transmission Loading Relief

### Research Needed:

None

### Brief Description:

This is a project that is carried over from 2006. This project involves a coordinated effort with NAESB to clarify and refine the requirements in the standard and identify which requirements are needed to support reliability and which requirements are needed to support a business practice. A part of this project is to modify the requirements so that the Interchange Distribution Calculator will accept market data, thus eliminating the need for the existing regional differences and to make other necessary modifications as identified by stakeholders.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2006-08 Transmission Loading Relief Web page

### Project Schedule:

Project 2006-08 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2006-08 Roster

| Standard Review Form<br>Project 2006-08 Transmission Loading Relief | |
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| **Standard #** | **Title** |
| **IRO-006-3** | Reliability Coordination – Transmission Loading Relief |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Include a clear warning that TLR procedures are not appropriate and not effective to mitigate an actual IROL violation.<br>• Identifies the available alternatives to mitigate an IROL violation other than the use of the TLR procedure. Consider the suggestions of MidAmerican and Xcel when developing the modification.<br>• Modify the WECC and ERCOT load relief procedures to ensure consistency with the standard form of the reliability standard including requirements, measures, and levels of non-compliance.<br><br>Regional Difference to IRO-006: PJM/MISO/SPP Enhanced Congestion Management<br>Disposition: Not Approved or Remanded.<br><br>• Commission will allow the twelve-month PJM/MISO/SPP field test to conclude before taking further action on the variance.<br>• Instructs the RTOs to continue working with the non-market regions to develop revised seams agreements that allow for equitable and feasible treatment of market flows in the NERC TLR/redispatch process.<br>• Allow the NERC Operating Committee to address the technical merits of netting flow impacts in the interchange distribution calculator.<br><br>FERC Order 890<br>• 911. The Commission has determined that modifications to the current planning redispatch requirement and creation of a conditional firm option are both necessary for provision of reliable and non-discriminatory point-to-point transmission service. The planning redispatch and conditional firm options represent different ways of addressing similar problems. They can be used to remedy a system condition that occurs infrequently and prevents the granting of a long-term firm point-to-point service. These options also can be used to provide service until transmission upgrades are completed to provide fully firm service. Planning redispatch involves an ex ante determination of whether out-of-merit order generation resources can be used to maintain firm service. Conditional firm involves an ex ante determination of whether there are limited conditions or hours under which firm service can be curtailed to allow firm service to be provided in all other conditions or hours. As we explain below, both techniques are currently used under certain conditions by transmission providers to serve native load and, hence, it is necessary to make comparable services available to transmission customers in order to avoid undue discrimination.<br>• 1074. We adopt a secondary network curtailment priority to apply for |

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| | the hours or specific system conditions when conditional firm service is conditional. During nonconditional periods, conditional firm service is subject to pro rata curtailment consistent with curtailment of other long-term firm service. Thus, secondary network service and conditional firm service when it is conditional will share the same curtailment priority. Also, there is no conflict with reliability standards because conditional firm service will be subject to pro rata curtailment with all other firm uses of the system once conditional curtailment hours, if that is the option selected, are exhausted.<br>• 1075. The secondary network curtailment priority is appropriate because the customer is paying the long-term firm point-to-point rate and thus should receive the highest non-firm curtailment priority during the conditional curtailment hours or during specified system conditions. Adoption of this curtailment priority overcomes what could otherwise be significant implementation hurdles. It allows for implementation of the service without changes to existing NERC TLR practices. NERC and members of the industry need not undertake the time-consuming and expensive process of establishing a new curtailment priority that is between firm and non-firm service as some commenters requested. Use of this curtailment priority also avoids attendant decisions relating to the method of curtailment that should apply, i.e., pro rata or transactional curtailment, for a quasi-firm curtailment priority. It is also consistent with existing interruption provisions of the pro forma OATT which provide that secondary service cannot be interrupted for economic reasons.659 This is consistent with our determination that conditional firm service when it is conditional is curtailable only to maintain reliable operation of the transmission system.<br>• 1076. We reject EEI's argument that the curtailment priority for conditional firm service is inconsistent with Commission precedent regarding priority non-firm service only for network customers. EEI's argument is inapposite. Long-term firm point-to-point customers taking fully firm service without the conditional firm option do not need access to priority non-firm service as EEI suggests. They have assurance that their service will not be interrupted for economic reasons and will only be curtailed on a comparable basis with network service. This would not be the case for conditional firm customers. We also find that EEI has failed to explain the connection between the conditional firm transmission service and the availability of reliability re-dispatch options, i.e., generators on its system that can ramp up or down in response to a curtailment. We reject Powerex's request that transmission providers be required to show that existing long-term rights are protected. Each addition of a new long-term firm transaction impacts the rights of existing firm customers to some extent.<br>• 1077. We disagree with commenters' suggestion that the NERC IDC must be changed to accommodate conditional firm service. We reiterate that we are not creating a new curtailment priority in this Final Rule. We also disagree that new tags that combine a firm and non-firm priority must be developed in order to implement the conditional firm option. The curtailment priority in a tag can be changed ahead of the operating hour based on a near-term forecast of system conditions.660 We are cognizant that daily and hourly operations to change the tags for conditional firm customers likely |

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| | involve the need for control room coordination and development of an appropriate tracking process. As the Commission described in the NOPR, new tracking and tagging business practices for this service must be developed by each transmission provider. Thus, we are allowing a sufficient period for the development of these business practices, i.e., 180 days from the date of publication of this Final Rule in the Federal Register. As directed above, transmission providers must coordinate with other transmission providers in their regions to develop these tracking and tagging business practices.<br><br>FERC Order 693<br>Disposition: Approve with modifications<br>• Include a clear warning that TLR procedures are not appropriate and not effective to mitigate an actual IROL violation.<br>• Identifies the available alternatives to mitigate an IROL violation other than the use of the TLR procedure. Consider the suggestions of MidAmerican and Xcel when developing the modification.<br>• Modify the WECC and ERCOT load relief procedures to ensure consistency with the standard form of the reliability standard including requirements, measures, and levels of non-compliance.<br><br>V0 Industry Comments<br>• Usage of TLR log questioned<br>• Some inconsistencies with current usage<br><br>VRF comments<br>• R2.1, .2 & .3 – not a requirement, just a suggested instruction<br>• R6 – redundant<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2006-09 Facility Ratings

### Standards Involved:

FAC-008-1 — Facility Ratings Methodology
FAC-009-1 — Establish and Communicate Facility Ratings

### Research Needed:

None

### Brief Description:

The revisions to these two standards will result in a single standard that is responsive to the recommended changes identified in the Standard Review Forms attached to this SAR.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2006-09 Facility Ratings Web page

### Project Schedule:

Project 2006-09 Schedule

### Target Completion Date:

First quarter of 2008

### Related Links:

Project 2006-09 Roster

| Standard Review Form<br>Project 2006-09 — Facility Ratings | | |
|---|---|---|
| **Standard #** | **Title** | |
| **FAC-008-1** | Facility Ratings Methodology | |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Consider EEI's suggestion for having this information available for review upon request of a registered user, owner, and operator as part of the standards development process.<br>• Require transmission and generator facility owners to document underlying assumptions and methods used to determine normal and emergency facility ratings.<br>• Ensure that the methodology chosen is consistent with standards developed in an open process like IEEE or CIGRE.<br>• Consider comments raised by LPPC and MRO as part of the standards development process.<br>• Identify and document the limiting component for all facilities and the increase in rating if that component were no longer the limiting component, i.e. the rating for the second-most limiting component, for facilities associated with an IROL, a limitation of TTC, an impediment to generator deliverability, or an impediment to service in major cities or load pockets.<br>• Consider International Transmission's comments regarding applying this directive only for lines where the conductor itself is not the limiting element as part of the standards development process.<br>• Consider comments from FirstEnergy and MISO that generators will have difficulty determining the increase in ratings due to the next limiting element through the standards development process.<br>• Consider Xcel's comments that an actual test be used by generator operators to determine capabilities as part of the standards development process.<br>• Consider FirstEnergy's comments that compliance with NRC rating methodologies should be assumed to comply with NERC reliability standards as part of the standards development process.<br>• Consider the comments by the Valley Group regarding dynamic line ratings as part of the standards development process.<br>• Add or update the compliance measures in the standard as part of the standards development process.<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2006-09 Facility Ratings | |
|---|---|
| **Standard #** | **Title** |
| **FAC-009-1** | Establish and Communicate Facility Ratings |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-01 Underfrequency Load Shedding

### Standards Involved:

PRC-006-0 — Development and Documentation of Regional ULS Program Requirements
PRC-007-0 — Assuring Consistency with Regional UFLS Programs
PRC-009-0 — UFLS Performance Following an Underfrequency Event

### Research Needed:

None

### Brief Description:

PRC-006 is one of the few reliability standards identified by the Regional Reliability Standards Working Group as a standard that has some requirements that need to be defined by each regional entity in a regional standard.

The standard drafting team (SDT) will work with stakeholders to review PRC-006 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the UFLS program documentation. The SDT shall determine which requirements should be continent-wide requirements and which requirements should be included in regional standards.

PRC-007 and PRC-009 have some 'fill-in-the-blank' characteristics, as identified in the Regional Reliability Standards Working Group work plan, which need to be removed. These standards shall be included with PRC-006 for consideration as one or more revised standards as necessary for consistency and clarity of overall program requirements and any other associated programs and/or requirements that affect or impact the UFLS program.

The standard drafting team may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2007-01 Underfrequency Load Shedding Web page

### Project Schedule:

Project 2007-01 Schedule

### Target Completion Date:

Third quarter of 2008

### Related Links:

Project 2007-01 Roster

| Standard Review Form<br>Project 2007-01 — Underfrequency Load Shedding | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-006-0** | | Development and Documentation of Regional Reliability Organizations' Underfrequency Load Shedding Programs |
| **Issues** | FERC Order 693<br>Disposition: Not approved or remanded<br>• Transfer responsibility from the regional reliability organization to the regional entity.<br><br>Fill-in-the-Blank Team Comments<br>• Modify R1 to require each Region to develop a regional standard, and<br>• Determine what elements (if any) of UFLS should be included in the North American standard and what elements should be included in the regional standards.<br>• Development of regional standards needs to be coordinated with Regional entities. Regional entities should begin process for developing regional standards once the drafting team for the North American standard has determined what elements of UFLS should be included in the continent-wide standard and what elements should be included in the regional standards.<br>• PRC-006 will be a continent-wide standard supported by Regional Reliability Standards.<br>• Related PRC-007, PRC-008, and 009.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Who do you submit compliance material to?<br>• Need to define evidence<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-01 — Underfrequency Load Shedding | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-007-0** | | Assuring Consistency of Entity Underfrequency Load Shedding Programs with Regional Reliability Organizations' Underfrequency Load Shedding Program Requirements |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Change "program" to "standard" in R1.<br>• Coordinated with PRC-006.<br>• The regional procedures need to be converted to a standard to implement this.<br><br>V0 Industry Comments<br>• Need to include RA<br>• Need to refine levels of non-compliance<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-01 — Underfrequency Load Shedding | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-009-0** | | Analysis and Documentation of Underfrequency Load Shedding Performance Following an Underfrequency Event |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Change "program" to "standard'.<br>• See issues for PRC-007.<br><br>V0 Industry Comments<br>• Define evidence<br>• 90 days vs. 30 days<br>• Exemptions for those with shunt reactors who don't shed load<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2007-02 Operating Personnel Communications Protocols

### Standards Involved:

COM-002-2

### Research Needed:

None

### Brief Description:

This is a new project that was identified in support of a blackout recommendation #26. This standard will require the use of specific communication protocols, especially for communications during alerts and emergencies. The standard will be applicable to transmission operators, balancing authorities, reliability coordinators, generator operators and distribution providers.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2007-02 Operating Personnel Communications Protocols Web page

### Project Schedule:

Project 2007-02 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2007-02 Roster

| Standard Review Form<br>Project 2007-02 Operating Personnel Communications Protocols | |
|---|---|
| **Standard #** | **Title** |
| **COM-002-2** | Communications and Coordination |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Establish tightened communication protocols, especially for communications during alerts and emergencies. Establish uniformity to the extent practical on a continent-wide basis.<br><br>V0 Industry Comments<br>• Voice with generators not required<br>• R1 – include reliability authority<br>• R2 – include sabotage and security<br>• R4 – clarify repeat back requirement with regard to emergency<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-03 Real-time Transmission Operations and Balancing of Load and Generation

### Standards Involved:

TOP-001-1 — Reliability Responsibilities and Authorities
TOP-002-2 — Normal Operations Planning
TOP-003-0 — Planned Outage Coordination
TOP-004-1 — Transmission Operations
TOP-005-1 — Operational Reliability Information
TOP-006-1 — Monitoring System Conditions
TOP-007-0 — Reporting SOL and IROL Violations
TOP-008-1 — Response to Transmission Limit Violations
PER-001-0 — Operating Personnel Responsibility and Authority

### Research Needed:

Operating Committee study of situational awareness tools

### Brief Description:

Most of the requirements in this set of standards were translated from Operating Policies as part of the Version 0 process. There have been suggestions for improving these requirements, and the drafting team will consider comments submitted by stakeholders, drafting teams and FERC in determining what changes should be proposed to stakeholders.

The drafting team will review all of the requirements in this set of standards and make a determination, with stakeholders, on whether to:

- Move the requirement (into another SAR or Standard or to the certification process or standards)
- Eliminate the requirement (either because it is redundant or because it does not support bulk power system reliability).
- Improve clarity of, improve measurability of, and remove ambiguity from the remaining requirements
- Bring the set of standards into conformance with the latest version of the Reliability Standards Development Procedure and the ERO Sanctions Guidelines.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standard Development Status:

Project 2007-03 Real-time Transmission Operations and Balancing of Load and Generation Web page

### Project Schedule:

Project 2007-03 Schedule

### Target Completion Date:

First quarter of 2009

## Related Links:

Project 2007-03 Roster

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-001-1** | Reliability Responsibilities and Authorities |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Clarify the definition of "emergency" and define the criteria for entering into the various states. Also define the authority for declaring these states.<br>• Consider Santa Clara's comments on requirements R7.2 and R7.3 on transmission operator notification requirements as part of the standards development process.<br>• Includes measures and levels of non-compliance for requirement R8<br>• Consider adding other measures and levels of non-compliance.<br><br>V0 Industry Comments<br>• Define emergency<br>• Need to expand included entities<br>• What is 'clear decision making authority'?<br>• Need to define single, central communications point during emergencies<br>• Some emergencies will require follow up notification as opposed to immediate<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-002-2** | Normal Operations Planning |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Delete references to confidentiality in requirements R3 and R4.<br>• Address critical energy infrastructure confidentiality as part of the routine standard development process.<br>• Next-day analysis for all IROLs must identify and communicate control actions to system operators that can be implemented within 30 minutes following a contingency.<br>• Requires next-day analysis of minimum voltages at nuclear power plants auxiliary power buses.<br>• Inform the nuclear plant operator in real-time if the auxiliary power bus voltages cannot be maintained.<br>• Requires simulation contingencies to match what will actually happen in the field.<br>• Consider the comments of ISO-NE and the NRC with respect to requirement R12 and measure M7 as part of the standard development process.<br><br>Fill-in-the-Blank Team Comments<br>• Remove "in accordance with NERC, Regional Reliability Organization, sub regional, and local reliability requirements" from R6 and "in accordance with filed tariffs and/or regional Total Transfer Capability and Available Transfer Capability calculation processes" from R12.<br><br>V0 Industry Comments<br>• Limit of 2 tests per year<br>• Coordination of planning required<br>• Reliability should 'trump' confidentiality<br>• Define 'without intentional delay'<br>• Define N-1<br><br>VRF comments<br>• R2 – administrative in nature, not a real requirement<br>• R9 – related to INT-003<br>• R14 & 14.1 – ambiguous<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-003-0** | Planned Outage Coordination |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Communicate scheduled outages to all affected entities well in advance to ensure reliability and accuracy of ATC calculations.<br>• Incorporate an appropriate lead time for planned outages using suggestions from the various commenters.<br>• Consider TVA's suggestion for including breaker outages within the meaning of facilities that are subject to advance notice for planned outages.<br>• Require any facility, that in the opinion of the reliability coordinator, balancing authority, or transmission operator, will have a direct impact on the reliability of the bulk power system be subject to the requirement R1 for planned outage coordination.<br><br>V0 Industry Comments<br>• Submit outage data ASAP but no later than noon day ahead<br>• RA can't request outage cancellation<br>• Outage information needed sooner than 1 day prior<br><br>VRF comments<br>• R4 – poorly written<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-004-1** | Transmission Operations |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Modify requirement R4 to state that the system should be restored to respect proven limits as soon as possible taking no more than 30 minutes.<br>• Defines high risk conditions under which the system must be operated to respect multiple outages in requirement R3.<br>• Consider Santa Clara's comments regarding changes to requirement R2 in the standards development process.<br>• Perform a survey of the prevailing operating practices and actual operating experiences surrounding IROL limits.<br>• Reliability coordinators should report any IROL violations to NERC on a monthly basis for one year beginning August 2, 2007.<br>• NERC should report the results of the survey to the Commission within 18 months of the effective date of this rule.<br><br>V0 Industry Comments<br>• Clarify roles<br>• Define SOL & IROL<br>• Operations should conform to planning standards<br>• Vagueness in application of IROL limits<br>• Specify disconnection as acceptable in R5<br>• Define (or remove) practical<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-005-1** | Operational Reliability Information |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Include information about the operational status of special protection systems and power system stabilizers in Attachment 1.<br>• Delete references to confidentiality agreements but ensure critical energy infrastructure confidentiality is addressed in the standards development process.<br>• Consider FirstEnergy's modifications to Attachment 1 and ISO-NE's recommended revision to requirement R4 in the standards development process.<br><br>V0 Industry Comments<br>• Need to include GO & LSE<br>• Data update is too slow<br>• Generator data should include voltage control & stabilizers<br>• GO needs to supply data to BA & TO<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-006-1** | Monitoring System Conditions |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br>• Add 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.<br>• Clarify the meaning of "appropriate technical information" concerning protective relays.<br>• Consider APPA's comments regarding missing measures in the standards development process.<br><br>V0 Industry Comments<br>• GO needs to provide normal & emergency data<br>• Monitor frequency at multiple points<br>• Need to match roles with FM<br>• Load forecasting data required<br><br>VRF comments<br>• R1, 1.1, 1.2 – 'available in emergency situation' may be needed<br>• R3 – define appropriate<br>• R4 – What information is required and what is a load pattern?<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | | |
|---|---|---|
| **Standard #** | | **Title** |
| **TOP-007-0** | | Reporting System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) Violations |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Eliminate overlapping matters in TOP-007 and TOP-008.<br>• Consider the NRC's comments on voltage requirements as part of the standards development process.<br><br>V0 Industry Comments<br>• Not enforceable with current criteria<br>• RA should be included<br>• More of a compliance issue than an true standard<br>• Need to tighten the non-compliance terms<br>• Need to define evidence of evaluation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | |
|---|---|
| **Standard #** | **Title** |
| **TOP-008-1** | Response to Transmission Limit Violations |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Consider APPA's comments regarding missing measures in the standards development process.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-03 — Real-time Trans Operations and Balancing of Load and Generation | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PER-001-0** | | Operating Personnel Responsibility and Authority |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>V0 Industry Comments<br>• Data retention should be 1 year<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2007-04 Certifying System Operators

### Applicable Standards:

PER-003-0 — Operating Personnel Credentials

### Research Needed:

None

### Brief Description:

This Version 0 Standard requires the Reliability Coordinator, Balancing Authority and Transmission Operator to staff its real-time operating positions with personnel that have a NERC certification credential.

The standard will be revised to address the directives from FERC Order 693 and industry comments from Version 0.

The standard will also be revised to conform to the latest version of the Reliability Standards Development Procedure and the ERO Sanctions Guidelines. The standard drafting team will apply the Reliability Standard Review Guidelines when modifying the standard.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-04 Certifying System Operators Web page

### Project Schedule:

Project 2007-04 Schedule

### Target Completion Date:

Second quarter of 2009

### Related Links:

Project 2007-04 Roster

| Standard Review Form<br>Project 2007-04 — Certifying System Operators | |
|---|---|
| **Standard #** | **Title** |
| **PER-003-0** | Operating Personnel Credentials |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Specify the minimum competencies that must be demonstrated to become and remain a certified operator.<br>• Identify the minimum competencies operating personnel must demonstrate to be certified.<br>• Consider grandfathering certification requirements for transmission operator personnel as part of the standards development process.<br><br>V0 Industry Comments<br>• Non-compliance levels missing<br>• Need to define 'current'<br>• Need to specify exact position titles and match to credentials<br>• Problem with wording change from 'both' to 'either'<br>• Need to define critical tasks<br>• Staffing plan is out of scope<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-05 Balancing Authority Controls

### Standards Involved:

BAL-002-0 — Disturbance Control Performance
BAL-004-0 — Time Error Correction
BAL-005-1 — Automatic Generation Control
BAL-006-1 — Inadvertent Interchange

### Research Needed:

None

### Brief Description:

The standard drafting team will:

- Work collaboratively with NAESB to ensure that the elements of these standards that are need to support reliability are include in the revised standard
- Consider comments receive during the initial development of this set of standards and other comments received from ERO regulatory authorities and stakeholders
- Bring the standards into conformance with the latest version of the Reliability Standards Development Procedure and the ERO Rules of Procedures
- Incorporate language to eliminate two interpretations (BAL-005, Requirement 17)
- Incorporate language to make permanent the Urgent Action removal of some of the reliability coordinator's requirements in BAL-004

The standard drafting team will review all of the requirements in the following set of standards:

- BAL-002 – Disturbance Control Standard
- BAL-004 – Time Error Correction
- BAL-005 – Automatic Generation Control
- BAL-006 – Inadvertent Interchange

For each existing requirement, the standard drafting team will also work with NAESB and stakeholders to:

- Eliminate redundancy (or overlap) in the requirements and associated business practices
- Identify requirement that should be moved into other SARs, standards, or business practices
- Eliminate requirements that do not support bulk power reliability
- Improve clarity of, improve measurability of, and remove ambiguity from the remaining requirements

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-05 Balancing Authority Controls Web page

### Project Schedule:

Project 2007-05 Schedule

**Target Completion Date:**

Second quarter of 2009

**Related Links:**

Project 2007-05 Roster

| Standard Review Form<br>Project 2007-05 — Balancing Authority Controls | |
|---|---|
| **Standard #** | **Title** |
| **BAL-002-0** | Disturbance Control Performance |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Modify to make requirements R4.2 and R6.2 refer to NERC rather than the NERC Operating Committee.<br>• Substitute regional entity for regional reliability organization<br><br><u>Including Demand-Side Management as a Resource</u><br>• Include a requirement that explicitly provides that DSM may be used as a resource for contingency reserves.<br>• DSM should be treated on a comparable basis and must meet similar technical requirements as other resources providing this service<br><br><u>Continent-wide Contingency Reserve Policy</u><br>• Include a continent-wide contingency reserve policy, which should include uniform elements (definitions and requirements)<br>• Policy can allow for regional differences, but should include procedures to determine the appropriate mix of operating reserves, spinning and non-spinning, as well as requirements pertaining to the specific amounts of operating reserves based on the load characteristics and magnitude, topology, and mix of resources in the region.<br><br><u>Disturbance Control Standard and the Associated Reserve Requirement</u><br>• Address Commission concerns about having enough contingency reserves to respond to an event on the system in requirement 3.1 and how such reserves are measured.<br>• Requires any single reportable disturbance that has a recovery time of 15 minutes or longer be reported as a violation.<br>• Define a significant (frequency) deviation and a reportable event, taking into account all events that have an impact on frequency, and how balancing authorities should respond.<br>• Include a frequency response requirement.<br>• Measures should be available in real-time to balancing authorities.<br><br>Fill-in-the-Blank Team Comments<br>• Modify R2 to remove reference to "sub-Regional Reliability Organization or Reserve Sharing Group", and<br>• Determine what elements of contingency reserve should be included in the North American standard and what elements should be included in the regional standard.<br>• Development of regional standards needs to be coordinated with Regional entities. Regional entities should begin process for developing regional standards once the drafting team for the North American standard has determined what elements of contingency reserve should be included in the continent-wide standard and what elements should be included in the regional standards.<br>• Regional reliability standards will be developed in support of North |

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| | American standard BAL-002.<br>• Each RRO will need to create a regional standard specifying its Contingency Reserve policy.<br><br>V0 Industry Comments<br>• Modify R2<br>• Determine N. America vs. regional elements<br>• Need regional standards in support of N. American<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-05 — Balancing Authority Controls | | |
|---|---|---|
| **Standard #** | | **Title** |
| **BAL-004-0** | | Time Error Correction |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Include levels of non-compliance and additional measures for requirement R3.<br>• In the five-year review cycle of the standard, perform research that would provide a technical basis for the present or any alternative approach that is more effective and helps reduce inadvertent interchange.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-05 — Balancing Authority Controls | |
|---|---|
| **Standard #** | **Title** |
| **BAL-005-1** | Automatic Generation Control |
| Issues | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Develop a process to calculate the minimum regulating reserve for a balancing authority, taking into account expected load and generation variation and transactions being ramped in and out.<br>• Change title to be neutral as to the source of regulating reserves and allows the inclusion of technically qualified DSM.<br>• If regulation is being provided over non-firm transmission service, the entity receiving the regulation must have a back-up plan to include the loss of the non-firm transmissions service as referenced in requirement R5.<br>• Address comments of Xcel and FirstEnergy when the standard is revisited in the work plan.<br>• Include a measure that provides for a verification process over the required automatic generation control, or regulating reserves a balancing authority maintains<br><br>V0 Industry Comments<br>• Purpose statement<br>• Re-order & re-word requirements<br>• Define data requirements<br>• Non-compliance missing<br><br>VRF comments<br>• R12 - sub-requirements should be separate requirements<br>• R12.3 – redundant<br>• R14 - Check for redundancy of second statement. This seems to be a real-time requirement - not planning. Is this for archival data requirements?<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-05 — Balancing Authority Controls | |
|---|---|
| **Standard #** | **Title** |
| **BAL-006-1** | Inadvertent Interchange |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Add measures concerning the accumulation of large inadvertent interchange balances and levels of non-compliance.<br>• Examine the WECC time error correction procedure as a possible guide.<br><br>Regional Differences to BAL-006-1: Inadvertent Interchange Accounting and Financial Inadvertent Settlement<br>Disposition: Approved with modifications<br><br>• Reference the current reliability standards and are in the standard form, which includes requirements, measures, and levels of non-compliance.<br>• Explore FirstEnergy's request to define the function of a waiver in the reliability standard development process.<br><br>V0 Industry Comments<br>• Purpose/Requirement contradiction<br>• Split requirements<br>• Wording in R4<br>• Requirements mixed in Compliance<br>• Non-compliance missing<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-06 System Protection

### Standards Involved:

PRC-001-1 — System Protection Coordination

### Research Needed:

Identification of criteria for determining where to install protection systems

### Brief Description:

The existing PRC-001 Standard has been identified in the Reliability Standards Development Plan as requiring revision, within the FERC Order 693 as requiring revisions, and by a SPCTF report (attached) which identified a number of issues with the existing standard (the SPCTF report, which precedes FERC Order 693, also includes observations from the preceding FERC NOPR on RM-06-16-000). This revision of PRC-001 should address concerns from these sources and should include upgrades to bring the revised standard into conformance with the latest version of the ERO Rules of Procedure.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-06 System Protection Web page

### Project Schedule:

Project 2007-06 Schedule

### Target Completion Date:

Second quarter of 2010

### Related Links:

Project 2007-06 Roster

| Standard Review Form<br>Project 2007-06 — System Protection | |
|---|---|
| **Standard #** | **Title** |
| **PRC-001-1** | System Protection Coordination |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Clarify the term "corrective action".<br>• Consider FirstEnergy's and the California PUC's comments about the maximum time for corrective actions in the standards development process.<br>• Upon detection of failures in relays or protection system elements on the bulk power system that threaten reliability, relevant transmission operators must be informed promptly, but within a specified period of time.<br>• Once informed, transmission operators must carry out corrective control actions that return the system to a stable state that respects system requirements as soon as possible and no longer than 30 minutes.<br>• Measures and levels of non-compliance incorrectly reference non-existent requirements.<br><br>V0 Industry Comments<br>• Effects on reliability may not be known<br>• Consistent terminology as to neighbor vs. affected<br>• Not all criteria moved over from policies<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-07 Vegetation Management

### Standards Involved:

FAC-003-1 — Vegetation Management Program

### Research Needed:

None

### Brief Description:

This is a Version 1 standard that was approved in 2006. It has some 'fill-in-the-blank' components to eliminate. In addition, the following comments submitted by FERC and stakeholders need to be addressed in the refinement of the standard:

**FERC Order 693 items**

Address the issue regarding applicability:

- Work with the reliability entities and the ERO to collect and make available to the FERC, a list of critical lower voltage transmission lines. (Refer to Applicability 4.3 section of the standard.)
- Consider other criteria in determining applicability of the standard to sub 200kV lines.

Address the issue of clearances for lines on both federal and non-federal lands:

- Review and analyze outage data (collected by the ERO) then consider defining clearances needed to avoid sustained vegetation-related outages that would apply to transmission lines crossing both federal and non-federal land.
- Consider revising the definition of right of way to encompass required clearance areas.
- Review the suitability of IEEE 516-2003 standard for minimum vegetation clearance.

**Procedural items**

- Re-format standard to bring it into conformance with the latest version of the Reliability Standard Development Procedure and the ERO Sanctions Guidelines.
- Remove references to RRO in the standard and substitute a responsible entity.
- Add newly developed compliance elements such as time horizons, violation risk factors, violation severity levels, etc.

**Stakeholder items**

- Prepare technical reference material such as a "white paper" to aid in understanding the technical basis for the standard.
- Review reporting criteria for Category 3 outages in the proposed technical reference material and may remove the reporting requirement of Category 3 outages in R.3 and R.4.
- Consider deleting requirement R.4.
- Review the reporting exemptions to include all category outages under major disasters in Requirement R3.2.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

**Standards Development Status:**

Project 2007-07 Vegetation Management Web page

**Project Schedule:**

Project 2007-07 Schedule

**Target Completion Date:**

First quarter of 2008

**Related Links:**

Project 2007-07 Roster

| Standard Review Form<br>Project 2007-07 — Vegetation Management | |
|---|---|
| **Standard #** | **Title** |
| **FAC-003-1** | Transmission Vegetation Management Program |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Address the issue of "bright-line" applicability of 200 kV and above through the standards development process.<br>• Incorporate suggestions to include facilities at lower voltages that are associated with IROLs.<br>• Evaluate suggestions by LPPC, APPA, and Avista in the standards development process.<br>• Consider a phase-in timeframe if lower voltage facilities are included as applicable to this standard.<br>• Develop compliance audit procedures, using industry experts, which would identify appropriate inspection cycles based on local factors.<br>• Ensure inspection cycles and vegetation management requirements are properly met by the responsible entities.<br>• Define the minimum clearance needed to avoid sustained vegetation-related outages that apply to line crossing federal and non-federal lands.<br>• Address issues that develop in the interim on a case-by-case basis.<br>• Collect outage data for transmission outages of lines that cross both federal and non-federal lands, analyze it, and use the results to develop a standard that would apply to both federal and non-federal lands.<br>• Address FirstEnergy's suggestion to clarify the definition of "rights-of-way" as part of the standards development process.<br><br>V0 Industry Comments<br>• RA vs. RRO<br>• Too weak on compliance<br>• Format inconsistencies<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-09 Generator Verification

### Standards Involved:

PRC-019-1 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection

PRC-024-1 — Generator Performance During Frequency and Voltage Excursions

MOD-024-1 — Verification of Generator Gross and Net Real Power CapabilityMOD-025-1 — Verification of Generator Gross and Net Reactive Power Capability

MOD-026-1 —Verification of Models and Data for Generator Excitation System Functions

MOD-027-1 — Verification of Generator Unit Frequency Response

### Research Needed:

None

### Brief Description:

The scope of this project includes:

- Modifying the six standards associated with this project so they conform to the latest version of NERC's Reliability Standards Development Procedure and the ERO Rules of Procedure,
- Replacing the "fill-in-the-blank" requirements assigned to the Regional Reliability Organization with requirements that can be applied on a continent-wide basis and are assigned to users, owners or operators of the bulk power system,
- Considering and addressing issues identified in FERC orders, including the modifications to MOD-024-1 and MOD-025-1 as proposed in FERC Order 693, and
- Considering and addressing issues identified during Phase III & IV field testing.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-09 Generator Verification Web page

### Project Schedule:

Project 2007-09 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2007-09 Roster

| Standard Review Form<br>Project 2007-09 — Generator Verification | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-019-1** | | Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection |
| **Issues** | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-09 — Generator Verification | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-024-1** | | Generator Performance During Frequency and Voltage Excursions |
| **Issues** | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |
| **Misc. Items** | | Compliance missing.<br>Phase III/IV field test. |

| Standard Review Form<br>Project 2007-09 — Generator Verification | |
|---|---|
| **Standard #** | **Title** |
| **MOD-024-1** | Verification of Generator Gross and Net Real Power Capability |

**Issues**

FERC Order 693
Disposition: Not Approved or Remanded.

- Require users, owners, and operators of the system to provide this information.
- Document test conditions and the relationships between test conditions and generator output so that the amount of power that can be expected to be delivered from a generator at different conditions can be determined.
- Clarify requirement R2 that specifies that the regional reliability organization shall provide generator gross and net real power capability verification within 30 calendar days of approval. The confusion centers on "approval" and when the 30-day period starts.
- Provide a work plan and compliance filing regarding the collection of information specified for standards that are deferred.

Fill-in-the-Blank Team Comments
- Review MOD-024 and MOD-025 concurrently to transition to uniform North American standards.
- Remove the fill-in-the-blank aspects (correct reference to "… Regional Reliability Organization's procedures…").
- Goal is uniform North American standards for real and reactive power verification. Look at regional requirements and identify the best practice, commonalities and differences, and whether differences are needed for reliability.

Phase III/IV comments
- No requirement for the RRO to demonstrate that its procedures result in accurate information of gross and net real power capability of generators for steady state models
- It is not clear in R3 to whom the Generator Owner will report the information.
- Non compliance levels are too strict. A small utility with 15-20 units will be L4 non-compliant if they miss one unit

Comment from draft SAR on Planning Authority
- Provide clarity where the Planning Authority is mentioned

Other
- Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure.

| Standard Review Form<br>Project 2007-09 — Generator Verification | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-025-1** | | Verification of Generator Gross and Net Reactive Power Capability |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Require verification of reactive power capability at multiple points over a unit's operating range.<br>• Clarify requirement R2 that specifies that the regional reliability organization shall provide generator gross and net reactive power capability verification within 30 calendar days of approval. The confusion centers on "approval" and when the 30-day period starts.<br>• Provide a work plan and compliance filing regarding the collection of information specified for standards that are deferred.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-024 and MOD-025 concurrently to transition to uniform North American standards.<br>• Remove the fill-in-the-blank aspects (correct reference to "… Regional Reliability Organization's procedures…").<br>• Refer to MOD-024.<br><br>Phase III/IV comments<br>• These standards do not provide for uniform testing of generator capability. The determination of which units are tested, how frequently they are tested, and the criteria used for determining capability are left to individual regions.<br>• Fundamental guidelines outlining some basic requirements (e.g., all units over 20 MW shall be tested annually under conditions that permit full net output of the unit for normal operation) are lacking.<br>• There is no clear reason for regional variations in capability testing. A generator in Georgia does not have more or less capability than an identical unit applied across the Florida line, despite the fact that one is in SERC and the other in FRCC.<br>• R1.5.1: The benefit of verifying maximum capability of generators to absorb VArs at seasonal real power generation capability is unclear, particularly if this standard applies to virtually all generators. For the vast majority of units, the need to absorb VArs occurs during low-load conditions, when unit real power production is below maximum capability and the unit's ability to absorb VArs is greater. Therefore, the single datum for unit VAr absorption capability determined pursuant to this standard seems to be of little practical use, except for relatively few generators in a limited set of circumstances.<br>• It is not clear in R3 to whom the Generator Owner will report the information.<br>• Non compliance levels are too strict. A small utility with 15-20 units will be L4 non-compliant if they miss one unit.<br>• Severity of non-compliance should be based on the percentage of the generator owner's total generation capability comprised of units | |

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| | required to be verified, rather than on the percentage (number) of generating units. Exempt units should be excluded from the total generation capability for determining level of non-compliance.<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-09 — Generator Verification | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-026-1** | | Verification of Models and Data for Generator Excitation System Functions |
| **Issues** | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |
| **Misc. Items** | | Compliance missing.<br>Phase III/IV field test. |

| Standard Review Form<br>Project 2007-09 — Generator Verification | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-027-1** | | Verification of Generator Unit Frequency Response |
| **Issues** | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |
| **Misc. Items** | | Compliance missing.<br>Phase III/IV field test. |

## 2007-11 Disturbance Monitoring

### Standards Involved:

PRC-002-1 — Define and Document Disturbance Monitoring Equipment Requirements
PRC-018-1 — Disturbance Monitoring Equipment Installation and Data Reporting

### Research Needed:

None

### Brief Description:

PRC-002 and PRC-018 were approved in 2006.
PRC-002 is one of four reliability standards identified by the Regional Reliability Standards Working Group as a standard that has some requirements that need to be defined by each regional entity in a regional standard. The standard drafting team (SDT) will review PRC-002 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to or contained with the disturbance monitoring program documentation. The SDT shall determine which requirements should be continent-wide requirements and which requirements should be included in regional standards.

When revising PRC-002 and PRC-018 the SDT shall address issues already identified by FERC, other drafting teams and stakeholders. Note: Phasor measurement networks are to be addressed by Project 2008-06.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-11 Disturbance Monitoring Web page

### Project Schedule:

Project 2007-11 Schedule

### Target Completion Date:

First quarter of 2009

### Related Links:

Project 2007-11 Roster

| Standard Review Form<br>Project 2007-11 — Disturbance Monitoring | |
|---|---|
| **Standard#** | **Title** |
| **PRC-002-1** | Define Regional Disturbance Monitoring and Reporting Requirements |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Consider if greater consistency can be achieved in the standard as suggested by Otter Tail, APPA, and Alcoa.<br><br>V0 Industry Comments<br>• More specificity in equipment requirements needed<br>• IDWG identified deficiencies<br>• Digital inputs and load need to be added<br><br>Phase III/IV comments<br>• There is no criteria that the RROs must use in specifying the process for identifying locations where DMEs are required<br><br>VRF comment<br>• R1 - This standard and all related sub requirements are after the fact data analysis.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2007-11 — Disturbance Monitoring | |
|---|---|
| **Standard#** | **Title** |
| **PRC-018-1** | Disturbance Monitoring Equipment Installation and Data Reporting |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Determine what elements (if any) of disturbance monitoring should be included in the North American standard and what elements should be included in the regional standards.<br>• Development of regional standards needs to be coordinated with Regional entities. Regional entities should begin process for developing regional standards once the drafting team for the North American standard has determined what elements of disturbance monitoring should be included in the continent-wide standard and what elements should be included in the regional standards.<br>• PRC-002 will be a continent-wide standard supported by Regional Reliability Standards.<br>• PRC-002 is directly related to PRC-018. PRC-018 requires the functional entities to comply with the requirements developed by each RRO.<br>• Need regions to develop and submit regional standards. NERC standard requires region to have this done in 9 months from board adoption (from August 9). Regions need to do this as a regional standard, not a procedure or some other document.<br><br>VRF comments<br>• R3.4, 3.5, 3.6, 3.7 – Ambiguous<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2007-12 Frequency Response

### Standards Involved:

New Standard

### Research Needed:

None

### Brief Description:

This project involves developing a new standard for the collection of data needed to accurately model existing Frequency Response within each interconnection.

The project will support the following directive in FERC Order 693:

- Define the necessary amount of Frequency Response needed for Reliable Operation for each balancing authority with methods of obtaining and measuring that the frequency response is achieved.

### Standards Development Status:

Project 2007-12 Frequency Response Web page

### Project Schedule:

Project 2007-12 Schedule

### Target Completion Date:

Fourth quarter of 2009

### Related Links:

Project 2007-12 Roster

## 2007-14 Permanent Changes to CI Time Table

### Standards Involved:

INT-005-2 — Interchange Authority Distributes Arranged Interchange
INT-006-2 — Response to Interchange Authority
INT-008-2 — Interchange Authority Distributes Status

### Research Needed:

None

### Brief Description:

An Urgent Action SAR to modify the Timing Table in three of the Coordinate Interchange standards (INT-005, INT-006, and INT-008) was approved by its ballot pool on March 30, 2007. The Urgent Action SAR modified the timing table so that the reliability assessment period for WECC was lengthened from 5 minutes to 10 minutes for e-tags submitted less than 1 hour and greater than 20 minutes prior to ramp start.

This project is limited to replacing the timing table in the set of standards.

### Standards Development Status:

Project 2007-14 Permanent Changes to CI Time Table Web page

### Project Schedule:

Project 2007-14 Schedule

### Target Completion Date:

Fourth quarter of 2008

### Related Links:

Project 2007-14 Roster

| Standard Review Form<br>Project 2007-14 — Permanent Changes to CI Time Table | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-005-2** | | Interchange Authority Distributes Arranged Interchange |
| **Issues** | Other<br>• Modify the Assessment Period for WECC from 5 minutes to 10 minutes for e-Tags submitted between 1 hour and 20 minutes prior to ramp start. Default ramp start for transactions beginning at the top of the hour is 10 minutes prior to the top of the hour with 20 minute duration. The effect in most cases would be to increase the assessment period from 5 minutes to 10 minutes for e-Tags submitted between xx:00 and xx:30 that have start times of xx+1:00. The Timing Table appears in INT-005-1, INT-006-1, and INT-008-1.<br>• Update the Timing Table to Reflect the Categories (On-time, Late, and After-the-fact) used in the latest E-Tag Specification with respect to receipt of an Arranged Interchange (RFI):<br>- Include designation of request status based on start and submittal times.<br>- Include assess times for After-The-Fact (ATF) requests. | |

| Standard Review Form<br>Project 2007-14 — Permanent Changes to CI Time Table | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-006-2** | | Response to Interchange Authority |
| **Issues** | Other<br>• Modify the Assessment Period for WECC from 5 minutes to 10 minutes for e-Tags submitted between 1 hour and 20 minutes prior to ramp start. Default ramp start for transactions beginning at the top of the hour is 10 minutes prior to the top of the hour with 20 minute duration. The effect in most cases would be to increase the assessment period from 5 minutes to 10 minutes for e-Tags submitted between xx:00 and xx:30 that have start times of xx+1:00. The Timing Table appears in INT-005-1, INT-006-1, and INT-008-1.<br>• Update the Timing Table to Reflect the Categories (On-time, Late, and After-the-fact) used in the latest E-Tag Specification with respect to receipt of an Arranged Interchange (RFI):<br>- Include designation of request status based on start and submittal times.<br>- Include assess times for After-The-Fact (ATF) requests. | |

| Standard Review Form<br>Project 2007-14 — Permanent Changes to CI Time Table | |
|---|---|
| **Standard #** | **Title** |
| **INT-008-2** | Interchange Authority Distributes Status |
| **Issues** | Other<br>• Modify the Assessment Period for WECC from 5 minutes to 10 minutes for e-Tags submitted between 1 hour and 20 minutes prior to ramp start. Default ramp start for transactions beginning at the top of the hour is 10 minutes prior to the top of the hour with 20 minute duration. The effect in most cases would be to increase the assessment period from 5 minutes to 10 minutes for e-Tags submitted between xx:00 and xx:30 that have start times of xx+1:00. The Timing Table appears in INT-005-1, INT-006-1, and INT-008-1.<br>• Update the Timing Table to Reflect the Categories (On-time, Late, and After-the-fact) used in the latest E-Tag Specification with respect to receipt of an Arranged Interchange (RFI):<br>- Include designation of request status based on start and submittal times.<br>- Include assess times for After-The-Fact (ATF) requests. |

## 2007-17 Protection System Maintenance & Testing

### Standards Involved:

PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing
PRC-008-0 — Underfrequency Load Shedding Equipment Maintenance Programs
PRC-011-0 — UVLS System Maintenance and Testing
PRC-017-0 — Special Protection System Maintenance and Testing

### Research Needed:

None

### Brief Description:

Revise PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing, to consolidate PRC-005-1, PRC-008-0 — Underfrequency Load Shedding Equipment Maintenance Programs; PRC-011-0 — UVLS System Maintenance and Testing; and PRC-017-0 — Special Protection System Maintenance and Testing into a single maintenance and testing standard. Standards PRC-008-0, PRC-011-0, and PRC-017-0 would then be withdrawn.

The revised PRC-005 standard should address the issues raised in the FERC Order 693 and the issues addressed in the SPCTF report "Assessment of PRC-005-1 – Transmission and Generation Protection System Maintenance and Testing; with implications for PRC-008-0, PRC-011-0, and PRC-017-0". The revised standard should also address the comments submitted by stakeholders during the development of Version 0, and Phase III & IV and should reflect improvements identified in the Reliability Standards Review Guidelines.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-17 Protection System Maintenance & Testing

### Project Schedule:

Project 2007-17 Schedule

### Target Completion Date:

Second quarter of 2009

### Related Links:

Project 2007-17 Roster

| Standard Review Form<br>Project 2007-17 — Protection System Maintenance & Testing | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-005-1** | | Transmission and Generation Protection System Maintenance and Testing |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Maintenance and testing of a protection system must be carried out within a maximum allowable time interval that is appropriate for the type of protection system and its impact on the reliability of the bulk power system.<br>• Consider FirstEnergy's and ISO-NE's suggestions to combine PRC-005, PRC-008, PRC-011, and PRC-017 into a single standard.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Include breakers/switches in list<br>• Define evidence<br><br>Phase III/IV comments<br>• PRC 003 to 005 only addresses generator (and transmission) protective systems, without defining this term.<br>• Need to add language to ensure the Regional Requirements focus on the most impactive scenarios<br>• Modify applicability to clarfify that the requirements are applicable to the following:<br>• All protection systems on the bulk electric system.<br>• All generation protection systems whose misoperations impact the bulk electric system<br>• There is no performance requirement or measure of effectiveness of a maintenance program required by the standard<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-17 — Protection System Maintenance & Testing | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-008-0** | | Underfrequency Load Shedding Equipment Maintenance Programs |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Maintenance and testing of a protection system must be carried out within a maximum allowable time interval that is appropriate for the type of protection system and its impact on the reliability of the bulk power system.<br><br>Fill-in-the-Blank Team Comments<br>• Okay if PRC-006 is fixed<br><br>V0 Industry Comments<br>• Consistent wording from standard to standard required<br>• Definition of evidence required<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-17 — Protection System Maintenance & Testing | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-011-0** | | UVLS System Maintenance and Testing |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Maintenance and testing of a protection system must be carried out within a maximum allowable time interval that is appropriate for the type of protection system and its impact on the reliability of the bulk power system.<br><br>V0 Industry Comments<br>• Define evidence<br>• Exemptions for those with shunt reactors<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-17 — Protection System Maintenance & Testing | | |
|---|---|---|
| **Standard #** | **Title** | |
| **PRC-017-0** | Special Protection System Maintenance and Testing | |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Maintenance and testing of a protection system must be carried out within a maximum allowable time interval that is appropriate for the type of protection system and its impact on the reliability of the bulk power system.<br>• Require that documentation identified in requirement R2 be routinely provided to NERC or the regional entity.<br><br>V0 Industry Comments<br>• Define evidence<br>• Need to retain two dates<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2007-18 Reliability-based Control

### Standards Involved:

BAL-001-0 - Real Power Balancing Control Performance
BAL-003-0 - Frequency Response and Bias
EOP-002-2 - Capacity and Energy Emergencies
IRO-005-2 - Reliability Coordination — Current Day Operations

### Research Needed:

None

### Brief Description:

This project includes expanding on the work already done in developing the draft BAL-007 through BAL-011 by adding requirements to address the following concerns:

- To support elimination of SOL/IROL violations caused by excessive (as determined by this standard) Area Control Error
- To prevent Interconnection frequency excursions of short duration attributed to the ramping of on and off-peak Interchange Transactions
- To support timely transmission congestion relief by requiring corrective load/generation management within a defined timeframe when ACE is impacted by the curtailment of
- Interchange Transactions under Transmission Loading Relief procedures
- To address the directives of FERC Order 693.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-18 Reliability-based Control Web page

### Project Schedule:

Project 2007-18 Schedule

### Target Completion Date:

Second quarter of 2010

### Related Links:

Project 2007-18 Roster

| Standard Review Form<br>Project 2007-18 — Reliability-based Control | | |
|---|---|---|
| **Standard #** | **Title** | |
| **BAL-001-0** | Real Power Balancing Control Performance | |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Regional Differences to BAL-001-0: ERCOT Control Performance Standard 2<br>Disposition: Approved with modifications<br><br>• Include requirements concerning frequency response contained in Section 5 of the ERCOT protocols.<br>• Include requirements, measures, and levels of non-compliance sections.<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-18 — Reliability-based Control | | |
|---|---|---|
| **Standard #** | | **Title** |
| **BAL-003-0** | | Frequency Response and Bias |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Include levels of non-compliance<br>• Determine the appropriate periodicity of frequency response surveys necessary to ensure requirement R2 and other requirements are being met; also modify measure M1 based on this determination.<br>• Define the necessary amount of frequency response needed for reliable operation for each balancing authority with methods of obtaining and measuring that the frequency response is achieved.<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-18 — Reliability-based Control | | |
|---|---|---|
| **Standard #** | | **Title** |
| **EOP-002-2** | | Capacity and Energy Emergencies |
| **Issues** | FERC Order 693<br>Disposition: Approved with modification<br><br>• Address emergencies resulting not only from insufficient generation but also insufficient transmission capability, particularly as it affects the implement of the capacity and energy emergency plan.<br>• Include all technically feasible resource options, including demand response and generation resources<br>• Ensure the TLR procedure is not used to mitigate actual IROL violations.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2007-18 — Reliability-based Control | | |
|---|---|---|
| **Standard #** | | **Title** |
| **IRO-005-2** | | Reliability Coordination — Current Day Operations |
| **Issues** | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2007-23 Violation Severity Levels

### Standards Involved:

All 83 FERC approved standards.

### Research Needed:

None

### Brief Description:

Replace Levels of Non-compliance with Violation Severity Levels in the 83 standards approved by FERC. Obtain stakeholder consensus on the criteria used for assignment of violation severity levels.
The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project 2007-23 Violation Severity Levels Web page

### Project Schedule:

Project 2007-23 Schedule

### Target Completion Date:

First quarter of 2008

### Related Links:

Project 2007-23 Roster

## 2008-01 Voltage and Reactive Control

### Standards Involved:

VAR-001-1 — Voltage and Reactive Control
VAR-002-1 — Generator Operation for Maintaining Network Voltage Schedules

### Research Needed:

Determine how to determine the amount of voltage and reactive reserves are needed. The research should identify how to determine the split of control between the reactive power provided by the generator and reactive power provided through reactors and power system stabilizers located geographically distant from the generator.

Research should identify how to subdivide an interconnection's need for reactive reserves amongst its Transmission Operators.

### Brief Description:

This is a new project and supports a blackout recommendation. Industry debate is needed on whether there should be a North American standard that requires a specific amount of reserves, or whether requirements for specific reserves should continue to be addressed at the regional level. The requirements in the existing standards need to be upgraded to be more specific in defining voltage and reactive power schedules. Consideration should be given to adding a requirement for the Reliability Coordinator to monitor and take action if reactive power falls outside identified limits.

The project will incorporate the interpretation of VAR-002 Requirement 1 and Requirement 2.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2008-01 Project Schedule

### Target Completion Date:

Fourth quarter of 2011

### Related Links:

Project 2008-01 Roster

| Standard Review Form<br>Project 2008-01 — Voltage and Reactive Control | |
|---|---|
| **Standard #** | **Title** |
| **VAR-001-1** | Voltage and Reactive Control |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Expand the applicability to include LSEs and reliability coordinators and define the reliability coordinators monitoring responsibilities.<br>• Address reactive power requirements for LSEs on a comparable basis with purchasing-selling entities.<br>• Include APPA's comments regarding varying power factor requirements due to system conditions and equipment in the standards development process.<br>• Includes detailed and definitive requirements on "established limits" and "sufficient reactive resources", and identifies acceptable margins above the voltage instability points.<br>• Address the concerns of Dynegy, EEI, and MISO through the standards development process.<br>• Perform voltage analysis periodically, using on-line techniques where commercially available and off-line techniques where not available on-line, to assist real-time operations, for areas susceptible to voltage instability.<br>• Include controllable load among the reactive resources to satisfy reactive requirements, considering the comments of Southern California Edison and SPA in the development of the standard.<br>• Address the power factor range at the interface between LSEs and the transmission grid.<br><br>V0 Industry Comments<br>• Not a standard but a business practice<br>• Expand to include relays<br>• Define voltage levels<br>• Clarify if this includes distribution<br>• Clarify responsibility for voltage support<br>• Add GO as entity<br>• Mention power factor requirements for distribution<br>• Add BA (R1 & 3)and RA (R5, 7, 8, 10 & 11)<br>• Move R9 to 5.2<br>• Delete SOL violations<br>• Define high probability<br><br>Phase III/IV comments<br>• No requirement for verifying that the reactive resources are truly available.<br>• No criteria for what is an acceptable reactive margin.<br>  o R3, R6, R10 go beyond the control of the responsible entity noted.<br>  o R3, the Transmission Operator only has the reactive resources that exist in the area-- how does the TO "acquire sufficient |

| | |
|---|---|
| | reactive resources" if existing resources are not adequate?<br>o Should R3 be assigned to the TP?<br>o Should the word "acquire" in R3 be replaced with the word "operate"?<br>o R6 and R10.1 presume that sufficient reactive resources are available.<br>• R3 covers normal and contingency conditions, while R10 mentions only first contingency conditions. Is there a reason for this difference?<br>• R3 Suggest changing the phrase…"to protect the voltage"…. to "maintain the voltage"<br>• What does the second sentence in R3 mean by the phrase 'transmission operator's share of the reactive requirements of interconnecting transmission circuits'? What would be the reactive requirements of transmission circuits?<br>• R5 This requirement is an Open Access Transmission Tariff requirement and does not belong in a reliability standard.<br>• Will R6 also apply to wind generation absorbing reactive power at the point of interconnection?<br>• R7 obligates Transmission Operators to know the status of all reactive power sources including AVRs and PSSs. Clarify that this means the generator is available and if dispatched will operate in voltage control mode and with the PSS active.<br>• R7 and R8 – consider adding more specificity to distinguish the TOP's authority to direct others to operate (Each Transmission Operator shall operate owned devices or direct the operation of, within their normal operating parameters and capabilities, capacitive and inductive reactive resources within its area-including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding- to maintain system and Interconnection voltages within established limits.)<br>• Consolidate R8 and R9<br>• R9.1 this requirement is not feasible. Cannot dictate where generation resources are to be disbursed or located.<br>• R10 remove "first" so as not to limit this requirement to first contingency conditions. As written with or without removing "first", R10 provides no additional information not already required in R3.<br>• R10.1 does 'disperse and locate' mean the same as 'dispatch'? If so, changing the wording to 'dispatch' would make the meaning clearer.<br>• R11 –Redundant with TOP-007<br>• The language in the measures and compliance sections such as "2.1.2 One incident of failing to maintain a voltage or reactive power schedule" is too vague and does not specify any duration that is acceptable or unacceptable to be off schedule.<br>• VAR-001 requirements (R1, R2, R7, R8, R9, R10, and R12) are redundant to the TOP standards<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2008-01 — Voltage and Reactive Control | | |
|---|---|---|
| **Standard #** | | **Title** |
| **VAR-002-1** | | Generator Operation for Maintaining Network Voltage Schedules |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>• Consider Dynegy's suggestion to improve the standard.<br>Phase III/IV comments<br>• R5 of VAR-002: Recognizing that such action would require the generator to change its loading level or cycle, the transmission operator should not rely on tap position changes on a step-up transformer with a no-load tap changer (NLTC) for periodic or seasonal system control, unless there is an explicit voluntary arrangement with the Generator Operator. For each instance of an urgent directive for such action, the transmission operator must justify its action to affected parties<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2008-02 Undervoltage Load Shedding

### Standards Involved:

PRC-010-0 — Assessment of the Design and Effectiveness of UVLS Program
PRC-022-1 — Under-Voltage Load Shedding Program Performance

### Research Needed:

Criteria for installing UVLS need to be identified.

### Brief Description:

These standards should be consolidated. Missing are any criteria for identifying where UVLS should be installed.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2008-02 Project Schedule

### Target Completion Date:

Second quarter of 2010

### Related Links:

Project 2008-02 Roster

| Standard Review Form<br>Project 2008-02 — Undervoltage Load Shedding | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-010-0** | | Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Require that an integrated and coordinated approach be included in all protection systems on the bulk power system, including generators and transmission lines, generators' low-voltage ride-through capabilities, and UFLS and UVLS systems.<br><br>V0 Industry Comments<br>• Define evidence<br>• Level 4 vs. level 1 changes<br>• Exemptions for some who use shunt reactors<br><br>Phase III/IV comments<br>• PRC-010 is a very weak standard – it only requires documentation and, in very broad terms, 'coordination' – it doesn't specify any level of desired performance or any specific scope for coordination. There should be some details to identify what the coordination must achieve – such as verification that the UVLS will trip when voltage drops to a specified voltage and verification that only a specified amount of load will be tripped and that other special protection systems will not be activated by the UVLS program.<br>• There is no requirement that identifies the desired performance of a UVLS program (what voltage set points and timing are acceptable?).<br>• What is the reliability-related need for the RRO to collect data on misoperations and operations of UVLS programs? Is this information used for anything?<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2008-02 — Undervoltage Load Shedding | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-022-1** | | Under-Voltage Load Shedding Program Performance |
| **Issues** | FERC Order 693<br>Disposition: Approved.<br><br>• Consider FirstEnergy's suggestions to revise requirement R1.3 as part of the standards development process.<br><br>Phase III/IV comments<br>• Consider incorporating into this family of standards a requirement that each TO should study, and implement if found effective, a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES.<br>• The TO should also be required to demonstrate that its UVLS program is coordinated with adjacent TOs.<br>• The reliability-related need for the RRO to collect data on operations and misoperations isn't clear – should this be revised and made available instead to the Compliance Monitor or to the Planning Authority?<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2008-03 Emergency Operations

### Standards Involved:

EOP-001-0 — Emergency Operations Planning
EOP-002-2 — Capacity and Energy Emergencies
EOP-003-1 — Load Shedding Plans
IRO-001-1 — Reliability Coordination – Responsibilities and Authorities

### Research Needed:

None

### Brief Description:

The first three standards in the list above may be merged into a single standard. There are some requirements in IRO-001 that may be improved and merged into the new EOP standard

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2008-03 Project Schedule

### Target Completion Date:

First quarter of 2009

### Related Links:

Project 2008-03 Roster

| Standard Review Form<br>Project 2008-03 — Emergency Operations | |
|---|---|
| **Standard #** | **Title** |
| **EOP-001-0** | Emergency Operations Planning |
| **Issues** | FERC Order 693<br>Disposition: Approved with modification<br><br>• Include reliability coordinators as an applicable entity.<br>• Consider Southern California Edison's and Xcel's suggestions in the standard development process.<br>• Includes definitions of system states (e.g. normal, alert, emergency), criteria for entering into these states. And the authority that will declare them.<br>• Consider a pilot program (field test) for the system states proposal.<br>• Clarifies that the actual emergency plan elements, and not the "for consideration" elements of Attachment 1, should be the basis for compliance.<br><br>V1 Industry Comments<br>• Combine R4 & R5<br>• Revise R5<br>• Measures are really data retention requirements<br><br>VRF comment<br>• R1 – primarily administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2008-03 — Emergency Operations | |
|---|---|
| **Standard #** | **Title** |
| **EOP-002-2** | Capacity and Energy Emergencies |
| **Issues** | V0 Industry Comments<br>• R3 should be applied to RC's<br>• Re-wording in R7<br>• Measures aren't really measures but requirements<br>• L4 non-compliance needs definition of time frame<br>• Several wording changes to Attachment<br>• Compliance not mapped to requirements<br><br>VRF comments<br>• R10 - This is a commercial and administrative ordering of curtailments.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2008-03 — Emergency Operations | |
|---|---|
| **Standard #** | **Title** |
| **EOP-003-1** | Load Shedding Plans |
| **Issues** | FERC Order 693<br>Disposition: Approved with modification<br><br>• Develop specific minimum load shedding capability that should be provided and the maximum amount of delay before load shedding can be implemented based on overarching nationwide criteria that take into account system characteristics.<br>• Require periodic drills of simulated load shedding.<br>• Suggest a review of industry best practices in determining nationwide criteria.<br>• Consider comments from APPA and ISO-NE in the standards development process.<br><br>V0 Industry Comments<br>• Move implementation requirements<br>• Re-state purpose<br>• Move to Policy 5 & 9<br>• Add UVLS<br><br>VRF comments<br>• R4 – Needs clarification<br>• R6 - Failure to shed load in this condition can inhibit restoration.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2008-03 — Emergency Operations | |
|---|---|
| **Standard #** | **Title** |
| **IRO-001-1** | Reliability Coordination – Responsibilities and Authorities |
| **Issues** | Fill-in-the-Blank Team Comments<br>• Remove ", sub-region, or interregional coordinating group" from R1<br>• Consider removing "Standards of conduct are necessary to ensure the Reliability Coordinator does not act in a manner that favors one market participant over another." from the Purpose section of the standard.<br><br>V0 Industry Comments<br>• Inability to perform needs to be communicated<br>• What is meant by 'interest of other entity'?<br><br>VRF comments<br>• R6 - Since the RC must be NERC certified, it stands to reason that anyone performing RC tasks should be certified. However, since the RC still retains the accountability for actions, and requirement 4 handles the agreements, this requirement is a medium risk.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2009-01 Disturbance and Sabotage Reporting

### Standards Involved:

CIP-001-0 — Sabotage Reporting
EOP-004-1 — Disturbance Reporting

### Research Needed:

None

### Brief Description:

The existing requirements need to be revised to be more specific – and there needs to be more clarity in what sabotage looks like.

CIP-001 may be merged with EOP-004 to eliminate redundancies. Acts of sabotage have to be reported to the DOE as part of EOP-004. Specific references to the DOE form need to be eliminated.

EOP-004 has some 'fill-in-the-blank' components to eliminate.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-01 Project Schedule

### Target Completion Date:

Fourth quarter of 2010

### Related Links:

Project 2009-01 Roster

| Standard Review Form<br>Project 2009-01 — Disturbance and Sabotage Reporting | |
|---|---|
| **Standard #** | **Title** |
| **CIP-001-0** | Sabotage Reporting |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Consider the need for wider application of the standard. Consider whether separate, less burdensome requirements for smaller entities may be appropriate.<br>• Define "sabotage" and provide guidance on triggering events that would cause an entity to report an event.<br>• In the interim, provide advice to entities about the reporting of particular circumstances as they arise.<br>• Consider FirstEnergy's suggestions to differentiate between cyber and physical security sabotage and develop a threshold of materiality.<br>• Incorporate a periodic review or updating of the sabotage reporting procedures and for their periodic testing. Consider a staggered schedule of annual testing and formal review every two to three years.<br>• Include a requirement to report a sabotage event to the proper government authorities. Develop the language to specifically implement this directive.<br>• Explore ways to reduce redundant reporting, including central coordination of sabotage reports and a uniform reporting format.<br><br>V0 Industry Comments<br>• Object to multi-site requirement<br>• Definition of sabotage required<br><br>VRF comments<br>• Adequate procedures will insure it is unlikely to lead to bulk electric system instability, separation, or cascading failures.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-01 — Disturbance and Sabotage Reporting | | |
|---|---|---|
| **Standard #** | | **Title** |
| **EOP-004-1** | | Disturbance Reporting |
| **Issues** | FERC Order 693<br>Disposition: Approved with modification<br><br>• Include any requirements for users, owners, and operators of the bulk power system to provide data that will assist NERC in the investigation of a blackout or disturbance.<br>• Change NERC's Rules of Procedure to assure the Commission receives these reports in the same frame as the DOE.<br>• Consider APPA's concern about generator operators and LSEs analyzing performance of their equipment and provide data and information on the equipment to assist others with analysis.<br>• Consider all comments offered in a future modification of the reliability standard.<br><br>Fill-in-the-Blank Team Comments<br>• Consider changes to R1 and R3.4 to standardize the disturbance reporting requirements (requirements for disturbance reporting need to be added to this standard)<br>• Regions currently have procedures, but not in the form of a standard. The drafting team will need to review regional requirements to determine reporting requirements for the North American standard.<br><br>V0 Industry Comments<br>• R3 – too many reports, narrow requirement to RC<br>• How does this apply to generator operator?<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2009-02 Connecting New Facilities to the Grid

### Standards Involved:

FAC-001-0 — Facility Connection Requirements
FAC-002-0 — Coordination of Plans for New Facilities

### Research Needed:

None

### Brief Description:

A broad review needs to take place to ensure that all of the elements that should be addressed when a new facility is connected to the grid are included in the revised standard. New requirements are needed to require that the facility connection requirements are followed.

FAC-001 and FAC-002 have some 'fill-in-the-blank' components to eliminate.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-02 Project Schedule

### Target Completion Date:

First quarter of 2011

### Related Links:

Project 2009-02 Roster

| Standard Review Form<br>Project 2009-02 — Connecting New Facilities to the Grid | |
|---|---|
| **Standard #** | **Title** |
| **FAC-001-0** | Facility Connection Requirements |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Remove the phrase "to ensure compliance with NERC Reliability Standards and applicable Regional Reliability Organization, sub regional, Power Pool, and individual Transmission Owner planning criteria and facility connection requirements".<br>• Document explicit definition of ride through capability for generators<br><br>V0 Industry Comments<br>• Not a NERC issue<br>• Need to consider FERC, states, end-users<br>• Should not degrade system on interconnection<br>• Merge R1.1 & 1.2<br>• R1.3 – 5 days not enough<br>• When is assessment required?<br>• Wording on Level 4<br><br>Phase III/IV comments<br>• There is no requirement that facility connection requirements be used.<br>• There is no set criteria that must be included in the connection requirements – just a list of topics that must be addressed.<br>• Consider revising this so that the RRO has some requirements for facility connections in addition to those of the transmission owner.<br>• In a market environment it is very possible that not every generator will provide Frequency Response (FRR) services. Thus, the governor and governor deadband should be a requirement to interconnect to a power system. Generators that provide FRR shall have responsive governor and prime mover<br><br>Industry Work Plan Comment<br>• Exercise care that the new standard focuses on reliability issues and does not replace interconnection agreements that are tariff-related<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-02 — Connecting New Facilities to the Grid | | |
|---|---|---|
| **Standard #** | | **Title** |
| **FAC-002-0** | | Coordination of Plans for New Generation, Transmission, and End-User Facilities |
| **Issues** | FERC Order 693<br>Disposition: Approved with modifications<br><br>• Consider FirstEnergy's suggestion to include a reference to TPL-004-0.<br>• Amend requirement R1.4 to require evaluation of system performance under both normal and contingency conditions by referencing TPL-001 through TPL-003.<br>• Address other commenter's concerns in future revisions to the standard.<br><br>Fill-in-the-Blank Team Comments<br>• Remove "and applicable Regional, sub regional, Power Pool, and individual system planning criteria and facility connection requirements" from R1.2.<br>• Consider removing/ modifying R1.4, as it is redundant with the TPL standard,<br>• Coordinate with FAC-001, and<br>• Review FERC rule on interconnecting generators and see what parts impact this standard.<br><br>V0 Industry Comments<br>• Add TO, RRO<br>• Use 30 days throughout<br>• What is Measure?<br>• Shouldn't impact TTC<br><br>Phase III/IV comments<br>• This standard requires facility owners to work together with the Planning Authority and Transmission Planner to do an assessment to verify there is no adverse impact on reliability before a new facility can be connected to the grid. There is no obvious connection to FAC-001.<br>• The standard does not involve the RRO in the coordination effort – if the FM is revised, the requirements should probably involve the RRO.<br>• The assessment is done by the PA and/or TP<br><br>VRF comment<br>• R1.2 – Ambiguous<br>• Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Industry Work Plan Comment<br>• Exercise care that the new standard focuses on reliability issues and does not replace interconnection agreements that are tariff-related<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability | |

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| | Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2009-03 Interchange Information

### Standards Involved:

INT-001-2 — Interchange Transaction Tagging
INT-003-2 — Interchange Transaction Implementation
INT-004-1 — Interchange Transaction Modifications
INT-005-2 — Interchange Authority Distributes Arranged Interchange
INT-006-2 — Response to Interchange Authority
INT-007-1 — Interchange Confirmation
INT-008-2 — Interchange Authority Distributes Status
INT-009-1 — Implementation of Interchange
INT-010-1 — Interchange Coordination Exemptions

### Research Needed:

None

### Brief Description:

Most of these standards were approved in 2006. In 2007 and 2008, the standards staff will collect feedback on the strengths and weaknesses of this set of standards from the Operating and Planning Committees and from compliance personnel. The data collected will be used to determine the scope of this project.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-03 Project Schedule

### Target Completion Date:

First quarter of 2011

### Related Links:

Project 2009-03 Roster

| Standard Review Form<br>Project 2009-03 — Interchange Information | |
|---|---|
| **Standard #** | **Title** |
| **INT-001-2** | Interchange Information |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Include a requirement that interchange information must be submitted for all point-to-point transfers entirely within a balancing authority area, including all grandfathered and "non-Order No. 888" transfers.<br>• Consider Santa Clara's comments about the applicability of the LSE in the standard as part of the standards development process.<br><br>Regional Difference to INT-001/4: WECC Tagging Dynamic Schedules and Inadvertent Payback<br>Disposition: Not approved or remanded<br><br>• Submit a filing within 90 days of the Order that provides the needed information or withdraws the regional variance.<br><br>Regional Difference to INT-001/3: MISO Energy Flow Information<br>Disposition: Approved<br><br>V0 Industry Comments<br>• R1 - Too stringent<br>• R1 – Who tags dynamic schedules?<br>• Load PSE responsibility is new restriction<br>• Clarify tagging of reserves<br>• R2.2 – 60 minute time frame questioned<br>• Question on generation scheduling<br>• Onerous to BA's<br>• More commercial problem than reliability<br>• Lack of compliance<br><br>VRF comments<br>• R1, 1.1, 2, 2.1, 2.2 – commercial and administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-03 — Interchange Information | |
|---|---|
| **Standard #** | **Title** |
| **INT-003-2** | Interchange Transaction Implementation |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Regional Difference to INT-001/3: MISO Energy Flow Information<br>Disposition: Approved<br><br>Regional Difference to INT-003: MISO/SPP Scheduling Agent<br>Disposition: Approved<br><br>Regional Difference to INT-003: MISO Enhanced Scheduling Agent<br>Disposition: Approved<br><br>VRF Comments<br>• R1, 1.1, 1.1.2, 1.2 – commercial and administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-004-1** | | Dynamic Interchange Transaction Modifications |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>• Consider adding levels of non-compliance to the standard.<br><br>Regional Difference to INT-001/4: WECC Tagging Dynamic Schedules and Inadvertent Payback<br>Disposition: Not approved or remanded<br><br>• Submit a filing within 90 days of the Order that provides the needed information or withdraws the regional variance.<br><br>V0 Industry Comments<br>• Replace TSP with TOP<br>• Need to address tag curtailment<br>• Suggested non-compliance levels<br>• Non-compliance based on %<br>• Use WECC criteria<br><br>VRF comments<br>• R2, 2.2, 2.3 – commercial and administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-005-2** | | Interchange Authority Distributes Arranged Interchange |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Consider adding levels of non-compliance to the standard.<br><br>VRF comment<br>• R5 – administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-006-2** | | Response to Interchange Authority |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Include reliability coordinators and transmission operators as applicable entities.<br>• Require reliability coordinators and transmission operators to review energy interchange transactions from the wide-area and local area reliability viewpoints respectively and, where their review indicates a potential detrimental reliability impact, communicate to the sink balancing authorities' necessary transaction modifications before implementation.<br>• Consider the suggestions made by EEI and TVA and address questions raised by Entergy and Northern Indiana as part of the standard development process.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-007-1** | | Interchange Confirmation |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>VRF comment<br>• R1, 1.1, 1.3, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.4 – administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-008-2** | | Interchange Authority Distributes Status |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Consider APPA's suggestion to clarify what reliability entity the standard applies as part of the standard development process.<br><br>VRF comments<br>• R1.1.1 & 1.1.2 – commercial and administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-009-1** | | Implementation of Interchange |
| **Issues** | FERC Order 693<br>• Consider APPA's suggestion to clarify what reliability entity the standard applies as part of the standard development process.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-03 — Interchange Information | | |
|---|---|---|
| **Standard #** | | **Title** |
| **INT-010-1** | | Interchange Coordination Exemptions |
| **Issues** | FERC Order 693<br>Disposition: Approved<br>• Consider Northern Indiana's and ISO-NE's suggestions in the standards development process.<br><br>VRF comments<br>• R1 & 3 – administrative<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2009-04 Modeling Data

### Standards Involved:

MOD-010-0 — Steady-State Data for Transmission System Modeling and Simulation
MOD-011-0 — Regional Steady-State Data Requirements and Reporting Procedures
MOD-012-0 — Dynamics Data for Transmission System Modeling and Simulation
MOD-013-1 — Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures
MOD-014-0 — Development of Interconnection-Specific Steady State System Models
MOD-015-0 — Development of Interconnection-Specific Dynamics System Models
PRC-013-0 — Special Protection System Database
PRC-015-0 — Special Protection System Data and Documentation
PRC-020-1 — Under-Voltage Load Shedding Program Database
PRC-021-1 — Under-Voltage Load Shedding Program Data

### Research Needed:

18 months study for dynamics modeling of load in simulations and analyses

### Brief Description:

This is one of two projects aimed at identifying all the 'data provision' requirements and consolidating the requirements into fewer standards. Research is needed to clearly identify what data is needed to accurately model load in simulations and analyses. The requirements need to be more specific to clearly identify the format, etc., for providing data.

As envisioned, this project will result in the elimination of most if not all region-specific requirements and the revised requirements would include much more specificity. MOD-010 through MOD-015 has some 'fill-in-the-blank' components to eliminate.

Many of the requirements need to be realigned so that the data that is needed is provided to the entity that needs the data. In several of the existing standards, the data is provided to the RRO who then provides the data to the Planning Authority or other entities.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-04 Project Schedule

### Target Completion Date:

First quarter of 2011

### Related Links:

Project 2009-04 Roster

| Standard Review Form<br>Project 2009-04 — Modeling Data | |
|---|---|
| **Standard #** | **Title** |
| **MOD-010-0** | Steady-State Data for Modeling and Simulation of the Interconnected Transmission System |

**Issues**

FERC Order 890

- 290. The Commission directs public utilities, working through NERC, to modify the reliability standards MOD-010 through MOD-025 to incorporate a requirement for the periodic review and modification of models for (1) load flow base cases with contingency, subsystem, and monitoring files, (2) short circuit data, and (3) transient and dynamic stability simulation data, in order to ensure that they are up to date. This means that the models should be updated and benchmarked to actual events. We find that this requirement is essential in order to have an accurate simulation of the performance of the grid and from which to comparably calculate ATC, therefore increasing transparency and decreasing the potential for undue discrimination by transmission providers.

FERC Order 693
Disposition: Approve with modifications

- Require users, owners, and operators to submit data to the regional entities as needed for modeling studies and assessments.
- Require transmission planners to provide the contingency lists they use in performing system operation and planning studies.
- Address critical energy infrastructure confidentiality issues as part of the standard development process.
- Expand the applicability to include transmission operators and the planning authority.

Fill-in-the-Blank Team Comments

- Review MOD-010, MOD-011, MOD-012, and MOD-013 concurrently for modeling requirements and reporting.
- Coordinate the revision of this standard with the revision to MOD-011. MOD-011 needs to be written as a North American standard with requirements for each interconnection. Once MOD-011 is modified, the only changes needed to MOD-010 are the references to the appropriate requirements in MOD-011.
- This standard is directly related to MOD-011.

V0 Industry Comments

- Not a standalone standard
- Don't need schedules for transactions within RTO
- Confidentiality needs not cited
- Non-compliance does not have time elements
- Don't provide data to NERC

Other

- Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team

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| | Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-011-0** | | Maintenance and Distribution of Steady-State Data Requirements and Reporting Procedures |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Expand the applicability to include the planning authority.<br>• Develop a work plan and submit a compliance filing that will facilitate the ongoing collection of the steady-state modeling and simulation data specified in this standard.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-010, MOD-011, MOD-012, and MOD-013 concurrently for modeling requirements and reporting.<br>• Coordinate the revision of this standard with the revision to MOD-010. MOD-011 needs to be written as a North American standard with requirements for each interconnection.<br>• This should be a North American Standard containing requirements which are interconnection-wide.<br>• MOD-010 and 011 are related. This is the MMWG work for the eastern interconnection.<br>• Revise NERC MOD-011 to clarify that the data reporting requirements must be uniform across each interconnection.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Add equipment types and variables<br>• Confidentiality of data<br>• Consistency across standards for non-compliance<br>• Time element not cited in non-compliance<br>• Locations of substations should be deleted<br>• Several semantics issues<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | |
|---|---|
| **Standard #** | **Title** |
| **MOD-012-0** | Dynamics Data for Modeling and Simulation of the Interconnected Transmission System |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Require users, owners, and operators to submit data to the regional entities as needed for modeling studies and assessments.<br>• Provide a list of faults and disturbances used in performing dynamics system studies for operation and planning.<br>• Address critical energy infrastructure confidentiality issues as part of the standard development process.<br>• Expand the applicability to include transmission operators, planning authorities, and transmission planners.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-010, MOD-011, MOD-012, and MOD-013 concurrently for modeling requirements and reporting.<br>• Coordinate the revision of this standard with the revision to MOD-013. MOD-013 needs to be written as a North American standard with requirements for each interconnection. Once MOD-013 is modified, the only changes needed to MOD-012 are the references to the appropriate requirements in MOD-013.<br>• This standard is directly related to MOD-013.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Consistency of non-compliance<br>• Confidentiality of data<br>• Time element missing in non-compliance<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-013-1** | | Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Permit entities to estimate dynamics stat if they are unable to obtain unit specific information.<br>• Require verification of the dynamic models with actual disturbance data.<br>• Expand the applicability to include transmission operators, planning authorities, and transmission planners.<br>• Develop a work plan and submit a compliance filing that will facilitate the ongoing collection of the dynamics modeling and simulation data specified in this standard.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-010, MOD-011, MOD-012 and MOD-013 concurrently for modeling requirements and reporting.<br>• Revise MOD-013 to clarify that the data reporting requirements must be uniform across each interconnection.<br>• This should be a North American Standard containing requirements which are interconnection-wide.<br>• MOD-012 and MOD-013 are related. This is the MMWG work for the Eastern Interconnection.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Confidentiality of data<br>• Timing element not mentioned in non-compliance<br>• 5 business days not sufficient<br>• Consistency in non-compliance<br>• Several semantics issues<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | **Title** | |
| **MOD-014-0** | Development of Steady-State System Models | |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Require models to be validated against actual system response.<br>• If model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy.<br>• Require users, owners, and operators to provide the validated models to regional reliability organizations.<br>• Develop a work plan that will facilitate ongoing validation of steady-state models and submit a compliance filing to the Commission.<br><br>V0 Industry Comments<br>• Solved cases should not have violations<br>• Define near-term vs. long-term<br>• Consistency of non-compliance<br>• Timing element missing in non-compliance<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | **Title** | |
| **MOD-015-0** | Development of Dynamics System Models | |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Require actual system events be simulated and dynamics system model output be validated against actual system response.<br>• Require users, owners, and operators to provide the validated models to regional entity.<br>• Develop a work plan that will facilitate ongoing validation of dynamics models and submit a compliance filing to the Commission.<br><br>V0 Industry Comments<br>• Confidentiality of data<br>• Timing element of non-compliance<br>• Consistency of non-compliance<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | |
|---|---|
| **Standard #** | **Title** |
| **PRC-013-0** | Special Protection System Database |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Consider APPA's suggestions for interconnection-wide consistency in the standards development process.<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-013 and PRC-015 together to properly reference regional standards (see notes of PRC-015 for options).<br>• Related to PRC-015.<br><br>V0 Industry Comments<br>• Not a standalone standard<br>• Define evidence<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-015-0** | | Special Protection System Data and Documentation |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-013 and PRC-015 together to properly reference regional standards (see notes of PRC-015 for options).<br>• Tied to PRC-013.<br>• Consider impact of removing R1.2 from PRC-012-0 and revision of PRC-013-0, R1.1, 1.2, & 1.3 to include a specific list of items to be included in the RRO SPS database. The same list could be added to PRC-015, R1.1. However, it may be cleaner to move PRC-015-0, R1.1 and the data portion of R1.3 to PRC-013. (Note: revisions to PRC-012 are identified for a separate drafting team and are expected to take place after revisions to PRC-013 and PRC-015 are completed.)<br><br>V0 Industry Comments<br>• Already covered elsewhere<br>• Define evidence<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-020-1** | | Under-Voltage Load Shedding Program Database |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>Phase III/IV comments<br>• The reliability-related need for the RRO to have the data isn't clear<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-04 — Modeling Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **PRC-021-1** | | Under-Voltage Load Shedding Program Data |
| **Issues** | FERC Order 693<br>Disposition: Approved.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2009-05 Demand Data

### Standards Involved:

MOD-016-1 — Actual and Forecast Demands, Net Energy for Load, Controllable DSM
MOD-017-0 — Aggregated Actual and Forecast Demands and Net Energy for Load
MOD-018-0 — Reports of Actual and Forecast Demand Data
MOD-019-0 — Forecasts of Interruptible Demands and DCLM Data
MOD-020-0 — Providing Interruptible Demands and DCLM Data
MOD-021-0 — Accounting Methodology for Effects of Controllable DSM in Forecasts

### Research Needed:

None

### Brief Description:

This is one of two projects aimed at identifying all the 'data provision' requirements and consolidating the requirements into fewer standards. As envisioned, this project will result in two standards – with MOD-016 through MOD-020 in a single standard, and MOD-021 in a separate standard. The requirements need to be more specific to clearly identify the format, etc., for providing data.

MOD-016, MOD-017, and MOD-019 have some 'fill-in-the-blank' components to eliminate.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-05 Project Schedule

### Target Completion Date:

Second quarter of 2011

### Related Links:

Project 2009-05 Roster

| Standard Review Form<br>Project 2009-05 — Demand Data | |
|---|---|
| **Standard #** | **Title** |
| **MOD-016-1** | Documentation of Data Reporting Requirements for Actual and Forecast Demands, net Energy for Load, and Controllable Demand-Side Management |

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| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Modify the definition of DSM to include any other entities that undertake activities or programs to influence the amount or timing of electricity they use without violating other reliability standards requirements.<br>• Expand the applicability to include transmission planners.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-016, MOD-017, and MOD-019 concurrently to develop uniform North American Standards for reporting of actual and forecast demand and NEL data to be reported to RRO for system modeling and analysis.<br>• Standard should address quality and accuracy of the forecast; need to avoid double-counting, etc.<br>• MOD-016 is the NERC requirement on region; MOD-017 and MOD-019 are the entity requirements to comply with the region. Includes MOD-016 through MOD-021.<br><br>V0 Industry Comments<br>• Weather data needed<br>• Consistency in non-compliance<br><br>Phase III/IV comments<br>• Purpose – revise to add 'best available' where noted. Ensure that accurate, actual demand data is available to support assessments and validation of past events and databases. Forecast demand data is needed to perform future system assessments to identify the need for system reinforcements for continued reliability. In addition, to assist in proper real-time operating, best available load information related to controllable demand-side management (DSM) programs is needed. A clear definition of forecast demand is needed.<br>• R1 - Transmission providers who serve customers who have retail access may have difficulty obtaining documentation identifying the scope and details of actual and forecast data. These transmission providers' can provide the actual and forecast data using their own data sets, but they may not have access to an individual retail choice customer's documentation for historical and forecast data. Often concerns about loss of competitive advantage or confidentiality issues are expressed about providing the data to the transmission provider.<br>• R1.2 – needs to identify the type of forecast<br>• R1.2 - revise to recognize that service territories may host multiple LSEs<br>• R2 and R3 – clarify what entity is providing the approval |

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| | • Add specificity to identify what must be considered in identifying the demand load forecast– is this expected to be the 'peak' demand and should it include such factors as economic, demographic, and customer trends; conservation, improvements in the efficiency of electrical energy use, and other changes in the end uses of electricity; and weather effects? Should the peak demand load forecast have a 50% probability of not being exceeded (expected peak demand)? This load forecast is commonly referred to as the 1-in-2 peak load forecast.<br>• There is a disconnect between LSE load forecasting and planning and the control area reporting as a major issue in the reporting of quality load and resources data to WECC. Confidentiality issues and other communication issues have contributed to making this an issue of concern therefore the following are action needs:<br>  o Expand the applicability to include Load Serving Entities and Purchasing/Selling entities<br>  o Explicitly state that LSEs are required to provide the documentation for actual and load forecast data for the loads they serve to the PAs and RROs.<br>  o Where Purchasing/ Selling entities are retail access customers who perform load forecasts, specify that these entities also need to provide similar documentation to PAs and RROS<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-05 — Demand Data | | |
|---|---|---|
| **Standard #** | | **Title** |
| **MOD-017-0** | | Aggregated Actual and Forecast Demands and Net Energy for Load |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Include requirements for reporting of temperature and humidity along with the peak loads.<br>• Reporting of accuracy, error and bias of load forecasts compared to actual loads taking temperature and humidity conditions into account.<br>• Address methods to correct forecasts to minimize prior inaccuracies, errors, and bias.<br>• Expand the applicability to include transmission planners.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-016, MOD-017, and MOD-019 concurrently to develop uniform North American Standards for reporting of actual and forecast demand and NEL data to be reported to RRO for system modeling and analysis.<br>• Correct reference to MOD-016 when MOD-016 is revised (MOD-016-1)<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-05 — Demand Data | | |
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| **Standard #** | | **Title** |
| **MOD-018-0** | | Treatment of Nonmember Demand Data and How Uncertainties are Addressed in the Forecasts of Demand and Net Energy for Load |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>• Provide a work plan and compliance filing regarding the collection of information specified for standards that are deferred.<br><br>V0 Industry Comments<br>• Need to define uncertainty<br>• Confidentiality of data<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-05 — Demand Data | |
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| **Standard #** | **Title** |
| **MOD-019-0** | Reporting of Interruptible Demands and Direct Control Load Management |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Require users, owners, and operators to provide to the regional entity information related to forecasts of interruptible demands and direct control load management.<br>• Require reporting of the accuracy, error, bias of controllable load forecasts.<br>• Analyze differences between actual and forecasted demands for five years of actual controllable load and identify what corrective actions should be taken to approve controllable load forecasting for the 10-year planning horizon.<br><br>Fill-in-the-Blank Team Comments<br>• Review MOD-016, MOD-017, and MOD-019 concurrently to develop uniform North American Standards for reporting of actual and forecast demand and NEL data to be reported to RRO for system modeling and analysis.<br>• Correct reference to MOD-016 when MOD-016 is revised (MOD-016-1)<br><br>V0 Industry Comments<br>• Level 4 non-compliance is harsh<br>• Confidentiality of data<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-05 — Demand Data | | |
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| **Standard #** | | **Title** |
| **MOD-020-0** | | Providing Interruptible Demands and Direct Control Load Management Data to System Operators and Reliability Coordinators |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br>• Require reporting of the accuracy, error, and bias of controllable load forecasts.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-05 — Demand Data | | |
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| **Standard #** | | **Title** |
| **MOD-021-0** | | Documentation of the Accounting Methodology for the Effects of Controllable Demand-Side Management in Demand and Energy Forecasts |
| **Issues** | FERC Order 693<br>Disposition: Approve with modifications<br><br>• Require users, owners, and operators to provide to the regional entity information related to this standard.<br>• Standardize principles on reporting and validation of DSM program information.<br>• Allow resource planners to analyze the causes of differences between actual and forecasted demands, and identify any corrective actions that should be taken to improve forecasted demand responses for future forecasts.<br>• Modify the title and purpose statement to remove the word "controllable".<br><br>Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

## 2009-06 Protection Systems

### Standards Involved:

PRC-003-1 — Regional Requirements for Transmission and Generation Protection System Misoperations
PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations
PRC-012-0 — Special Protection System Review Procedure
PRC-014-0 — Special Protection System Assessment
PRC-016-0 — Special Protection System Misoperations

### Research Needed:

None

### Brief Description:

Consideration should be given to merging some of the standards to eliminate the need for cross-referencing.

PRC-003, PRC-004, PRC-014, and PRC-016 have some 'fill-in-the-blank' components to eliminate.

PRC-012 is one of the few 'fill-in-the-blank' standards that was identified by the Regional Reliability Standards Working Group as a standard that has some requirements that need to remain in regional standards.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-06 Project Schedule

### Target Completion Date:

Second quarter of 2011

### Related Links:

Project 2009-06 Roster

| Standard Review Form<br>Project 2009-06 — Protection Systems | |
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| **Standard #** | **Title** |
| **PRC-003-1** | Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Consider if greater consistency can be achieved in the standard as suggested by APPA.<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-003 and PRC-004 together to identify the specific requirements of the functional entities (include specific requirements for each functional entity).<br>• This is a North American Standard as written which places requirements on the regions to develop a procedure. However, PRC-004 requires functional entities to comply with the procedures the RROs develop. Craft a new PRC-003 as a North American standard containing the specific requirements for each functional entity.<br>• Modify PRC-003 to include specific requirements for each functional entity. Each of the regional plans needs to be reviewed to determine what should be included in the North American standard. The current PRC-003 defines requirements for RROs. The drafting team should revise PRC-004 to include proper references to the new PRC-003.<br><br>V0 Industry Comments<br>• Need to define evidence<br>• Change wording to reporting instead of monitoring<br><br>Phase III/IV comments<br>• Enhance the applicability section to clarify that the systems addressed by the requirements are limited to:<br>  o All transmission circuits 200 kV and above<br>  o All transmission circuits 100 kV to 200 kV operationally significant circuits, as defined by the RROs<br>  o Generator protection systems, whose misoperations impact the bulk electric system<br>• The RRO should be required to demonstrate that the requirements developed in accordance with R1 produce the desired result.<br>• In R1.2 change format to content<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-06 — Protection Systems | | |
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| **Standard #** | | **Title** |
| **PRC-004-1** | | Analysis and Mitigation of Transmission and Generation Protection Misoperations |
| **Issues** | FERC Order 693<br>Disposition: Approve<br><br>• Consider ISO-NE's suggestion that LSEs and transmission operators should be listed as applicable entities.<br>• The regional entity should develop procedures for corrective action plans.<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-003 and PRC-004 together to identify the specific requirements of the functional entities.<br>• See notes for PRC-003-1.<br>• Coordinate the revision of this standard with the revision to standard PRC-003. PRC-003 needs to be written as a North American standard with requirements for each functional entity as appropriate. Once PRC-003 is modified, the only changes needed to PRC-004 are the references to the appropriate requirements in PRC-003.<br><br>V0 Industry Comments<br>• Levels of non-compliance need to be redefined<br><br>Phase III/IV comments<br>• This standard should apply to all protection systems on the Bulk Electric System (BES) not just those that 'impact' the BES<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-06 — Protection Systems | | |
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| **Standard #** | | **Title** |
| **PRC-012-0** | | Special Protection System Review Procedure |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Consider APPA's suggestions for interconnection-wide consistency in the standards development process.<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-012 and PRC-016 together to properly reference regional standards.<br>• Modify R1 to require each Region to have a regional standard, and<br>• Identify what elements (if any) of SPS schemes should be included in the North American standard and what elements should be included in the regional standards.<br>• Development of regional standards needs to be coordinated with Regional entities. Regional entities should begin process for developing regional standards once the drafting team for the North American standard has determined what elements of SPS schemes should be included in the continent-wide standard and what elements should be included in the regional standards.<br>• PRC-012 will be a continent-wide standard supported by Regional Reliability Standards.<br>• PRC-012 is related to PRC- 016. Justified as regional standard; network specific.<br>• Consider removing R1.6 and capitalize "Misoperation" in the current R1.7 as "misoperation" has been added to the glossary of the standards manual.<br>• Also consider: R1 needs to be changed to state Regional Standard instead of Regional criteria (once they become standards).<br>• Consider removing R1.2 from PRC-012-0 (see notes for PRC-015 for additional details. Make sure data requirements have been addressed adequately in PRC-013 and PRC-015 such that R1.2 of PRC-012 can be removed).<br><br>V0 Industry Comments<br>• Should be RA and not RRO<br>• Levels of compliance need to differentiate severity of different items within requirements<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-06 — Protection Systems | | |
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| **Standard #** | | **Title** |
| **PRC-014-0** | | Special Protection System Assessment |
| **Issues** | FERC Order 693<br>Disposition: Not Approved or Remanded.<br><br>• Consider APPA's suggestions for interconnection-wide consistency in the standards development process.<br><br>V0 Industry Comments<br>• Already covered elsewhere<br>• Assessment should be by TO or TP, not RRO<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. | |

| Standard Review Form<br>Project 2009-06 — Protection Systems | |
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| **Standard #** | **Title** |
| **PRC-016-0** | Special Protection System Misoperations |
| **Issues** | FERC Order 693<br>Disposition: Approved<br><br>Fill-in-the-Blank Team Comments<br>• Review PRC-012 and PRC-016 together to properly reference regional standards (see notes of PRC-015 for options).<br>• Tied to PRC-012.<br><br>V0 Industry Comments<br>• Not really a standalone standard<br>• Define evidence<br>• Define what makes up an SPS<br>• Only need evidence that action was taken<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2009-07 Cyber Security

### Standards Involved:

CIP-002-1 — Critical Cyber Asset Identification
CIP-003-1 — Security Management Controls
CIP-004-1 — Personnel & Training
CIP-005-1 — Electronic Security Perimeter(s)
CIP-006-1 — Physical Security of Critical Cyber Assets
CIP-007-1 — Systems Security Management
CIP-008-1 —Incident Reporting and Response Planning
CIP-009-1 — Recovery Plans for Critical Cyber Assets

### Research Needed:

None

### Brief Description:

These are new standards that were approved in 2006 and some requirements won't become effective until 2010. In 2007 and 2008, the standards staff will collect feedback on the strengths and weaknesses of this set of standards from the Operating and Planning Committees and from compliance personnel. The data collected will be used to determine the scope of this project.

The project will address the interpretation for CIP-006 Requirement 1.1.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-07 Project Schedule

### Target Completion Date:

Second quarter of 2011

### Related Links:

Project 2009-07 Roster

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-002-1** | Cyber Security – Critical Cyber Asset Identification |
| **Issues** | FERC Cyber NOPR Comments<br><br>Paragraph 325 - Add missing Violation Risk Factors to Requirement R3.1<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards; |

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| | Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 103 Provide some basic guidance on the content or considerations to be applied in a risk assessment methodology. Proper risk-based assessment methodology to identify critical assets should examine (1) the consequences of the loss of the asset to the Bulk-Power System and (2) the consequence to the Bulk-Power System if an adversary gains control of the asset for intentional misuse.<br><br>Paragraph 104 ERO and Regional Entities provide reasonable technical support to such entities that would assist them in determining whether their assets are critical to the Bulk-Power System.<br><br>Paragraph 108 Include a requirement that a senior manager annually review and approve the risk-based assessment methodology.<br><br>Paragraph 113 Include a mechanism for the external review and approval of critical asset lists based on a regional perspective.<br><br>Paragraph 115 Modify Requirement R1.2 to clarify the requirement to show why specific assets were or were not chosen as critical assets, and to require the consideration of misuse of control<br><br>Industry Work Plan Comment – Compliance Measures<br><br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-003-1** | Cyber Security - Security Management Controls |
| **Issues** | VRF comments<br>• R4.2 – only an administrative requirement<br><br>FERC Cyber NOPR Comments<br><br>Paragraph 325 - Add missing Violation Risk Factors to Requirement R4.1 and Requirement R5.1.2<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues. |

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| | Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards;<br><br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 126-127 Provide additional guidance for the topics and processes that the required cyber security policy should address to ensure that the responsible entity reasonably protects its critical cyber assets as explained in Paragraph 126-127 of the NOPR.<br><br>Paragraph 132 Modify Requirement R3 of CIP-003-1 to require a responsible entity to periodically submit to the Regional Entity the documentation of exceptions to the cyber security policy.<br><br>Paragraph 133 Clarify that the exceptions mentioned in Reliability Standard CIP-003-1, Requirements R2.3 and R3, do not except responsible entities from the requirements of the CIP Reliability Standards.<br><br>Paragraph 136 Modify CIP-003-1, to make clear the senior manager's ultimate responsibility.<br><br>Paragraph 139 Modify Reliability Standards CIP-003-1, CIP-004-1, and/or CIP-007-1, to ensure and make clear that access to protected information is revoked promptly.<br><br>Paragraph 144 Modify Requirement R6 of Reliability Standard CIP-003-1 to include in the process of change control and configuration management a requirement for detection and monitoring controls to determine if changes are made as intended and to investigate whether any unintended or unplanned changes have been made.<br><br>Paragraph 147 Modify Reliability Standard CIP-003-1 to provide direction regarding the issues and concerns that a "mutual distrust" posture must address to protect the control system from the "outside world."<br><br>Paragraph 312 R6 - The CIP Reliability Standards should specifically state that a change control process should include procedures for a tested backup. Adding language, such as "these procedures are to include practices to test and verify the operability of the backup before it is stored and relied upon for recovery," would eliminate this ambiguity.<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level. |

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| | Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-004-1** | Cyber Security - Personnel & Training |
| **Issues** | VRF comment<br>• R3 - This needs to be looked at for 30 days - should be done prior to access being granted.<br><br>FERC Cyber NOPR Comments<br><br>Paragraph 325 - Add missing Violation Risk Factors to Requirement R2.2.2 and Requirement R2.2.3<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues. |

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| | Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards;<br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 158 Require affected personnel to receive the required training before obtaining access to critical cyber assets (rather than within 90 days of access authorization), but allowing limited exceptions, such as during emergencies, subject to documentation and mitigation.<br><br>Paragraph 159 Require responsible entities to identify "core training" elements to ensure that essential training elements will not go unheeded in an emergency and other contingency situations where full training prior to access will not best serve the reliability of the Bulk-Power System. Alternate provisions for emergencies and certain other conditions could be designed, such as requiring documentation of all personnel who received access to particular equipment during the emergency and whether they received a briefing or any other training prior to their access concerning the specific facilities; the extent to which people needed for the emergency had received general training and possessed appropriate specialized expertise for the circumstance; and any risk mitigation steps taken during the emergency access.<br><br>Paragraph 159 Consider what, if any, modifications to CIP-004-1 should be made to address the concern raised by the ISA Group that security trainers be adequately trained themselves.<br>Paragraph 160 Clarify that the cyber security training programs required by Requirement R2 are intended to encompass training on the networking hardware and software and other issues of electronic interconnectivity supporting the operation and control of the critical cyber assets. One method of clarification the ERO should consider is the addition of a provision such as that contained in CIP-005-1, Requirement R1.4, which specifically subjects any non-critical cyber asset within a defined electronic security perimeter to the Reliability<br><br>Paragraph 161 Increase the guidance in the Reliability Standard as to the scope and quality of training. Examples of some areas where the inclusion of guidance can be considered are: control of electronic devices (such as laptop computers), the appropriate audiences for the training, delivery methods, and updates of training materials.<br><br>Paragraph 161 Consider relevant aspects of the cited NIST Special Publications, as well as other relevant models, to improve CIP-004-1 and prevent a lowest common denominator result. |

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| | Paragraph 166 Develop modifications to Requirement R2 to provide that newly-hired personnel and vendors should not have access to critical cyber assets, except in specified circumstances such as an emergency. The ERO should determine the parameters of such exceptional circumstances in developing the proposed modification through its Reliability Standards development process.<br><br>Paragraph 166 The 30-day window allowing access before the personnel risk assessment is completed remain in effect for current employees and vendors with existing contractual relationships with the responsible entity as of the effective date of the Reliability Standard. We propose to direct that the ERO include, in developing modifications to CIP-004-1, criteria that address circumstances in which current personnel can continue access to critical cyber assets during the 30-day investigative period during initial compliance with CIP-004-1.<br><br>Paragraph 169 Require immediate revocation of access privileges when an employee, contractor, or vendor no longer performs a function that requires authorized physical or electronic access to a critical cyber asset for any reason (including disciplinary action, transfer, retirement or termination).<br><br>Paragraph 169 Modify Requirement R4 to make clear that unescorted physical access should be denied to individuals that are not identified on the authorization list.<br>Paragraph 173 Address the "joint use" concerns expressed by APPA/LPPC while developing any modifications to these Reliability Standards directed in a final rule. Regardless of whether a facility subject to CIP-004-1 is jointly owned or not, all entities that have access to it must comply with CIP-004-1. Each entity, however, is responsible for only its compliance and may not attempt to block or limit another's access on the basis of its perception that the other entity has not complied with CIP-004-1.<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-005-1** | Cyber Security – Electronic Security Perimeter(s) |
| **Issues** | VRF comments<br>• R1.3 – administrative definition<br>• R1.5 – standard to comply with a standard = double jeopardy<br><br>FERC Cyber NOPR Comments<br><br>Paragraph 325 - Add missing Violation Risk Factors to the Requirement R1.5<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br><br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal |

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| | entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards;<br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br>Paragraph 181 Implement a defensive security approach including two or more defensive measures in a defense in depth posture.<br><br>Paragraph 188 Ensure access is granted only to users who have corresponding job responsibilities.<br><br>Paragraph 188 Requirement R2.4 should provide greater clarity regarding the expectation for adequate compliance by identifying examples of specific verification technologies that would satisfy the Requirement, while also allowing compliance pursuant to other technically equivalent measures or technologies.<br><br>Paragraph 189 Providing such basic security measures as access control can be accomplished using/placing measures "in front of" systems as opposed to "inside" systems. Such an approach can be used to secure even older, yet functioning, legacy systems. Evaluate the issue and provide specific guidance to responsible entities that must face such issues.<br><br>Paragraph 197 Develop a bifurcated review requirement of access logs at electronic access points in which readily available logs are reviewed more frequently than every 90 days. The Commission believes such review should be performed at least weekly. must include in the Reliability Standard guidance on how a responsible entity should designate individual assets as "readily accessible" or "not readily accessible,"<br><br>Paragraph 201 Require a vulnerability assessment of the electronic access points as part of, or contemporaneously with, any modifications to the electronic security perimeter or defense in depth strategy.<br><br>Paragraph 201 Requirement R4 should provide for the conduct of live vulnerability assessments at least once every three years, with subsequent annual paper assessments in the intervening years.<br><br>Industry Work Plan Comment – Compliance Measures<br>Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br>Other |

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| | • Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-006-1** | Cyber Security – Physical Security of Critical Cyber Assets |
| **Issues** | VRF comments<br>• R1.5 & .9 – Should be consistent with CIP-005<br>• R1.8 - A requirement to meet other standard requirements - double jeopardy<br>• R2.1, .2, .3 & .4 - These are 4 things from which to choose one or more, so no one of them is required. Should be a bulleted list, not sub-requirements.<br>• R3.1 – May statement<br><br>FERC Cyber NOPR Comments<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect |

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| | the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards;<br><br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 209 Treat the allowance of "alternative measures" as "interim actions" developed and implemented as part of a mitigation plan under a "technical feasibility" exception.<br><br>Paragraph 214 A responsible entities must, at a minimum, implement two or more different security procedures when establishing a physical security perimeter around critical cyber assets.<br><br>Paragraph 221 (1) A readily accessible critical cyber asset be tested every year with a one-year record requirement for the retention of testing, maintenance, and outage records; and (2) a non-readily accessible critical cyber asset be tested in a three-year cycle with a three-year record retention requirement.<br><br>Standards Process<br>• Incorporate approved formal interpretation<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-007-1** | Cyber Security – Systems Security Management |
| **Issues** | VRF comment<br>• R2 & 2.3 - An open port can lead to loss of system integrity.<br>• R3 **-** An improper patch can lead to loss of system integrity.<br><br>FERC Cyber NOPR Comments<br><br>Paragraph 325 - Add missing Violation Risk Factors to the Requirement R5.1, Requirement R5.3.3, and Requirement R7<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br><br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and |

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| | on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83-86 Reliability Standards;<br><br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 230 Modify Requirement R1 and its subparts to require documentation of each significant difference between the testing and the production environments, and how each such difference is mitigated or otherwise addressed.<br><br>Paragraph 234 Revise Requirement R2 and its subparts to reflect our determinations discussed above to remove the "acceptance of risk" language and to impose the same conditions and reporting requirements here for "technical limitations" as imposed elsewhere in this NOPR regarding "technical feasibility."<br><br>Paragraph 239 The "acceptance of risk" language must be removed in R3also.<br><br>Paragraph 244 The "acceptance of risk" language must be removed here (R4), and the same conditions and reporting requirements regarding "technical feasibility" that apply elsewhere are applicable here.<br><br>Paragraph 244 Modify Requirement R4 to include safeguards against personnel introducing, either maliciously or unintentionally, viruses or malicious software to a cyber asset within the electronic security perimeter through remote access, electronic media, or other means.<br><br>Paragraph 251 Revise Requirement R6 to include a requirement that logs be reviewed on a weekly basis for readily accessible critical assets and reviewed within the retention period for assets that are not readily accessible. Accessibility should take into account both physical remoteness and available communications channels. We would expect control centers to fall within the "readily accessible" category.<br><br>Paragraph 252 Revise Requirement R6.4 to clarify that while the retention period for all logs specified in Requirement R6 is 90 days, the retention period for logs mentioned in Requirement R6.3 for the support of incident response as required in CIP-008-1 is the retention period required by CIP-008-1, i.e., three years.<br><br>Paragraph 256 Clarify that R7 assures that there is no opportunity for unauthorized retrieval of data from a cyber asset prior to discarding it or redeploying it. |

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| | Paragraph 260 Provide more direction on what features, functionality, and vulnerabilities the responsible entities should address when conducting the vulnerability assessments.<br><br>Paragraph 260 Revise Requirement R8.4 to require an entity-imposed timeline for completion of the already-required action plan.<br><br>Paragraph 263 Modify Requirement R9 to state that the changes resulting from modifications to the system or controls shall be documented in a 30-day time period.<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | | |
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| **Standard #** | | **Title** |
| **CIP-008-1** | | Cyber Security – Incident Reporting and Response Planning |
| **Issues** | FERC Cyber NOPR Comments<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83- | |

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| | 86 Reliability Standards;<br><br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraph 270 Develop and include in CIP-008-1 language that takes into account a breach that may occur through cyber or physical means<br><br>Paragraph 270 Harmonize, but not necessarily limit, the meaning of the term reportable incident with other reporting mechanisms, such as DOE Form 417<br><br>Paragraph 270 Recognize that the term "reportable incident" should not be triggered by ineffectual and untargeted attacks that proliferate on the internet<br><br>Paragraph 280 Modify CIP-008-1 to require a responsible entity to contact appropriate government authorities and industry participants in the event of a Cyber Security Incident as soon as possible, but, in any event, within one hour of the event, even if it is a preliminary report. The reporting timeframe should run from the discovery of the incident by the responsible entity, and not the occurrence of the incident.<br><br>Paragraph 286 Refine R2 to require responsible entities to maintain documentation of paper drills, full operational drills, and responses to actual incidents, all of which must include lessons learned.<br><br>Paragraph 286 Require revisions to the Incident Response Plan to address these lessons learned.<br><br>Paragraph 286 Provide guidance on the meaning of the term "full operational exercise."<br><br>Paragraph 286 Require responsible entities to perform a "full operational exercise" at least once every three years, or to fully document its reason for not conducting an exercise in full operational mode pursuant to the technical feasibility parameters discussed earlier in the NOPR.<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

| Standard Review Form<br>Project 2009-07 — Cyber Security | |
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| **Standard #** | **Title** |
| **CIP-009-1** | Cyber Security – Recovery Plans for Critical Cyber Assets |
| **Issues** | FERC Cyber NOPR Comments<br><br>Paragraph 41 Add that a responsible entity must implement a plan, policy or procedure that it is required to develop. (CIP-002-009)<br><br>Paragraph 48 Develop a self-certification process with more frequent certifications, either tied to target dates in the schedule or perhaps quarterly or semi-annual certifications.<br><br>Paragraph 58 Remove references to the "reasonable business judgment" language.<br><br>Paragraph 77 Treat instances where technical feasibility is invoked as exceptions that require certain alternative courses of action;<br><br>Paragraph 77 Interpret the term "technical feasibility" narrowly as applying to the technical characteristics of existing assets and having no relation to the considerations of business judgment discussed above;<br>Paragraph 79 Establish a structure to require accountability from those who rely on "technical feasibility" as the basis for an exception as discussed in Paragraph 79 of the NOPR. This proposed structure should include a review by senior management of the expediency and effectiveness of the manner in which a responsible entity has addressed each of these three proposed conditions.<br><br>Paragraph 79 Require a responsible entity to report and justify to the ERO and the Regional Entity for approval each exception and its expected duration. In situations where any of the proposed conditions are not satisfied, the ERO or the Regional Entity would inform the responsible entity that its claim to an exception based on technical feasibility is insufficient and therefore not approved. Failure to timely rectify the deficiency would invalidate the exception for compliance purposes.<br><br>Paragraph 82 Consider making "technically feasible," and derivative forms of that phrase as used in the CIP Reliability Standards, defined terms in NERC's glossary, pursuant to the prior clarifications, without any reference to reasonable business judgment.<br><br>Paragraph 88 Consider the development and implementation of the NIST standards to determine if they contain provisions that will better protect the Bulk-Power System. Seek and consider comments from those federal entities (TVA and WAPA) on the effectiveness of the NIST standards and on any implementation issues.<br><br>Paragraphs 330 Modify the Violation Risk Factors as directed in the NOPR list of proposed Actions.<br><br>Paragraphs 77 Eliminate the "acceptance of risk" option from the CIP 83- |

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| | 86 Reliability Standards;<br><br>Paragraphs 77/80 Develop an annual report that quantifies, on a wide-area basis, the frequency with which responsible entities invoke "technical feasibility" or other provisions that produce the same outcome as discussed in Paragraphs 77 and 80 of the NOPR. The report should include aggregated information with sufficient detail for the Commission to understand the frequency in which specific provisions are being invoked as well as mitigation and remediation plans over time and by region<br><br>Paragraphs 293 Explicitly require actual implementation when the "events or conditions of varying duration and severity" occur.<br><br>Paragraph 303 R2 - Require a full operational exercise once every three years (unless an actual incident occurs), but to permit reliance on table-top exercises annually in other years. Further, we propose, in conjunction with the above proposed modification, that the ERO consider the appropriateness of a "technical feasibility" option, in the limited fashion proposed earlier in this NOPR.<br><br>Paragraph 304 Either define in its Glossary the term "full operational exercise" or provide more direction directly in the Reliability Standard as to the parameters of the term.<br><br>Paragraph 308 Modify Requirement R3 of CIP-009-1 to shorten the timeline for updating recovery plans to 30 days, while continuing to allow up to 90 days for completing the communications of that update to responsible personnel.<br>Paragraph 312 R4 - Incorporate guidance that the backup and restoration processes and procedures required by Requirement R4 should include, at least with regard to significant changes made to the operational control system, verification that they are operational before the backups are stored or relied upon for recovery purposes.<br><br>Paragraph 319 Provide direction that backup practices include regular procedures to ensure verification that backups are successful and backup failures are addressed, thus guaranteeing that backups are available for future use. Insertion of language such as, "backup procedures are to include regular verification of successful completion and procedures to address backup failures" would satisfy this goal.<br><br>Paragraphs 297- Incorporate use of good forensic data collection practices into 298 R1 of this CIP Reliability Standard. Make clear that such practices should not impede or restrict system restoration and to consider whether it is necessary to include a "technical feasibility" provision.<br><br>Industry Work Plan Comment – Compliance Measures<br>• Consider MISO's comment that the standard should be measured at the standard level rather than the individual requirement level.<br><br>Other<br>• Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure. |

## 2009-08 Phasor Measurement Units

### Standards Involved:

New

### Research Needed:

Analysis of existing research needs to be conducted.

**Brief Description**: This is a new project that was identified in 2006 in support of a blackout recommendation. Several industry studies were recently issued and these studies need to be analyzed to determine appropriate requirements for a NERC standard.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-08 Project Schedule

### Target Completion Date:

Third quarter of 2011

### Related Links:

Project 2009-08 Roster

| Standard Review Form<br>Project 2009-8 Phasor Measurement Units |
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| **This is a new standard – no history exists.** |

## 2009-09 Resource Adequacy Assessments

### Standards Involved:

New

### Research Needed:

None

### Brief Description:

This is a continuation of a project from 2006 that was delayed for higher priority projects. The purpose of this standard is to implement some of the recommendations from the Resource and Transmission Adequacy Task Force Report and the Gas/Electricity Interdependency Task Force Report approved by the NERC BOT in 2004 related to resource adequacy.

As envisioned, the standard will require entities to create metrics to assess resource adequacy that takes into account various factors such as fuel deliverability, performing resource adequacy assessments, sharing the results of those assessments. The standard would also require that resource adequacy assessments be conducted according to those metrics.

### Standard Development Steps Completed:

The SAR has been posted for two comment periods but has not been finalized due to other conflicting higher priority projects. The SAR will be finalized and then work will be delayed on drafting the standard until 2008.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2009-09 Project Schedule

### Target Completion Date:

Third quarter of 2011

### Related Links:

Project 2009-09 Roster

| Standard Review Form<br>Project 2009-09 — Resource Adequacy |
|---|
| Comment from draft SAR on Planning Authority<br>• Provide clarity where the Planning Authority is mentioned |

## 2010-01 Support Personnel Training

### Standards Involved:

New

### Research Needed:

None

### Brief Description:

This is a new project that was identified in support of a blackout recommendation. Stakeholders indicated a preference for completing work on a standard for real-time system operators before beginning work on this standard, due to resource limitations. The standard will require the use of a systematic approach to determining training needs of generator operators and operations planning and support staff with a direct impact on the reliable operations of the bulk power system.

The standard will require that entities have evidence that this systematic approach is used and require that each responsible entity have evidence that each of applicable personnel is competent to perform each assigned task that is on its company-specific list of reliability-related tasks.

The development may include other improvements to the standards deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing high quality, enforceable and technically sufficient bulk power system reliability standards.

### Standards Development Status:

Project has not started.

### Project Schedule:

Project 2010-01 Project Schedule

### Target Completion Date:

Fourth quarter of 2011

### Related Links:

Project 2010-01 Roster

| Standard Review Form<br>Project 2010-01 — Support Personnel Training |
|---|
| **FERC NOPR**<br>• Identify the expectations of the training for each job function;<br>• Develop training programs tailored to each job function with consideration of the individual training needs of the personnel;<br>• Expand the Applicability to include reliability coordinators, generator operators, and operations planning and operations support staff with a direct impact on the reliable operation of the Bulk-Power System;<br>• Use the SAT methodology in its development of new training programs; and<br>• (5) Include performance metrics associated with the effectiveness of the training program. |

NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

# Reliability Standards Development Plan: 2008–20010

# Volume III
# Regional Reliability Standards Projects

**September 25, 2007**

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## Introduction

NERC's Rules of Procedure Section 300 allow for a regional entity to develop regional reliability standards. A regional entity developing regional reliability standards must adhere to a NERC-approved regional reliability standards development procedure when developing its regional reliability standards. Each regional entity's regional standards development procedure is in Exhibit C of its regional delegation agreement with NERC. The latest approved version of each agreement will be filed with the Commission and Canadian regulatory agencies in mid-October 2007. NERC shall rebuttably presume that a regional reliability standard developed by a regional entity organized on an interconnection-wide basis in accordance with a regional reliability standards development process approved by NERC is just, reasonable, and not unduly discriminatory or preferential, and in the public interest, and consistent with such other applicable standards of governmental authorities. Regional reliability standards that are not proposed to be applied on an interconnection-wide basis are not presumed to be valid but may be demonstrated by the proponent to be valid. NERC's process for reviewing and approving proposed regional standards is delineated in its rules of procedure.

No regional reliability standard shall be effective within a region unless approved and filed by NERC with the Commission and the applicable authorities in Canada and Mexico and approved by such regulatory authorities. Regional reliability standards, when approved by FERC and the applicable authorities in Canada and Mexico, shall be made part of the body of NERC reliability standards and shall be enforced upon all applicable bulk-power system owners, operators, and users within the applicable regional entity's region, regardless of membership in the region.

Regional reliability standards shall provide for as much uniformity as possible with reliability standards across the interconnected bulk power system of the North American continent. A regional reliability standard shall be:

- more stringent than a continent-wide reliability standard, including regional standards that address matters that continent-wide reliability standards do not; or
- necessitated by a physical difference in the bulk power system.

This Volume III of NERC's reliability standards three-year work plan identifies the standards anticipated to be developed by the individual regions over the next three years. With the exception of regional standards developed in support of continent-wide standards, the regional entities may independently initiate regional standards development and forward such standards to NERC for review and approval. NERC has identified 19 regional standards that are currently under development as listed in the index that follows this discussion. Additionally, four continent-wide standards projects identified in Volume II may require each regional entity to develop a companion regional standard. The NERC continent-wide projects that may require each regional entity to develop companion regional standards are:

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| Project 2007-01 | Underfrequency Load Shedding |
| Project 2007-05 | Balancing Authority Controls |
| Project 2007-11 | Disturbance Monitoring |
| Project 2008-04 | Protection Systems |

NERC has identified a total of 51 proposed regional standards it expects to receive over the course of the timeframe contemplated by this work plan.

**Index to Project Descriptions:**

Regional Projects Possibly Requiring Coordination ..... 4
with NERC Continent-wide Projects ..... 4
2007-01-RE Underfrequency Load Shedding — Regional Standards Development ..... 5
2007-05-RE Balancing Authority Controls — Regional Standards Development ..... 7
2007-11-RE Disturbance Monitoring — Regional Standards Development ..... 9
2008-04-RE Protection Systems — Regional Standards Development ..... 11
Florida Reliability Coordination Council (FRCC) Regional Reliability Standards Development Projects ..... 13
MOD-025-FRCC-01 Generator Reactive (MVAR) Power Capability — FRCC ..... 14
MOD-024-FRCC-01 Generator Real (MW) Power Capability — FRCC ..... 15
PRC-003-FRCC-01 Misoperation of Protection Systems — FRCC ..... 16
PRC-024-FRCC-01 Gen Performance During Frequency and Voltage Excursions — FRCC 17
Midwest Reliability Organization (MRO) Regional Reliability Standards Development Projects ..... 18
TPL-503-MRO-01 System Performance Requirement — MRO ..... 19
TPL-504-MRO-01 Subsynchronous Resonance Requirement — MRO ..... 20
TPL-502-MRO-01 Power System Stabilizer Requirement — MRO ..... 21
RES-501-MRO-01 Generation Planning Reserve Requirements — MRO ..... 22
Northeast Power Coordinating Council (NPCC) Regional Reliability Standards Development Projects ..... 23
ReliabilityFirst Corporation (RFC) Regional Reliability Standards Development Projects ..... 24
MOD-024-RFC-01 Generator Real (MW) Power Capability — RFC ..... 25
MOD-025-RFC-01 Generator Reactive (MVAR) Power Capability — RFC ..... 26
BAL-502-RFC-01 Resource Planning Reserve Requirement Standard — RFC ..... 27
SERC Reliability Corporation (SERC) Regional Reliability Standards Development Projects .. 28
Southwest Power Pool, Inc. (SPP) Regional Reliability Standards Development Projects ..... 29
Texas Regional Entity (TRE) Regional Reliability Standards Development Projects ..... 30
Western Electricity Coordinating Council (WECC) Regional Reliability Standards Development Projects ..... 31
TOP-007-WECC-1 Operating Transfer Capability — WECC ..... 32
PRC-STD-001-1 Certification of Protective Relay — WECC ..... 33
PRC-004-WECC-1 Protective Relay and RAS Misoperation — WECC ..... 34
IRO-006-WECC-1 Unscheduled Flow — WECC ..... 36
PRC-005-WECC-1 Transmission Maintenance — WECC ..... 38
VAR-002-WECC-1 Automatic Voltage Regulators — WECC ..... 39
VAR-501-WECC-1 Power System Stabilizers — WECC ..... 40
BAL-004-WECC-01 Automatic Time Error Correction Standard — WECC ..... 41

# Regional Projects Possibly Requiring Coordination with NERC Continent-wide Projects

In this section, four regional reliability standards development projects are described. These four regional projects are:

| | |
|---|---|
| Project 2007-01-RE | Underfrequency Load Shedding |
| Project 2007-05-RE | Balancing Authority Controls |
| Project 2007-11-RE | Disturbance Monitoring |
| Project 2008-04-RE | Protection Systems |

These projects are being coordinated with NERC's continent-wide standards projects as described in Volume II of this three-year work plan. In general, the standard drafting team of the NERC continent-wide project working with industry stakeholders shall propose which requirements should be continent-wide requirements and which requirements should be included in regional standards. Further, the timing of these regional projects is driven to large degree by the timeline of the corresponding continent-wide project.

Additional information is found in the individual projects that follow.

## 2007-01-RE Underfrequency Load Shedding — Regional Standards Development

### Standards Involved:

Eight regional reliability standards (one for each of the eight regions) identifying regional requirements in support of the following continent-wide standards:

- PRC-006 — Development and Documentation of Regional Reliability Organizations' Underfrequency Load Shedding Programs
- PRC-007 — Assuring Consistency with Regional UFLS Programs
- PRC-009 — UFLS Performance Following an Underfrequency Event

### Research Needed:

None

### Brief Description:

This is a continuation of the corresponding project in Volume II of this work plan. Depending on the findings and determinations of the NERC standard draft team for Project 2007-01 Underfrequency Load Shedding (NERC UFLS SDT), it is anticipated that each region may be required to develop a regional standard that supports the continent-wide standard(s) developed for underfrequency load shedding.

PRC-006 is one of the few reliability standards identified by the Regional Reliability Standards Working Group as a standard that has some requirements that may need to be defined by each regional entity in a regional standard.

The NERC UFLS SDT will work with stakeholders to review PRC-006 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the UFLS program documentation. The NERC UFLS SDT working with industry stakeholders shall propose which requirements should be continent-wide requirements and which requirements should be included in regional standards.

PRC-007 and PRC-009 have some 'fill-in-the-blank' characteristics, as identified in the Regional Reliability Standards Working Group work plan, which need to be removed. These standards shall be included with PRC-006 for consideration as one or more revised standards as necessary for consistency and clarity of overall program requirements and any other associated programs and/or requirements that affect or impact the UFLS program.

### Standard Development Status:

See NERC Project 2007-01 UFLS

### Milestone Timeline:

See NERC UFLS SDT schedule

**Related Links:**

NERC Regional Reliability Standards Under Development
Florida Reliability Coordinating Council (FRCC)
Midwest Reliability Organization (MRO)
Northeast Power Coordinating Council (NPCC)
ReliabilityFirst Corporation (RFC)
SERC Reliability Corporation (SERC)
Southwest Power Pool, Inc. (SPP)
Texas Regional Entity (TRE)
Western Electricity Coordinating Council (WECC)

## 2007-05-RE Balancing Authority Controls — Regional Standards Development

### Standards Involved:

Eight regional reliability standards (one for each of the eight regions) identifying regional requirements in support of the following continent-wide standard:

- BAL-002 — Disturbance Control Performance

### Research Needed:

None

### Brief Description:

This is a continuation of the corresponding project in Volume II of this work plan. Depending on the findings and determinations of the NERC standard draft team for Project 2007-05 Balancing Authority Controls (NERC BAC SDT), it is anticipated that each region may be required to develop a regional standard that supports the continent-wide standard(s) developed for disturbance control performance.

BAL-002 is one of the few reliability standards identified by the Regional Reliability Standards Working Group (RRSWG) as a standard that has some requirements that may need to be defined by each regional entity in a regional standard. In particular, its October 2006 report, the RRSWG suggested the following related to BAL-002:

- In the long-term, regional reliability standards should be developed in support of North American standard BAL-002.
- Each regional entity should create a regional standard specifying its Contingency Reserve policy.
- The continent-wide BAL-002 should be modified to:
  - address FERC's May 11 comments and
  - revise R2 to remove reference to "sub-Regional Reliability Organization or Reserve Sharing Group".

The NERC BAC SDT will work with stakeholders to review BAL-002 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the BAC program documentation. The NERC BAC SDT shall determine which requirements should be continent-wide requirements and which requirements should be included in regional standards.

### Standards Development Status:

See NERC Project 2007-05 Balancing Authority Controls

### Milestone Timeline:

See NERC BAC SDT schedule

**Related Links:**

NERC Regional Reliability Standards Under Development
Florida Reliability Coordinating Council (FRCC)
Midwest Reliability Organization (MRO)
Northeast Power Coordinating Council (NPCC)
ReliabilityFirst Corporation (RFC)
SERC Reliability Corporation (SERC)
Southwest Power Pool, Inc. (SPP)
Texas Regional Entity (TRE)
Western Electricity Coordinating Council (WECC)

## 2007-11-RE Disturbance Monitoring — Regional Standards Development

### Standards Involved:

Eight regional reliability standards (one for each of the eight regions) identifying regional requirements in support of the following continent-wide standard:

- PRC-002 — Define and Document Disturbance Monitoring Equipment Requirements

### Research Needed:

None

### Brief Description:

This is a continuation of the corresponding project in Volume II of this work plan. Depending on the findings and determinations of the NERC standard draft team for Project 2007-11 Disturbance Monitoring (NERC DM SDT), it is anticipated that each region may be required to develop a regional standard that supports the continent-wide standard(s) developed for disturbance monitoring.

PRC-002 is one of the few reliability standards identified by the Regional Reliability Standards Working Group (RRSWG) as a standard that has some requirements that may need to be defined by each regional entity in a regional standard. In particular, in its October 2006 report the RRSWG suggested the following related PRC-002:

- In the long-term, this should be a Regional Reliability Standard.
- As written, it is a requirement for each RRO to develop a comprehensive set of requirements for DME and can be enforced that way.
- PRC-002 is directly related to PRC-018. PRC-018 requires the functional entities to comply with the requirements developed by each RRO. Any references to each other embedded in the requirements of the two standards need verified.
- Need regions to develop and submit regional standards.

The NERC DM SDT will work with stakeholders to review PRC-002 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the DM program documentation. The NERC DM SDT working with industry stakeholders shall propose which requirements should be continent-wide requirements and which requirements should be included in regional standards.

### Standards Development Status:

See NERC Project 2007-11 Disturbance Monitoring.

### Milestone Timeline:

See NERC DM SDT schedule.

**Related Links:**

NERC Regional Reliability Standards Under Development
Florida Reliability Coordinating Council (FRCC)
Midwest Reliability Organization (MRO)
Northeast Power Coordinating Council (NPCC)
ReliabilityFirst Corporation (RFC)
SERC Reliability Corporation (SERC)
Southwest Power Pool, Inc. (SPP)
Texas Regional Entity (TRE)
Western Electricity Coordinating Council (WECC)

## 2008-04-RE Protection Systems — Regional Standards Development

### Standards Involved:

Eight regional reliability standards (one for each of the eight regions) identifying regional requirements in support of the following continent-wide standard:

- PRC-012 — Special Protection System Review Procedure

### Research Needed:

None

### Brief Description:

This is a continuation of the corresponding project in Volume II of this work plan. Depending on the findings and determinations of the NERC standard draft team for Project 2008-04 Protection Systems (NERC PS SDT), it is anticipated that each region may be required to develop a regional standard that supports the continent-wide standard(s) developed for special protection systems/schemes.

PRC-012 is one of the few reliability standards identified by the Regional Reliability Standards Working Group (RRSWG) as a standard that has some requirements that may need to be defined by each regional entity in a regional standard.

The NERC PS SDT will work with stakeholders to review PRC-012 and each of the current regional programs developed in accordance with that standard, including any other associated programs and/or requirements related to and contained with the special protection system program documentation. The NERC PS SDT working with industry stakeholders shall propose which requirements should be continent-wide requirements and which requirements should be included in regional standards.

### Standards Development Status:

This project has not yet started.

### Milestone Timeline:

The timeline for this project has not yet been established.

### Related Links:

NERC Regional Reliability Standards Under Development
Florida Reliability Coordinating Council (FRCC)
Midwest Reliability Organization (MRO)
Northeast Power Coordinating Council (NPCC)
ReliabilityFirst Corporation (RFC)
SERC Reliability Corporation (SERC)
Southwest Power Pool, Inc. (SPP)
Texas Regional Entity (TRE)
Western Electricity Coordinating Council (WECC)

# Florida Reliability Coordination Council (FRCC) Regional Reliability Standards Development Projects

## MOD-025-FRCC-01 Generator Reactive (MVAR) Power Capability — FRCC

### Standards Involved:

MOD-025 — FRCC-01 Verification of Generator Reactive (MVAR) Power Capability — FRCC

### Research Needed:

None

### Brief Description:

FRCC plans to develop a regional standard to ensure accurate information on generator gross and net Reactive (MVARS) Power capability is available for steady-state models used to assess Bulk Electric System reliability.

In accordance with NERC Reliability Standard, MOD-025-1, "Verification of Generator Gross and Net Reactive Power Capability", the FRCC plans to develop, establish and maintain procedures to address verification of generator gross and net Reactive Power capability. These procedures are to be provided to the Generator Owners, Generator Operators, Transmission Operators, Planning Authorities and Transmission Planners within the Region that are affected by the procedures.

### Standards Development Status:

See FRCC Verification of Generator Gross and Net Reactive (MVAR) Power Capability

### Related Links:

See Florida Reliability Coordinating Council (FRCC) Standards Under Development page.

## MOD-024-FRCC-01 Generator Real (MW) Power Capability — FRCC

### Standards Involved:

MOD-024 — FRCC-01 Verification of Generator Real (MWs) Power Capability — FRCC

### Research Needed:

None

### Brief Description:

FRCC plans to develop a regional standard to ensure accurate information on generator gross and net Real (MWs) Power capability is available for steady-state models used to assess Bulk Electric System reliability.

In accordance with NERC Reliability Standard, MOD-024-1, "Verification of Generator Gross and Net Real Power Capability", the FRCC plans to develop, establish and maintain procedures to address verification of generator gross and net Real Power capability. These procedures are to be provided to the Generator Owners, Generator Operators, Transmission Operators, Planning Authorities and Transmission Planners within the Region that are affected by the procedures.

### Standards Development Status:

See FRCC Verification of Generator Gross and Net Real (MW) Power Capability.

### Related Links:

See Florida Reliability Coordinating Council (FRCC) Standards Under Development page.

## PRC-003-FRCC-01 Misoperation of Protection Systems — FRCC

### Standards Involved:

PRC-003 — FRCC-01 Analysis of Misoperations of Transmission and Generation Protection Systems — FRCC

### Research Needed:

None

### Brief Description:

FRCC plans to convert the existing handbook document, "FRCC Requirements for Analysis of Protection Mis-operations & Corrective Actions Reporting", revision dated October 2003 into a new regional reliability standard, that complies with the requirements of NERC Reliability Standard, PRC-003-1 — "Regional Procedure for Analysis of Mis-operations of Transmission and Generation Protection Systems".

### Standards Development Status:

See FRCC Regional Procedure for Analysis of Mis-operations of Transmission and Generation Protection Systems.

### Related Links:

See Florida Reliability Coordinating Council (FRCC) Standards Under Development page.

## PRC-024-FRCC-01 Gen Performance During Frequency and Voltage Excursions — FRCC

### Standards Involved:

PRC-024 — FRCC-01 Generator Performance during Frequency and Voltage Excursions — FRCC

### Research Needed:

None

### Brief Description:

FRCC is developing a standard to establish "ride through" requirements for generators in the FRCC Region with respect to temporary grid voltage or frequency deviations from their normal range.

### Standards Development Status:

See FRCC Regional Generator Performance During Frequency and Voltage Excursions.

### Related Links:

See Florida Reliability Coordinating Council (FRCC) Standards Under Development page.

# Midwest Reliability Organization (MRO) Regional Reliability Standards Development Projects

## TPL-503-MRO-01 System Performance Requirement — MRO

### Standards Involved:

TPL-503-MRO-01 System Performance Requirement — MRO

### Research Needed:

None

### Brief Description:

The MRO is developing a regional standard to ensure adequate interconnected transmission system performance in the MRO.

### Standards Development Status:

See MRO System Performance Requirement.

### Related Links:

See Midwest Reliability Organization (MRO) Standards Under Development page.

## TPL-504-MRO-01 Sub synchronous Resonance Requirement — MRO

### Standards Involved:

TPL-504-MRO-01 Subsynchronous Resonance Requirement — MRO

### Research Needed:

None

### Brief Description:

The MRO is developing a regional standard to ensure subsynchronous resonance with series compensated lines, torsional interaction with power system controls and generator shaft damage or excessive torsional fatigue due to network switching does not occur in the Midwest Reliability Organization ("MRO").

### Standards Development Status:

See MRO Subsynchronous Resonance Requirement.

### Related Links:

See Midwest Reliability Organization (MRO) Standards Under Development page.

## TPL-502-MRO-01 Power System Stabilizer Requirement — MRO

### Standards Involved:

TPL-502-MRO-01 Power System Stabilizer Requirement — MRO

### Research Needed:

None

### Brief Description:

The MRO is developing a regional standard to ensure that power system stabilizers are designed, installed and tuned as required to dampen power system oscillations in the Midwest Reliability Organization ("MRO"). To ensure small signal stability assessments are performed. To ensure testing programs are developed and poorly damped oscillations are analyzed and corrected.

### Standards Development Status:

See MRO Power System Stabilizer Requirement.

### Related Links:

See Midwest Reliability Organization (MRO) Standards Under Development page.

## RES-501-MRO-01 Generation Planning Reserve Requirements — MRO

### Standards Involved:

RES-501-MRO-01 Generation Planning Reserve Requirements — MRO

### Research Needed:

None

### Brief Description:

The MRO is developing a regional standard to establish common criteria by which to assess Resource Adequacy in the MRO for the short term and long term planning horizon.

### Standards Development Status:

See MRO Generation Planning Reserve Requirements.

### Related Links:

See Midwest Reliability Organization (MRO) Standards Under Development page.

## Northeast Power Coordinating Council (NPCC) Regional Reliability Standards Development Projects

NPCC has no additional regional standards planned at this time beyond the four regional standards projects required to support their associated continent-wide NERC reliability standards identified in first part of this volume. NPCC will develop these four regional standards in conjunction with, and as set forth by the schedules associated with, the continent-wide standards.

# ReliabilityFirst Corporation (RFC) Regional Reliability Standards Development Projects

## MOD-024-RFC-01 Generator Real (MW) Power Capability — RFC

### Standards Involved:

MOD-024-RFC-01 Verification of Generator Real (MWs) Power Capability — RFC

### Research Needed:

None

### Brief Description:

RFC plans to develop a regional standard to ensure accurate information on generator gross and net Real (MWs) Power capability is available for steady-state models used to assess Bulk Electric System reliability.

### Standards Development Status:

See RFC Verification and Data Reporting of Generator Gross and Net Real Power Capability project.

### Related Links:

See ReliabilityFirst Corporation (RFC) Standards Under Development page.

## MOD-025-RFC-01 Generator Reactive (MVAR) Power Capability — RFC

### Standards Involved:

MOD-025-RFC-01 Verification of Generator Reactive (MVAr) Power Capability — RFC

### Research Needed:

None

### Brief Description:

RFC plans to develop a regional standard to ensure accurate information on generator gross and net Reactive (MVAR) Power capability is available for steady-state models used to assess Bulk Electric System reliability.

### Standards Development Status:

This project is not started yet.

### Related Links:

See ReliabilityFirst Corporation (RFC) Standards Under Development page.

## BAL-502-RFC-01 Resource Planning Reserve Requirement Standard — RFC

### Standards Involved:

BAL-502-RFC-01 Resource Planning Reserve Requirement Standard — RFC

### Research Needed:

None

### Brief Description:

RFC is developing a regional standard to establish requirements for a minimum level of resource adequacy to reliably serve all load in the ReliabilityFirst (RFC) corporate region.

### Standards Development Status:

See RFC Resource Planning Reserve Requirement Standard.

### Related Links:

See ReliabilityFirst Corporation (RFC) Standards Under Development page.

## SERC Reliability Corporation (SERC) Regional Reliability Standards Development Projects

SERC has no additional regional standards planned at this time beyond the four regional standards projects required to support their associated continent-wide NERC reliability standards identified in first part of this volume. SERC will develop these four regional standards in conjunction with, and as set forth by the schedules associated with, the continent-wide standards.

## Southwest Power Pool, Inc. (SPP) Regional Reliability Standards Development Projects

SPP has no additional regional standards planned at this time beyond the four regional standards projects required to support their associated continent-wide NERC reliability standards identified in first part of this volume. SPP will develop these four regional standards in conjunction with, and as set forth by the schedules associated with, the continent-wide standards.

## Texas Regional Entity (TRE) Regional Reliability Standards Development Projects

Texas RE has no additional regional standards planned at this time beyond the four regional standards projects required to support their associated continent-wide NERC reliability standards identified in first part of this volume. Texas RE will develop these four regional standards in conjunction with, and as set forth by the schedules associated with, the continent-wide standards.

## Western Electricity Coordinating Council (WECC) Regional Reliability Standards Development Projects

(Note: WECC is currently undergoing an extensive study of what regional standards need to be developed. The study should be completed by the end of 2007 at which time WECC may add to the list of WECC regional reliability standards to be developed.)

## TOP-007-WECC-1 Operating Transfer Capability — WECC

### Standards Involved:

TOP-007-WECC-1 Operating Transfer Capability — WECC

### Research Needed:

None

### Brief Description:

WECC plans to develop a regional standard called TOP-007-WECC-1 to create a permanent replacement standard for TOP-STD-007-0. TOP-007-WECC-1 is designed to implement the directives of FERC and recommendations of NERC when TOP-STD-007-0 was approved as a NERC reliability standard.

The NERC standard (TOP-STD-007-0) has requirements for reducing actual flows to within System Operating Limits (SOL) on Major WECC Transfer Paths in the Bulk Electric System. The major paths listed in the Table titled "Major WECC Transfer Paths in the Bulk Electric System" are significant components for reliable delivery of power in the Western Interconnection. System Operating Limits for these paths are critical because they transfer energy from remotely located generation to population/load centers. The entities of the Western Interconnection through studies and operation see the need for optimizing the capacity of these paths. The lack of redundant transmission in these corridors raises the level of scrutiny for these paths; therefore, this standard is designed to add emphasis to reducing flows to within SOL to maintain reliable Western Interconnection operation.

### Standards Development Status:

See WECC Operating Transfer Capability.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## PRC-STD-001-1 Certification of Protective Relay — WECC

### Standards Involved:

PRC-STD-001-1 Certification of Protective Relay — WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Certification of Protective Relay Applications and Settings Criterion included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the Certification of Protective Relay Applications and Settings requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

The initial objective of PRC-STD-001-1 is designed to implement the directives of FERC and recommendations of NERC when PRC-STD-001-1 was approved as a NERC reliability standards. Several significant changes were made to PRC-STD-001, and as a result it will be retracted because the requirements are covered by other standards per description below:

a. PRC-STD-001 requirements B-WR1-a,b,c are covered under PRC-001
b. PRC-STD-001 requirement B-WR1-d is covered in the this standard PRC-004-WECC-1
c. PRC-STD-001 requirement B-WR1-e is covered under TOP-005-1

The remaining requirements of PRC-STD-001 will be combined with the requirements from PRC-STD-003 to create a new regional reliability standard called PRC-004-WECC-1.

### Standards Development Status:

See WECC Certification of Protective Relay.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## PRC-004-WECC-1 Protective Relay and RAS Misoperation — WECC

### Standards Involved:

PRC-004-WECC-1 Protective Relay and RAS Misoperation - WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Protective Relay and Remedial Action Scheme (RAS) Misoperation Criterion included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the Protective Relay and Remedial Action Scheme Misoperation requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

The purpose of this standard is to create a permanent replacement standard for PRC-STD-003-1. The new standard called PRC-004-WECC-1 is designed to implement the directives of FERC and recommendations of NERC when PRC-STD-001-1 and PRC-STD-003-1 were approved as NERC reliability standards. The new standard addresses the following areas:

1. Requirements for investigating operations to check for Misoperations (and failures).
2. Mitigation requirements after security-based Misoperations for redundant or non-redundant Protection Systems or Remedial Action Schemes.
3. Mitigation requirements after dependability-based Misoperations that do not adversely affect the reliability of the Bulk Electric System.

The NERC standard PRC-003-1 has requirements for Regional Reliability Organizations to establish procedures for review, analysis, reporting, and mitigation of transmission and generation Protection System Misoperations but does not address the owners of the transmission and generation facilities. The NERC standard PRC-004-1 has requirements for Protection System Misoperations but does not provide for the additional requirements contained in the WECC standard. WECC identified the need for the timely mitigation of relaying problems and implemented such actions under the Reliability Management System (RMS). The proposed standard incorporates the RMS criteria and provides:

1. More robust requirements for review and analysis of all operations of those elements by operating and system protection personnel, and
2. Timely actions that must be taken to ensure that Misoperations of those elements are not repeated.

This standard is designed to minimize the SOL reductions required to maintain reliable Western Interconnection operation.

## Standards Development Status:

See WECC Protective Relay and RAS Misoperation.

## Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## IRO-006-WECC-1 Unscheduled Flow — WECC

### Standards Involved:

IRO-006-WECC-1 Unscheduled Flow — WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Qualified Path Unscheduled Flow (USF) Relief Criterion included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the Qualified Path Unscheduled Flow Relief requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

The purpose of this standard is to create a permanent replacement standard for IRO-STD-006-0 that implements key requirements from WECC's Unscheduled Flow Mitigation Plan (UFMP). The standard called IRO-006-WECC-1 is designed to implement the FERC directives and NERC recommendations when IRO-STD-006-0 was approved as a NERC reliability standard. In the UFMP the Qualified Path Unscheduled Flow Relief responsibilities do not conform to the current NERC functional model. This RMS Criterion and currently-approved standard assigns Load Serving Entities (LSEs) the responsibility of curtailing schedules to reduce unscheduled flow, a reliability function that the NERC functional model now assigns to Reliability Coordinators and Balancing Authorities. The existing RMS and IRO-STD-006 standards place the sole responsibility for providing relief upon the LSE without providing the ability for the LSE to ensure compliance (e.g. the Balancing Authority does not have to approve a curtailment request made by the LSE).

In the proposed IRO-006-WECC-1 standard, responsibility for initiating schedule curtailment is assigned to the Reliability Coordinators, and the responsibility for implementing the curtailments is assigned to Balancing Authorities. The proposed standard should improve the efficiency of the program including improved compliance, more certain Unscheduled Flow relief, and fewer complications associated with multiple entities taking partial responsibility for curtailment activity.

### Standards Development Status:

See WECC Unscheduled Flow.

## Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## PRC-005-WECC-1 Transmission Maintenance — WECC

### Standards Involved:

PRC-005-WECC-1 Transmission Maintenance — WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Transmission Maintenance Standard included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the Transmission Maintenance Standard requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

The purpose of this standard is to create a permanent replacement standard for PRC-STD-005-1. The standard is designed to implement the directives of FERC and recommendations of NERC when PRC-STD-005-1 was approved as a NERC reliability standard. The NERC standard (PRC-005-1) has requirements for equipment maintenance and inspection of relay and backup power systems and FAC-003-1 has requirements for vegetation management. The NERC standards do not have any maintenance and test requirements for the additional components such as breakers, reactive devices, transformers and the associated transmission line. The Major paths identified in the standard are significant components for reliable delivery of power in the Western Interconnection. Breaker, transformer, and insulator failures, although they are not as prevalent as protective relay failures and vegetation related problems, do cause reductions to the System Operating Limits (SOL) for those paths, and thus limit transfers between remotely located generation in the Western Interconnection and population/load centers. The entities of the Western Interconnection through study and operation see optimizing the capacity for these paths as critical to the reliability of the Western Interconnection. The lack of redundant transmission in these corridors raises the level of scrutiny for the components and facilities associated with these paths; therefore, this standard is designed to minimize the SOL reductions required to maintain reliable Western Interconnection operation.

### Standards Development Status:

See WECC Transmission Maintenance.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## VAR-002-WECC-1 Automatic Voltage Regulators — WECC

### Standards Involved:

VAR-002-WECC-1 Automatic Voltage Regulators — WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Automatic Voltage Regulators (AVR) Criterion included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the Automatic Voltage Regulator requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

In addition, the purpose of this standard is to create a permanent replacement standard for VAR-STD-002a-1. VAR-002-WECC-1 is designed to implement the directives of FERC and recommendations of NERC when VAR-STD-002a-1 was approved as a NERC reliability standard. NERC Standard VAR-002-1 requires that Transmission Operators know the status of Automatic Voltage Regulators (AVR) and that generators operators notify the Transmission Operators when AVRs are not controlling voltage. WECC's proposed VAR-002-WECC-1 standard requires that AVRs be in service 98% of all operating hours for synchronous generators and condensers, unless very specific restrictive repair and operational conditions exist. The permanent replacement standard VAR-STD-002a-1 addresses requirements for which there is no similar NERC Standard.

### Standards Development Status:

See WECC Automatic Voltage Regulators.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## VAR-501-WECC-1 Power System Stabilizers — WECC

### Standards Involved:

VAR-501-WECC-1 Power System Stabilizers — WECC

### Research Needed:

None

### Brief Description:

The WECC Regional Standards Task Force (RSTF) has identified the Power System Stabilizers (PSS) Criterion included in Reliability Management System (RMS) Reliability Criteria Agreement as a criterion that the RSTF desires to translate to the newly approved WECC Standards format for submittal to the ERO for approval for mandatory compliance. All requirements and compliance elements associated with the PSS requirements are already identified in the existing RMS Agreement, so development of these components is not necessary. This is a translation effort to put the requirements in the approved format and seek WECC approval for submittal to the ERO for mandatory enforcement.

The purpose of this standard is to create a permanent replacement standard for VAR-STD-002b-1. VAR-501-WECC-1 is designed to implement the directives of FERC and recommendations of NERC when VAR-STD-002b-1 was approved as a NERC reliability standard. NERC Standard VAR-002-1 only requires that Transmission operators know the status of Power System Stabilizers (PSS). WECC's proposed VAR-501-WECC-1 standard requires that PSS to be in service 98% of all operating hours for synchronous generators, unless very specific with restrictive repair and operational conditions exist. The permanent replacement standard VAR-STD-002b-1 addresses requirements for which there is no similar NERC Standard.

### Standards Development Status:

See WECC Power System Stabilizers.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.

## BAL-004-WECC-01 Automatic Time Error Correction Standard — WECC

### Standards Involved:

BAL-004-WECC-01 Automatic Time Error Correction Standard — WECC

### Research Needed:

None

### Brief Description:

WECC is developing a regional standard to maintain Interconnection frequency within a predefined frequency profile under all conditions (i.e. normal and abnormal), and to ensure that Time Error Corrections are effectively conducted in a manner that does not adversely affect the reliability of the Interconnection.

The Automatic Time Error Correction standard is designed to:

1. Ensure that Automatic Time Error Correction is an enforceable mandatory standard in the Western Interconnection
2. Ensure participation from all Balancing Authorities in the Western Interconnection
3. Ensure continuous and equitable payback of accumulated Inadvertent Interchange between Balancing Authorities in the Western Interconnection
4. Ensure continuous reduction in time error correction

### Standards Development Status:

See WECC Automatic Time Error Correction Standard.

### Related Links:

See Western Electricity Coordinating Council (WECC) Standards Under Development page.