

---

---

**BEFORE THE  
BRITISH COLUMBIA UTILITIES COMMISSION  
OF THE PROVINCE OF BRITISH COLUMBIA**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
INFORMATIONAL FILING OF 2010 DEVELOPMENT PLAN  
PURSUANT TO SECTION 310 OF THE NERC RULES OF PROCEDURE**

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

Rebecca J. Michael  
Assistant General Counsel  
Holly A. Hawkins  
Attorney  
North American Electric Reliability  
Corporation  
1120 G Street, N.W., Suite 990  
Washington, D.C. 20005-3801  
(202) 393-3993  
(202) 393-3955 – facsimile  
[rebecca.michael@nerc.net](mailto:rebecca.michael@nerc.net)  
[holly.hawkins@nerc.net](mailto:holly.hawkins@nerc.net)

December 17, 2009

---

---

## TABLE OF CONTENTS

I. INTRODUCTION	1
II. NOTICES AND COMMUNICATIONS	1
III. BACKGROUND	2
A. Significant 2010 Development Plan Revisions	3
B. NERC Stakeholders Input	19
IV. CONCLUSION	21

### ATTACHMENTS

#### EXHIBIT A: *Reliability Standards Development Plan: 2010–2012* (“2010 Development Plan”)

- Volume I: Summary overview of the 2010 Development Plan and identification of significant modifications to the filed 2009 Development Plan.  
  
Appendix A — Summary of Industry Comments
- Volume II: Details of the specific standards development projects.
- Volume III: Summary of the expected Regional Entity standards development activity anticipated during the three-year period contemplated by the 2010 Development Plan.

#### EXHIBIT B: Complete Development Record for the *Reliability Standards Development Plan: 2010–2012*

**BEFORE THE  
BRITISH COLUMBIA UTILITIES COMMISSION  
OF THE PROVINCE OF BRITISH COLUMBIA**

**NORTH AMERICAN ELECTRIC )  
RELIABILITY CORPORATION )**

**NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION  
2010 DEVELOPMENT PLAN  
PURSUANT TO SECTION 310 OF THE NERC RULES OF PROCEDURE**

**I. INTRODUCTION**

The North American Electric Reliability Corporation (“NERC”) hereby submits for informational purposes its revised Reliability Standards Development Plan in accordance with Section 310 of the NERC Rules of Procedure. The *Reliability Standards Development Plan: 2010–2012* (“2010 Development Plan”), is included as **Exhibit A**. The complete development record for the 2010 Development Plan is included as **Exhibit B**.

**II. NOTICES AND COMMUNICATIONS**

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

David N. Cook  
Vice President and General Counsel  
North American Electric Reliability Corporation  
116-390 Village Boulevard  
Princeton, NJ 08540-5731  
(609) 452-8060  
(609) 452-9550 – facsimile  
[david.cook@nerc.net](mailto:david.cook@nerc.net)

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

### **III. BACKGROUND**

In 2006, NERC developed an initial version of the plan for Reliability Standards development entitled the *Reliability Standards Development Plan: 2007–2009*. NERC has since updated the plan annually, and the 2010–2012 version is presented in this filing. The 2010 Development Plan serves as a management tool to guide and coordinate the development of Reliability Standards and provide benchmarks for assessing progress. The 2010 Development Plan also 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 further provides a base for developing annual plans and budgets for the standards program. Consistent with the three previous versions of the plan, the 2010 Development Plan is filed for informational purposes. No specific action is requested at this time.

The 2010 Development Plan builds upon the foundation established by the previous plans and identifies the current plans for development and modification of NERC Reliability Standards. In particular, the 2010 version of the plan identifies projects that continue the work on NERC Reliability Standards.

The 2010 Development Plan, included as **Exhibit A**, is organized into three volumes:

- Volume I provides a summary overview of the 2010 Development Plan and identifies significant modifications to the 2009 plan.
- Volume II details the specific standards development projects.
- Volume III summarizes the expected Regional Entity standards development activity anticipated during the three year period contemplated by the plan.

The complete development record for the 2010 Development Plan is included as **Exhibit B**.

The discussions that follow are intended to inform applicable governmental authorities of the significant changes to the content of the 2009 plan that led to the 2010 Development Plan as

presented, to provide insight into changes in project timelines and completion dates that are reflected in the 2010 Development Plan, and to present a summary of stakeholder comments that were used, in part, to develop the revised 2010 Development Plan.

## **A. Significant 2010 Development Plan Revisions**

### **i. General Revisions**

This section provides a summary of significant revisions to the *Reliability Standards Development Plan: 2010–2012* relative to the 2009 plan. The 2010 Development Plan includes 37 projects, two fewer than the 39 projects identified in the 2009 version of the plan.

#### *Projects Removed/Completed*

Seven projects in the previous version of the plan were completed in 2009 and were removed from the 2010 Development Plan. These completed projects are:

#### **Projects initiated in 2006:**

2006-01 System Personnel Training

2006-03 System Restoration and Blackstart

2006-07 Transfer Capabilities: ATC, TTC, CBM, and TRM

2006-09 Facility Ratings

#### **Projects initiated in 2007:**

2007-14 Permanent Changes to CI Timing Table

2007-23 Violation Severity Levels

#### **Projects initiated in 2008:**

2008-08 EOP Violation Severity Levels Revisions

#### *Project Removed/SAR Withdrawn*

One project, Project 2008-05 — Credible Multiple Element Contingencies, identified in the 2009 plan, was removed from the 2010 Development Plan because the Standard Authorization Request (“SAR”) for the project was withdrawn.

## *Project Realigned from 2011 to 2012*

The 2010 Development Plan also realigns one project, Project 2012-01 — Equipment Monitoring and Diagnostic Devices. This project was moved from 2011 to 2012 to ensure that NERC and industry resources are available to support Project 2010-06 Results-based Reliability Standards. As such, no new projects are planned for initiation in 2011.

### *New Projects*

Six projects are new to the 2010 Development Plan. These new projects are:

#### **Projects initiated in 2009:**

2009-06 Facility Ratings

2009-07 Reliability of Protection Systems

2009-18 Withdraw Three Midwest ISO Waivers<sup>1</sup>

#### **Projects anticipated commencing in 2010:**

2010-06 Results-based Reliability Standards

2010-07 Generator Requirements at the Transmission Interface

#### **Projects anticipated commencing in 2012:**

2012-02 Physical Protection

In preparing the 2010 Development Plan, NERC staff reached out to stakeholders and asked for input regarding the 2009 version of the plan. Several stakeholders voiced a concern that had been expressed in the preceding two years, that there were too many projects under development concurrently. Commenters noted that providing support for the large number of projects under development is straining the industry's ability to properly resource the development activities. Commenters recommended that the 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.

---

<sup>1</sup> At the time the *Reliability Standards Development Plan: 2010-2012* was being finalized, Project 2009-18 Withdraw Three Midwest ISO Waivers was an active project. The revisions successfully completed initial ballot without negative comment and thus no recirculation ballot was necessary, thereby shortening the expected timeline. As a result, the project was completed in 2009 instead of 2010 as contemplated by the plan.

NERC received similar comments during the development of NERC's Three-year Assessment of its performance as the Electric Reliability Organization. In response to the opportunity to comment on the assessment, several stakeholders recommended that the industry focus existing Reliability Standards and Reliability Standards Development on areas that will lead to the greatest improvement in bulk power system reliability. Suggestions included: (1) focusing development of new Reliability Standards on those that will lead to the greatest improvement in reliability; *i.e.*, addressing the greatest risks of wide-area cascading outages; (2) reducing the number of existing Reliability Standards to include only those that have a critical impact on reliability of the bulk power system, and converting the remaining Reliability Standards to guidelines; and (3) developing a more systematic process for prioritizing new Reliability Standards development projects based on risks to the bulk power system. Accordingly, the 2010 Development Plan establishes a new project ("Project 2010-06 Results-Based Reliability Standards") aimed at better focusing the development of NERC Reliability Standards on reliability performance and reliability outcomes.

NERC staff also considered the anticipated volume of industry requests for interpretations in determining projects to be included in the 2010 Development Plan. The number of projects proposed for any particular year is directly impacted by the number of formal requests for interpretations submitted by the industry. Requests for interpretations of NERC Reliability Standards are projected to increase until the review and revision of the Version 0 and some Version 1 standards is completed. The volume of interpretation requests has been steadily increasing: two in 2006; nine in 2007, and eight in 2008. For 2009, 14 requests for interpretation have been submitted, with an estimated eleven more expected before year-end, for a total of twenty-five. Based on current trends, approximately 30 interpretations are predicted in 2010. To accommodate this volume of work, the 2010 Development Plan is based on the projected effort

necessary from NERC staff and industry resources to support the development of the draft interpretations, in addition to the standards development projects outlined in the plan.

## **ii. Other Modifications**

In conjunction with this year's effort to prepare the 2010 Development Plan, NERC staff incorporated pending items and issues in what is termed the "NERC Standards Issues Database" ("Issues Database"). The Issues Database was developed informally by NERC standards staff to track issues and concerns identified with a particular standard. These issues were then used in part to populate the "Issues to be Considered by the Standard Drafting Team" tables included for each project in Volume II of the 2010 Development Plan. The projects in Volume II were revised to include all issues identified to date.

NERC has also developed specific initiatives related to compliance monitoring and enforcement, reliability assessment and performance analysis, and event analysis to identify possible "high impact" Reliability Standard development projects that may have significant impact on the reliability of the bulk power system. System events tracked for the last three years have been reviewed to identify trends, actions, or behaviors that may be causal or contributory to the severity of system disturbances. This information assists NERC to focus efforts and provide the technical foundation for standards development and modification efforts on issues that are most critical to bulk power system reliability. For example, NERC has developed a broad-based reliability initiative that addresses issues in the area of system protection and control. That initiative identified a compendium of system protection and control issues that have contributed to many system events. This effort, with significant support from the NERC System Protection and Control Subcommittee, served as the basis for Project 2010-05 System Protection, and a number of other ongoing standards development projects in the area of system protection and control. This ongoing collaborative effort between the event analysis program and standards



development planning will continue to be used as a tool to identify specific changes to Reliability Standards to ensure an adequate level of reliability of the North American bulk power system.

### **iii. Project Timeline Changes**

This section identifies the changes to timelines for projects in the 2010 Development Plan relative to those in the 2009 plan, and the factors contributing to the changes. One goal of the 2010 Development Plan is to improve the set of detailed project schedules.

In 2009, NERC made a concerted effort to develop more detailed project timelines. Based on lessons learned from the execution of prior projects, the revised project schedules include a more detailed and complete list of tasks that must be undertaken as part of a standards development project. As a result, timelines for the majority of projects now provide more realistic estimates of the time necessary to bring the projects to completion. The recognition of additional tasks necessary to successfully complete a project has resulted in longer estimated project duration.

The differences in project timelines for specific projects in the 2010 Development Plan as compared to the 2009 plan are attributable to several factors. First, to develop consensus during the development of Reliability Standards, drafting teams, working with industry stakeholders, must fully explore and consider the many issues identified in the “Issues to be Considered by the Standard Drafting Team” portion of the project description. Accordingly, the plan incorporates a reasonable estimate for completion of each project, but recognizes that actual time to complete a project may vary significantly based on the complexity of the issues under consideration and the scope of active stakeholder engagement in those issues. Flexibility is therefore required to develop a specific project timeline to account for the projected time necessary to complete stakeholder consideration of the issues.

NERC has also determined that in prior years proposed standards may have progressed to the ballot stage without adequately documenting how or whether the drafting team considered and addressed specific regulatory directives. As a result, unanticipated time and effort has been expended late in the development process to ensure the standard drafting team has sufficiently addressed all regulatory directives. To minimize similar impacts to project timelines going forward, NERC has initiated a process for addressing regulatory coordination coincident with the standards development phases of a project. This activity is now explicitly identified and accounted for in each standard development schedule.

Other factors affecting the accuracy of prior estimates for project durations include: underestimating the number of comment periods necessary for each project and broader than anticipated participation by industry stakeholders in the comment periods. These have manifested themselves in additional industry comment periods and more time spent developing replies to an unpredicted volume of comments. Additionally, time has been added to the project schedules to account for the detailed and specific NERC internal staff review of documents proposed by drafting teams for posting for industry comment described above. Some or all of these factors result in the necessary expenditure of additional development time and effort by the drafting team participants.

With these factors in mind, the following paragraphs summarize the significant timeline changes, and the factors contributing to the changes, project-by-project, for the projects in the 2010 Development Plan as compared to the timelines identified in the 2009 plan.

**2006-02 Assess Transmission Future Needs.** The first and second drafts of the revised TPL-001-1 — Transmission System Planning Performance Requirements standard were posted for industry comment in the fourth quarter of 2007 and the third quarter of 2008, respectively. Two drafts were posted for comment in 2009, from May 26 through July 9, 2009, and from September 16 through October 16, 2009. The response to those postings is currently under

consideration by the drafting team. The effort to complete the initial four drafts of the standard took longer than expected due to the significant volume of industry comments received during the postings and the additional time required for internal NERC staff review of the draft standard. The anticipated completion of the project is now slated for the second quarter of 2010.

**2006-04 Backup Facilities.** The first and second drafts of the standard were posted for industry comment in 2008, with an additional draft posted for comment from March 17 through April 15, 2009. Subsequently, the standard was posted for pre-ballot consideration from August 17 through September 16, 2009, and initially balloted from September 16 through September 28, 2009. The additional unanticipated comment periods, the time needed to address issues identified during those comment periods, and the need to add further clarity—an activity that became apparent during the balloting—have resulted in a project schedule extension of approximately six months. The projected completion date has been moved from the second quarter of 2009 to the first quarter of 2010.

**2006-06 Reliability Coordination.** The first and second drafts of these standards were posted for industry comment in the third quarter of 2008, and the third quarter of 2009, respectively. This project was initiated two months later than originally anticipated as NERC added staff coordinators, and the drafting of the revised standards required more work and coordination with other projects than originally anticipated. In addition, the drafting team has since determined that a third comment period will be necessary for this set of standards. Also, in October 2009, the NERC Standards Committee requested that the drafting team coordinate with two other drafting teams regarding the use of the three-part communication protocol and the definition of “Directive.” As a result, it was necessary to apply an approximate twelve-month extension of the projected completion date, to the fourth quarter of 2010.

**2006-08 Transmission Loading Relief.** The first phase of this project split the reliability aspects from the commercial aspects of the then existing standard. That effort took four months

longer to complete than anticipated, and as a result, initiation of subsequent phases was delayed. Additionally, the field test associated with phase two modifications was extended and two additional comment periods were necessary for the development of the phase three changes, now being addressed concurrently with phase two. The resulting adjustment in project schedule added nine months for the projected completion of phase two and eight months for the completion of phase three. Phase two was completed in the third quarter of 2009, and phase three is now scheduled for completion in the second quarter of 2010.

**2007-01 Underfrequency Load Shedding.** The standard drafting team posted the revised standard for the first industry comment period in the third quarter of 2008. The development of the foundational underfrequency performance characteristics required more meetings than originally anticipated in order to thoroughly explore and consider those characteristics and other issues. The second version of the standard was posted in the second quarter of 2009. The drafting team received many comments including one set that identified the need of a variance for Québec for this standard. The inclusion of the variance for Québec necessitated the project scope to be expanded, and as a result, the projected completion date was extended approximately six months, to the first quarter of 2010.

**2007-02 Operating Personnel Communications Protocols.** The effort to consider the seminal work of the Reliability Coordinator Working Group (“RCWG”) with respect to the Alert Level Guidelines formed the basis for much of the standard drafting team’s scope. The drafting team’s thorough review and consideration of that work, as well as the necessary internal NERC staff review of the draft standard took significantly longer than originally anticipated and scheduled. It was further necessary to coordinate with the RCWG on the field test of the Alert Level Guidelines, to ensure consensus on the extent and accuracy of transferring the guideline to the new standard drafted by the standard drafting team. This additional effort resulted in

significantly more time needed to develop the draft COM-003-1 — Operating Personnel Communications Protocols standard before it could be initially posted.

Shortly after the team posted the first draft of COM-003-1 for industry comment in October 2009, the draft standard was withdrawn by the NERC Standards Committee in order to perform further collaboration between the standard drafting team for this project and two other standard drafting teams involved with the use of the three-part communication protocol and the definition of “Directive.” These combined activities have resulted in an approximate twelve month extension to the project. The anticipated completion date for the project is now the fourth quarter of 2010.

**2007-03 Real-time Transmission Operations.** This project was initiated three months later than anticipated and the drafting team has added an additional comment period to the original schedule. The drafting team posted the revised standards for the initial industry comment period in the fourth quarter of 2008. Successive drafts were posted for comment from April 7 through May 7, 2009 and from August 25 through September 24, 2009, respectively. The effort to review and explore the existing requirements related to the NERC certification process, the philosophical shift from operating to SOLs to operating to IROLs within  $T_v$ , and the added time for internal NERC staff review of the draft standard involved more time and effort than originally anticipated. In addition, the NERC Standards Committee requested the drafting team to coordinate with two other drafting teams regarding the use of the three-part communication protocol and the definition of “Directive.” These combined activities have resulted in an approximate twelve month extension to the project. The anticipated completion date of the project is now the third quarter of 2010.

**2007-04 Certifying System Operators.** The effort to review and explore the issues associated with the directives identified in FERC Order 693 for the PER-003-0 — Operating Personnel Credentials standard and the added time for internal NERC staff review of the draft

standard took longer than originally anticipated. The first draft of the proposed standard was posted for comment from October 21 through November 20, 2009, and the drafting team is presently considering those comments. As a result, the projected completion date has been extended by approximately twelve months, to the third quarter of 2010.

**2007-05 Balancing Authority Controls.** This project was initiated seven months later than originally anticipated. It was also necessary to adjust the project timeline to coordinate with the North American Energy Standards Board effort pertaining to the commercial elements relating to the BAL standards within the scope of the project. In addition, the standard drafting team conducted an industry survey on Time Error Correction in order to collect further input and data. The time to develop and conduct the survey was not contemplated in the original timeline for the project. Finally, a reforecast of the project was undertaken based on information and experience collected during the drafting team meetings. The project is technically complex and requires a high level of coordination based on its interaction with several other standards (*i.e.* BAL-001, BAL-003, and the INT family of standards). Much of the subject matter (*e.g.*, continent wide reserve policy) is extremely contentious, resulting in extended dialogue and consideration by the team. The project is now anticipated to be completed in two phases. Phase one will address the majority of the work within the scope of the project and is expected to be completed in the second quarter of 2012. Phase two will deal with Time Error Correction and is expected to be completed in the fourth quarter of 2012.

**2007-06 System Protection.** The effort to examine and debate the issues associated with the directives identified in FERC Order 693 for the PRC-001-1 — System Protection Coordination standard and the added time for internal NERC staff review of the draft standard took much longer than originally anticipated. The first draft of the standard was posted for comment from September 11 through October 26, 2009. Additional issues were raised in the comments received during the initial posting of the draft standard that will require more time to

address than the drafting team anticipated. As a result, the projected completion date has been extended approximately six months to the third quarter of 2010.

**2007-07 Vegetation Management.** The initial posting of the draft standard FAC-003-2 for industry comment generated a significant volume of comments. The team took additional time to complete the second draft of the standard based on the need to address the high volume of industry comments received during the initial posting. The additional time required for internal NERC staff review of the draft standard also affected the project schedule. The subsequent posting of the draft standard for industry comment, which concluded in October 2009, generated nearly as many stakeholder comments as the initial posting. A third posting of the draft standard for industry comment will therefore be necessary, extending the anticipated completion of the project to the fourth quarter of 2010.

**2007-09 Generator Verification.** The effort to review and consider the issues associated with the directives identified in FERC Order No. 693 for the MOD-024-1 — Verification of Generator Gross and Net Real Power Capability standard, development of three other associated standards, and the added time for internal NERC staff review of the draft standards took longer than originally anticipated. Proposed drafts of MOD-026 and PRC-024 were posted for stakeholder comment from February 17 through April 2, 2009. Comments on the PRC-024-1 standard were generally favorable; however, the lack of a performance orientation was noted by some stakeholders and prompted the drafting team to revise its second version to meet that expectation. Feedback on the MOD-026 standard was focused on streamlining the technical requirements. The drafting team is combining and subsuming requirements in an effort to address the stakeholders' concerns. These combined activities have resulted in an approximate eight month extension with project completion now projected in the first quarter of 2011.

**2007-11 Disturbance Monitoring.** The standard drafting team posted the first version of the standard in the first quarter 2009. In the process of revising the standard and responding to

comments, the drafting team identified the need to perform a regional data analysis to assist in identifying locations for monitoring and recording data that accommodate the regional variability of the electric grid. Thus, identifying the location thresholds for recording Sequence of Events, Dynamic Disturbance Recording, and Fault Recording data requires analysis of data for several NERC regions. Time for the collection and analysis of this data was not factored into the original project schedule. The collection and analysis of data has extended the overall timeline for the project by approximately fourteen months, with completion of the project now anticipated in the third quarter of 2011.

**2007-12 Frequency Response.** The original Standard Authorization Request for the project called for development of a data collection standard before drafting a revised frequency response standard. In order to expedite the process, NERC has decided to obtain the necessary data through a formal Data Request, negating the need to draft a data collection standard. The drafting team will use the data, once collected and analyzed, to draft a Frequency Response standard. NERC is developing the plan for a Frequency Response initiative of which the standard development project is a key part.

**2007-17 Protection System Maintenance and Testing.** The revised completion date for this work is now in the third quarter 2010. This standard merges previous standards PRC-005-0, PRC-008-0, PRC-011-0, and PRC-017-0. It also addresses FERC comments from Order 693, and addresses observations from the NERC System Protection and Control Task Force, as presented in *NERC SPCTF Assessment of Standards: 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*. The initial draft of the standard was posted for industry comment from July 24 through September 8, 2009. The effort to review and consider the issues associated with the directives identified in FERC Order



693 for the PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing standard and the added time for internal NERC staff review of the draft standard took much longer than originally anticipated. Several issues emerged from the initial posting of the draft standard for industry comment that also required extensive examination and debate. These combined activities have resulted in an approximate twelve month extension to the project schedule. The anticipated completion date of the project is now in the third quarter of 2010.

**2007-18 Reliability-Based Control.** This project was initiated three months later than originally anticipated. The drafting team posted a “Proposed Metrics” document for the first industry comment period in the third quarter of 2008. The comment period was intended to inform and gain industry comments on proposed metrics for the purpose statements of the Standard Authorization Request. The drafting team also performed some additional statistical analysis (relating to frequency excursions) not anticipated during the development of the original timeline. As a result, the project schedule was extended by approximately thirteen months with a present anticipated completion date in the fourth quarter of 2011.

**2008-01 Voltage and Reactive Control.** The Standard Authorization Request development phase of this project was deferred until July, 2009 while the NERC Transmission Issues Subcommittee finalized the Reactive Support and Control Whitepaper in May, 2009. The white paper identifies the technical requirements needed to determine the reactive resources required under each system state. Based on the complexities discussed in the whitepaper, a third posting for industry comment was added to the timeline for the project to permit sufficient industry vetting. In addition, other adjustments to account for longer vetting and debating by the industry for the first and second drafts of the standards were incorporated into the project schedule. These combined activities have resulted in an approximate nine month extension to the project. The anticipated completion date of the project is now scheduled for the third quarter of 2012.

**2008-02 Undervoltage Load Shedding.** No changes have been made to the timeline for this project relative to the schedule projected in the preceding development plan.

**2008-06 Cyber Security Order No. 706.** This project was initiated in 2008 to address the directives in FERC Order No. 706,<sup>2</sup> and was reflected in the 2009 plan. In Order No. 706, FERC approved the CIP Version 1 Reliability Standards and associated implementation plan, but also directed NERC to develop modifications to the CIP Reliability Standards to address specific concerns identified by FERC. The scope and volume of the directives in Order No. 706 resulted in the adoption of a multi-phased approach to address those directives. NERC filed Version 2 of the CIP Reliability Standards with FERC in May 2009, representing phase one of the overall work for revising the CIP Reliability Standards. Subsequent phases of Project 2008-06 will address the remaining modifications to the CIP Reliability Standards enumerated in FERC's Order No. 706. FERC approved Version 2 of the CIP Reliability Standards on September 29, 2009,<sup>3</sup> and directed NERC to submit a compliance filing within 90 days to: (1) revise CIP-006-2 to add a requirement on visitor control programs, including the use of visitor logs to document entry and exit; (2) revise CIP-008-2 R1.6 to strike the sentence stating that "Testing the Cyber Security Incident response plan does not require removing a component or system from service during the test;" and (3) revise the Version 2 Implementation Plan to address the comments made by FERC in Attachment A to the September 29, 2009 FERC Order.

NERC anticipates submitting the compliance filing, which will include Version 3 of the CIP Reliability Standards, the Version 3 Implementation Plan, and the revised Implementation Plan for Newly Identified Critical Cyber Assets and Newly Registered Entities, in accordance with FERC's directives in the September 29, 2009 Order by the end of December 2009.

---

<sup>2</sup> *Mandatory Reliability Standards for Critical Infrastructure Protection*, 122 FERC ¶61,040 (January 18, 2008).

<sup>3</sup> *Order Approving Revised Reliability Standards for Critical Infrastructure Protection and Requiring Compliance Filing*, 128 FERC ¶61,291 (September 30, 2009).

The compliance filing for Version 3 of the CIP Reliability Standards will complete phase one of the work planned to revise these standards based on FERC's directives in Order No. 706. The majority of the remaining substantive issues identified in Order No. 706 will be addressed in phase two of Project 2008-06, which is anticipated to require multiple cycles of postings and industry responses to reach a suitable understanding and industry agreement on the new requirements. The timeline for completion of all project phases is still undergoing review and modification before it can be finalized and submitted as required by December 2009.

**2008-12 Coordinate Interchange Standards.** This project was initiated in 2008 and was included in the 2009 plan to ensure that each requirement is assigned to an owner, operator, or user of the bulk power system. Additional improvements to the standard are also included in the scope of the project, and the team has chosen to address the project in two phases. Phase one addresses the assignment of requirements to appropriate registered entities, and is intended to improve the overall quality of the standard. This first phase is expected to be completed in the first quarter of 2011. Phase two will specifically address dynamic transfers and, if necessary, interchange tool fault tolerance. The second phase is expected to be completed in the second quarter of 2013. Prior to being publicly noticed, the timelines for the projects planned for future years (*e.g.*, projects commencing in 2011 and later) will be developed in coordination with the assigned standard drafting teams.

#### **iv. Projects Updates - 2009**

This section summarizes the current status of the 2009 projects identified in the 2010 Development Plan.

**2009-01 Disturbance and Sabotage Reporting.** The Standard Authorization Request for this project was posted for industry comment from April 22 to May 21, 2009 and was approved by the Standards Committee on September 3, 2009. The standard drafting team for the project was appointed by the Standards Committee on November 12, 2009.

**2009-02 Real-time Tools.** The Standard Authorization Request for this project was posted for industry comment from July 10 to July 11, 2009. The standard drafting team for the project was appointed by the Standards Committee on July 15, 2009. The standard drafting team anticipates posting the Standards Authorization Request for a second round of industry comments during the first quarter of 2010.

**2009-03 Emergency Operations.** The Standard Authorization Request is being drafted to initiate this project.

**2009-04 Phasor Measurements Units.** The Standard Authorization Request is being drafted to initiate this project.

**2009-05 Resource Adequacy Assessments.** NERC is considering potential alternatives to developing a reliability standard for Resource Adequacy Assessments before forwarding a Standard Authorization Request to the Standards Committee for its consideration.

**2009-06 Facility Ratings.** The initial version of the Standard Authorization Request for this project was posted for industry comment from January 20 to March 5, 2009. A revised version of the request for this project was posted for industry comment August 10 to September 9, 2009. Proposed revisions to the draft FAC-008-2 — Facility Ratings standard were posted simultaneously with the Standard Authorization Requests.

**2009-07 Reliability of Protection Systems.** The Standard Authorization Request for this project was posted for industry comment January 29 to February 18, 2009. The SAR drafting team for the project was appointed by the Standards Committee on March 5, 2009.

**2009-18 Withdraw Three Midwest ISO Waivers.** The project was initiated in April, 2009 with the standards successfully completing ballot in September, 2009. The proposed revised standards were then approved by the NERC Board and filed with FERC for approval on November 20, 2009.

## **B. NERC Stakeholders Input**

To support the preparation of the 2010 Development Plan, NERC sought stakeholder comment during two public comment periods, which took place from May 20 through July 6, 2009 and August 28 through September 28, 2009. In addition, NERC solicited input from the NERC technical committees as well as from additional subject matter experts on NERC staff. NERC received 30 sets of comments during the open stakeholder comment periods from American Electric Power, Bonneville Power Administration, CenterPoint Energy, Construction Specialty Services, Inc. & Critical Systems, LLC, Consumers Energy Company, Dominion Resource Inc., Duke Energy, Electric Power Supply Association, FirstEnergy, Florida Municipal Power Agency, Georgia System Operations Corp., Independent Electricity System Operator, IRC Standards Review Committee, Manitoba Hydro, Midwest ISO, Midwest Reliability Organization, National Rural Electric Cooperative Association, NERC Regional Reliability Standards Working Group, NERC System Protection and Control Subcommittee, North American Energy Standards Board, Northeast Power Coordinating Council, SERC EC Planning Standards Subcommittee, Southern California Edison, Southern Company, and US Bureau of Reclamation. The comments and NERC's response to these comments are provided in Appendix A to Volume I of the 2010 Development Plan, which is included as part of **Exhibit A**. The comments are also included in the complete development record for the 2010 Development Plan, included as **Exhibit B**. The major themes of the comments received are summarized below.

Many comments suggested that NERC sponsor an industry triage of the entire set of Reliability Standards to identify the core reliability requirements. In response, NERC added Project 2010-06 — Results-based Reliability Standards to the 2010 Development Plan. This project will focus on:

- triaging existing approved Reliability Standards to identify those requirements that directly impact reliability and those that are of secondary importance;

- developing performance-based requirements to fill any missing reliability objectives;
- promoting and refining performance-based requirements in the existing Reliability Standards to improve clarity and identified measures;
- revising existing requirements to be more performance-based, if practical and beneficial to reliability.

Many additional comments were received in support of the addition of Project 2010-06 — Results-based Reliability Standards to the 2010 Development Plan.

Other comments reflected concern with the large volume of work contemplated by the 2010 Development Plan and the stress it will place on limited staff and industry resources. NERC understands the commitment of resources required (both industry and NERC specific resources) for the development of quality standards, and is cognizant of the fact that industry resources are not limitless. NERC staff coordinates all standards development activities through the NERC Standards Committee, whose members are industry representatives, and whose consideration includes the potential impact on industry resources when planning standards-related projects and activities.

A few commenters advised that NERC must place more priority on completion of regional “fill-in the blank”<sup>4</sup> standards relative to the development of continent-wide standards. NERC standards staff is in regular contact with the staff responsible for developing Regional Reliability Standards at each of the Regional Entities. In many instances, the Regional Entity has commenced work on a 'fill-in-the blank' standard in order to be able to better coordinate the

---

<sup>4</sup> In Order No. 693 at PP 287 to 304, FERC discusses fill-in the blank standards. FERC explains that certain Reliability Standards, referred to as fill-in the blank standards, require the Regional Entities to develop certain criteria for use by users, owners, or operators within each region. In P 297, FERC stated that it will not approve these fill-in the blank standards until supplemental information for any Reliability Standard that currently requires a Regional Entity to fill in missing criteria or procedures has been filed at FERC. FERC noted that until such information is submitted for FERC-approval, compliance with fill-in the blank standards should continue on a voluntary basis, and FERC considers compliance with such Reliability Standards to be a matter of good utility practice.

development of the regional standard with the development of the continent-wide standard. Each Regional Entity has a FERC-approved regional standard development procedure. Embedded in the regional standard development process is a requirement that the region seeking approval of a regional reliability standard justify the need for the standard. It is incumbent on those who participate in the regional standards development process to assess the benefit of expending resources on parallel development of a regional standard while the continent-wide standard development process is underway. Each of the regional standards development procedures mandates a fair and open process for the development of standards. Any interested party in the region may utilize that process to participate in determining which standards development projects are pursued and which are not.

#### IV. CONCLUSION

NERC respectfully requests acceptance of this informational filing in compliance with Section 310 of the ERO Rules of Procedure.

David N. Cook  
Vice President and General Counsel  
North American Electric Reliability Corporation  
116-390 Village Boulevard  
Princeton, NJ 08540-5731  
(609) 452-8060  
(609) 452-9550 – facsimile  
[david.cook@nerc.net](mailto:david.cook@nerc.net)

Respectfully submitted,

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

## EXHIBIT A

### *Reliability Standards Development Plan: 2010–2012* (“2010 Development Plan”)

- Volume I: Summary overview of the 2009 Development Plan and identifies significant modifications to the filed 2008 Development Plan.
- Volume II: Details the specific standards development projects.
- Volume III: Summarizes the expected Regional Entity standards development activity anticipated during the three-year period contemplated by the plan.



The logo for NERC (North American Electric Reliability Corporation) features the letters "NERC" in a bold, black, sans-serif font. A horizontal blue bar is positioned below the letters.

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Reliability Standards Development Plan: 2010–2012

Volume I — Overview

to ensure  
the reliability of the  
bulk power system

October 7, 2009

116-390 Village Blvd., Princeton, NJ 08540  
609.452.8060 | 609.452.9550 fax  
[www.nerc.com](http://www.nerc.com)

## Acknowledgement

The NERC Reliability Standards Program would like to thank all the individuals who invest their time and expertise in the development of NERC Reliability Standards and in the annual revision of this *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 provide an Adequate Level of Reliability for the North American bulk power system.

## Table of Contents

### Volume I: Overview

Acknowledgement .....	2
Introduction .....	6
Purpose .....	6
Summary .....	7
Projects within this Plan: .....	7
Focus on Impact to Reliability .....	2
Fill-in-the-blank Standards .....	9
Priority of Projects .....	9
Other modifications .....	10
Organization of the Plan .....	11
Background .....	12
Authority .....	12
Standards Filings and Approvals .....	<b>Error! Bookmark not defined.</b>
Standards Development Process .....	12
Background on Standards Development .....	<b>Error! Bookmark not defined.</b>
Strategy for Project Resources .....	13
Global Improvements .....	14
Statutory Criteria .....	14
Quality Objectives .....	14
Issues Related to the Applicability of a Standard .....	19
Issues Related to Regional Entities and Reliability Organizations .....	21
Issues Related to Ambiguity .....	22
Issues Related to Technical Adequacy .....	22
Issues Related to Compliance Elements .....	22
Coordination with NAESB .....	25
Additional Considerations .....	27
Resource Documents Used .....	27
Appendix A — Summary of Industry Comments .....	29

### Volume II: Project Descriptions (provided separately)

Introduction .....	<b>Error! Bookmark not defined.</b>
Reliability Standards Development Plan Overall Project Schedules .....	<b>Error! Bookmark not defined.</b>
Reference Identifying the Standard in each Project Sorted by Standard Number .....	<b>Error! Bookmark not defined.</b>
Reference Identifying the Standard in each Project Sorted by Project Number .....	<b>Error! Bookmark not defined.</b>
Project Descriptions .....	<b>Error! Bookmark not defined.</b>
Project 2006-02      Assess Transmission and Future Needs .....	<b>Error! Bookmark not defined.</b>
Project 2006-04      Backup Facilities .....	<b>Error! Bookmark not defined.</b>
Project 2006-06      Reliability Coordination .....	<b>Error! Bookmark not defined.</b>
Project 2006-08      Transmission Loading Relief .....	<b>Error! Bookmark not defined.</b>
Project 2007-01      Underfrequency Load Shedding .....	<b>Error! Bookmark not defined.</b>
Project 2007-02      Operating Personnel Communications Protocols .....	<b>Error! Bookmark not defined.</b>
Project 2007-03      Real-time Operations .....	<b>Error! Bookmark not defined.</b>
Project 2007-04      Certifying System Operators .....	<b>Error! Bookmark not defined.</b>
Project 2007-05      Balancing Authority Controls .....	<b>Error! Bookmark not defined.</b>

Project 2007-06	System Protection Coordination.....	<b>Error! Bookmark not defined.</b>
Project 2007-07	Vegetation Management .....	<b>Error! Bookmark not defined.</b>
Project 2007-09	Generator Verification.....	<b>Error! Bookmark not defined.</b>
Project 2007-11	Disturbance Monitoring .....	<b>Error! Bookmark not defined.</b>
Project 2007-12	Frequency Response.....	<b>Error! Bookmark not defined.</b>
Project 2007-17	Protection System Maintenance & Testing ...	<b>Error! Bookmark not defined.</b>
Project 2007-18	Reliability-based Control .....	<b>Error! Bookmark not defined.</b>
Project 2008-01	Voltage and Reactive Control .....	<b>Error! Bookmark not defined.</b>
Project 2008-02	Undervoltage Load Shedding.....	<b>Error! Bookmark not defined.</b>
Project 2008-06	Cyber Security — Order 706.....	<b>Error! Bookmark not defined.</b>
Project 2008-12	Coordinate Interchange Standards.....	<b>Error! Bookmark not defined.</b>
Project 2009-01	Disturbance and Sabotage Reporting .....	<b>Error! Bookmark not defined.</b>
Project 2009-02	Real-time Tools .....	<b>Error! Bookmark not defined.</b>
Project 2009-03	Emergency Operations .....	<b>Error! Bookmark not defined.</b>
Project 2009-04	Phasor Measurement Units.....	<b>Error! Bookmark not defined.</b>
Project 2009-05	Resource Adequacy Assessments .....	<b>Error! Bookmark not defined.</b>
Project 2009-06	Facility Ratings .....	<b>Error! Bookmark not defined.</b>
Project 2009-07	Reliability of Protection Systems .....	<b>Error! Bookmark not defined.</b>
Project 2009-18	Withdraw Three Midwest ISO Waivers .....	<b>Error! Bookmark not defined.</b>
Project 2010-01	Support Personnel Training.....	<b>Error! Bookmark not defined.</b>
Project 2010-02	Connecting New Facilities to the Grid.....	<b>Error! Bookmark not defined.</b>
Project 2010-03	Modeling Data.....	<b>Error! Bookmark not defined.</b>
Project 2010-04	Demand Data.....	<b>Error! Bookmark not defined.</b>
Project 2010-05	Protection Systems .....	<b>Error! Bookmark not defined.</b>
Project 2010-06	Results-based Reliability Standards .....	<b>Error! Bookmark not defined.</b>
Project 2010-07	Transmission Requirements at the Generator Interface	<b>Error! Bookmark not defined.</b>
<b>defined.</b>		
Project 2012-01	Equipment Monitoring and Diagnostic Devices .....	<b>Error! Bookmark not defined.</b>
<b>defined.</b>		
Project 2012-02	Physical Protection.....	<b>Error! Bookmark not defined.</b>

**Volume III: Regional Reliability Standards Projects (provided separately)**

<b>Regional Projects Possibly Requiring Coordination with NERC Continent-wide Projects .....</b>	<b>4</b>
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
<b>Florida Reliability Coordinating Council (FRCC) Regional Reliability Standards Development Projects .....</b>	<b>12</b>
PRC-002-FRCC-01 — Definition of FRCC Regional Disturbance Monitoring and Reporting Requirements — FRCC .....	13
PRC-003-FRCC-01 — Misoperation of Protection Systems — FRCC.....	14
PRC-006-FRCC-01 — FRCC Automatic Underfrequency Load Shedding Program .....	15
PRC-024-FRCC-01 — Generator Performance During Frequency and Voltage Excursions — FRCC .....	16
<b>Midwest Reliability Organization (MRO) Regional Reliability Standards Development Projects...</b>	<b>17</b>
TPL-503-MRO-01 — System Performance Requirement — MRO.....	18
TPL-504-MRO-01 — Sub synchronous Resonance Requirement — MRO .....	19
PRC-502-MRO-01 — Power System Stabilizer Requirement — MRO .....	20
RES-501-MRO-01 — Generation Planning Reserve Requirements — MRO .....	21

PRC-006-MRO-01 — Development and Documentation of Regional UFLS Programs — MRO...	22
BAL-002-MRO-01 — Disturbance Control Performance — MRO.....	23
PRC-012-MRO-01 — Special Protection System Review Procedure — MRO.....	24
PRC-018-MRO-01 — Disturbance Monitoring — MRO.....	25
<b>Northeast Power Coordinating Council (NPCC) Regional Reliability Standards Development</b>	
<b>Projects .....</b>	<b>26</b>
BES-501-NPCC-01 — Classification of Bulk Power Systems Elements — NPCC .....	27
PRC-006-NPCC-01 — Underfrequency Load Shedding Program — NPCC.....	28
PRC-012-NPCC-01 — Special Protection Systems — NPCC.....	29
PRC-002-NPCC-01 — Disturbance Monitoring — NPCC .....	30
<b>ReliabilityFirst Corporation (RFC) Regional Reliability Standards Development Projects.....</b>	<b>31</b>
MOD-024-RFC-01 — Generator Real (MW) Power Capability — RFC .....	32
MOD-025-RFC-01 — Generator Reactive (MVAR) Power Capability — RFC .....	33
BAL-502-RFC-02 — Resource Planning Reserve Requirement Standard — RFC .....	34
PRC-006-RFC-01 — Automatic Underfrequency Load Shedding Requirements — RFC .....	35
PRC-002-RFC-01 — Disturbance Monitoring and Reporting Requirements — RFC.....	36
PRC-012-RFC-01 — Special Protection System Requirements — RFC .....	37
<b>SERC Reliability Corporation (SERC) Regional Reliability Standards Development Projects .....</b>	<b>38</b>
PRC-006-SERC-01 — Underfrequency Load Shedding Program — SERC .....	39
<b>Southwest Power Pool, Inc. (SPP) Regional Reliability Standards Development Projects.....</b>	<b>40</b>
PRC-300-SPP-01 — Automatic Underfrequency Load Shedding Program — SPP .....	41
<b>Texas Regional Entity (Texas RE) Regional Reliability Standards Development Projects .....</b>	<b>42</b>
BAL-001-TRE-01 — Regional Variance for CPS2 — Texas RE .....	43
PRC-006-TRE-01 — Development and Documentation of Regional UFLS Program — Texas RE	44
<b>Western Electricity Coordinating Council (WECC) Regional Reliability Standards Development Projects</b>	
.....	45
TOP-007-WECC-1 — Operating Transfer Capability — WECC .....	46
PRC-STD-001-1 — Certification of Protective Relay — WECC .....	48
PRC-004-WECC-1 — Protective Relay and RAS Misoperation — WECC .....	49
IRO-006-WECC-1 — Unscheduled Flow — WECC .....	51
FAC-501-WECC-1 — Transmission Maintenance — WECC.....	52
VAR-002-WECC-1 — Automatic Voltage Regulators — WECC.....	53
VAR-501-WECC-1 — Power System Stabilizers — WECC.....	54
BAL-004-WECC-01 — Automatic Time Error Correction Standard — WECC .....	55
BAL-002-WECC-1 — Contingency Reserves — WECC .....	56



# Introduction

---

## **Purpose**

The North American Electric Reliability Corporation (NERC) is committed to developing reliability standards that deliver an Adequate Level of Reliability for the North American bulk power system. The NERC *Reliability Standards Development Plan* serves as the foundation for reliability standards development efforts. The plan serves as the management tool that guides, prioritizes, and coordinates revision or retirement of existing reliability standards and the development of new reliability standards for the immediate 3-year time horizon.

The initial 3-year plan was developed in 2006 and has been since updated annually. In doing so, NERC seeks input from the other program areas within NERC, as well as from NERC's technical committees and industry groups, on the need for and prioritization of new or revised reliability standards.

The objectives of the plan include but are not limited to:

- Addressing the recommendations for new or revised reliability standards identified in the *U.S.-Canada Power System Outage Task Force Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations*.
- Addressing comments from industry, the Federal Energy Regulatory Commission (FERC), and others suggesting improvements to each reliability standard, including those comments received from industry stakeholders during public comment periods.
- Addressing quality issues to ensure each reliability standard has a clear statement of purpose, and has results-based requirements that are clear and measurable.
- Ensuring measures and compliance elements are aligned to support the requirements within the reliability standards and follow definitions outlined in the reliability standards template.
- Eliminating requirements that do not have an impact on bulk power system reliability; retiring redundant requirements; retiring or converting (into guidelines) lower-level “facilitating” requirements that are already measured through compliance with higher-level requirements; and moving basic “capability” requirements that are routinely used into the NERC certification process.
- Improving reliability standard requirements by incorporating approved interpretations.
- Incorporating feedback from other NERC program areas such as compliance monitoring and enforcement, reliability assessments, and event analysis.
- Satisfying the requirement in section 300 of the Rules of Procedure of the North American Electric Reliability Corporation for a five-year review of all reliability standards.

Developing excellent reliability standards is a long-term effort. This plan best supports the effort in that it is flexible and can be continuously adapted to circumstances and changing priorities.





The plan is reviewed and maintained by the NERC Standards Committee and Standards staff, and is updated on an annual basis or more frequently if necessary.

## **Summary**

This revised *Reliability Standards Development Plan: 2010-2012* identifies a total of 37 continent-wide standards development projects. These projects are:

### **Projects initiated in 2006:**

2006-02 Assess Transmission Future Needs  
2006-04 Backup Facilities  
2006-06 Reliability Coordination  
2006-08 Transmission Loading Relief

### **Projects initiated in 2007:**

2007-01 Underfrequency Load Shedding  
2007-02 Operating Personnel Communications Protocols  
2007-03 Real-time Operations  
2007-04 Certifying System Operators  
2007-05 Balancing Authority Controls  
2007-06 System Protection Coordination  
2007-07 Vegetation Management  
2007-09 Generator Verification  
2007-11 Disturbance Monitoring  
2007-12 Frequency Response  
2007-17 Protection System Maintenance and Testing  
2007-18 Reliability-based Control

### **Projects initiated in 2008:**

2008-01 Voltage and Reactive Control  
2008-02 Undervoltage Load Shedding  
2008-06 Cyber Security — Order 706  
2008-12 Coordinate Interchange Standards

### **Projects within this Plan:**

The number of projects proposed in this plan decreased to 37 from the 39 listed in the 2009-2011 version of the plan:

- The following seven projects identified in the 2009-2011 plan have been completed and removed from this revised plan:

#### **Projects initiated in 2006:**

2006-01 System Personnel Training  
2006-03 System Restoration and Blackstart  
2006-07 Transfer Capabilities: ATC, TTC, CBM, and TRM  
2006-09 Facility Ratings

#### **Projects initiated in 2007:**

2007-14 Permanent Changes to CI Timing Table  
2007-23 Violation Severity Levels

#### **Projects initiated in 2008:**

2008-08 EOP Violation Severity Levels Revisions

### **Projects initiated in 2009:**

2009-01 Disturbance and Sabotage Reporting  
2009-02 Real-time Tools  
2009-03 Emergency Operations  
2009-04 Phasor Measurements Units  
2009-05 Resource Adequacy Assessments  
2009-06 Facility Ratings  
2009-07 Reliability of Protection Systems  
2009-18 Withdraw Three Midwest ISO Waivers

### **Projects anticipated commencing in 2010:**

2010-01 Support Personnel Training  
2010-02 Connecting New Facilities to the Grid  
2010-03 Modeling Data  
2010-04 Demand Data  
2010-05 Protection Systems  
2010-06 Results-based Reliability Standards  
2010-07 Generator Requirements at the Transmission Interface

### **Projects anticipated commencing in 2011:**

None

### **Projects anticipated commencing in 2012:**

2012-01 Equipment Monitoring and Diagnostic Devices  
2012-02 Physical Protection

- Project 2008-05 Credible Multiple Element Contingencies which was identified in the 2009-2011 plan was removed from this revised plan as the requester of the Standard Authorization Request (SAR) withdrew their request from further development and consideration by the industry.
- The following six projects are new to the Reliability Standards Development Plan:

**Projects initiated in 2009:**

2009-06 Facility Ratings  
 2009-07 Reliability of Protection Systems  
 2009-18 Withdraw Three Midwest ISO  
 Waivers

**Projects anticipated commencing in 2010:**

2010-06 Results-based Reliability Standards  
 2010-07 Generator Requirements at the  
 Transmission Interface

**Projects anticipated commencing in 2012:**

2012-02 Physical Protection

To summarize, the *Reliability Standards Development Plan: 2009-2011* identified a total of 39 continent-wide standards development projects. Seven of those 39 projects have been completed and one was withdrawn leaving 31 currently active projects from the 2009-2011 plan. Six new projects have been added to the 2010-2012 plan, three of which were unanticipated but initiated in 2009 and three new projects, bringing to a total of 37 continent-wide standards development projects in this Reliability Standards Development Plan: 2010-2012.


**Focus on Impact to Reliability**

As part of the process employed in 2009 for revising the *Reliability Standards Development Plan*, NERC staff reached out to all stakeholders and asked for input on the plan. Similar to the last two years, several stakeholders indicated a concern that too many projects were under development concurrently which is stretching the industry resources available to work on standards development to their limits. They recommended that the 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.

In addition, during the development of NERC’s Three-year Assessment of its performance as the electric reliability organization, several stakeholders recommended that the industry focus existing reliability standards and reliability standards development on areas that will lead to the greatest improvement in bulk power system reliability. Suggestions included: (1) focus the development of new reliability standards on those that will lead to the greatest improvement in reliability; i.e., address the greatest risks of wide-area cascading outages; (2) reduce the number of existing reliability standards to just those that have a critical impact on reliability of the bulk power system and convert the remaining reliability standards to guidelines; and (3) develop a more systematic process for prioritizing new reliability standards development projects based on risks to the bulk power system.

Accordingly, this version of the plan establishes a new project (Project 2010-06 Results-based Reliability Standards) aimed at focusing NERC Reliability Standards to be more focused on reliability performance. This version also realigns one project, Project 2012-01 Equipment Monitoring and Diagnostic Devices, from 2011 to 2012 in order to ensure NERC and industry





resources are available to devote the needed level of expertise to Project 2010-06 Results-based Reliability Standards. There are no other projects planned for initiation in 2011 as a result.

### **Fill-in-the-blank Standards**

The phrase “fill-in-the-blank standards” refers to standards that require a bulk power system user, owner, or operator to implement regional criteria that are not specifically part of a NERC Reliability Standard. While an acceptable practice, the regional criteria needs regulatory approval for proper evaluation in support of the NERC Reliability Standards or needs to be replaced with mandatory and enforceable standards that incorporate the needed reliability aspects.

NERC recognized this issue at the time it applied to become the ERO. Working with the Regional Entities, NERC provided dedicated staff to coordinate the development of regional standards and address the “fill-in-the-blank” issue. As a result, the action plans and schedules to resolve each “fill-in-the-blank” standard were provided in Volume III of the original 2007-2009 plan and has since been wholly incorporated into the projects identified in Volume II of each of the succeeding work plans.


### **Priority of Projects**

All currently active projects are considered to be high priority projects meriting continuation.

For proposed standards development projects identified in the *Reliability Standards Development Plan*, the NERC Standards Committee, comprised of industry representatives, assists NERC staff in prioritizing the initiation of these projects.

Those projects anticipated to be started in 2010 represent the next highest priority set of projects. Each will be initiated in 2010 as determined by the NERC Standards Committee in coordination with NERC staff as other projects are concluded and coordinator and drafting team resources become available:

- Project 2010-01 Support Personnel Training is a priority project as it was proposed in support of a 2003 blackout recommendation.
- The following projects involve the original “Version 0” standards originally approved in 2005. They all are required to be reviewed in 2010 pursuant to the Rules of Procedure of the North American Electric Reliability Corporation which state in part “each reliability standard shall be reviewed at least once every five years from the effective date of the standard or the latest revision to the standard, whichever is later.”
  - Project 2010-02 Connecting New Facilities to the Grid involves revisions to FAC-001 and FAC-002.
  - Project 2010-03 Modeling Data involves revisions to MOD-010, MOD-011, MOD-012, MOD-014, PRC-013, and PRC-015.
  - Project 2010-04 Demand Data involves revisions to MOD-018, MOD-020, and MOD-021
  - Project 2010-05 Protection Systems involves revisions to PRC-012 and PRC-014.

- 
- Project 2010-06 Results-based Reliability Standards is a priority project as discussed in the “Focus on Impact to Reliability” section above. The project provides for improving the set of NERC Reliability Standards to be more focused on reliability performance.
  - Project 2010-07 Generator Requirements at the Transmission Interface is a priority project as it will add greater specificity and clarity to the expectations of those responsible for owning and operating the interconnection facilities that connect generators to the transmission grid.

As noted earlier, the single project anticipated to commence in 2011 pursuant to the 2009-2011 plan has been moved to 2012 in this revised plan to ensure industry and NERC staff resources are available to devote to Project 2010-06 Results-based Reliability Standards, identified as a higher priority in the plan.


### **Other modifications**

As part of the process employed in 2009 for revising the *Reliability Standards Development Plan*, NERC staff reached out to the stakeholder community seeking input on how to improve and update the plan. In so doing, NERC received a number of comments that led to various modifications and improvements to the plan. Appendix A to Volume I summarizes the comments received and NERC’s response to the comments.

In conjunction with this year’s project to revise the plan, NERC staff reviewed the items in what is termed the “NERC Standards Issues Database (Issues Database).” The Issues Database is used by the NERC standards program staff to track the issues and concerns identified with a particular standard. These ‘issues’ are then used to populate the “Issues to be Considered by the Standard Drafting Team” tables included for each project in Volume II. As such, projects in Volume II include the “issues” identified to date.

The update to this year’s plan also includes another improvement in the form of a set of more detailed project schedules. The revised project schedules include a more detailed list of tasks needed to be undertaken as part of the standards development project and has been modified based on “lessons learned” from prior projects. In doing so the timeline for the majority of projects has been extended, but at the same time provides a better estimate for the completion of each of the projects. Further, a link to each of the project schedules (for the projects currently under development) has been posted on the “Related Files” page on the NERC website.

NERC has also developed specific initiatives related to compliance monitoring and enforcement, reliability assessment and performance analysis, and event analysis to identify possible “high impact” reliability standard development projects that may have significant impact on the reliability of the bulk power system. For example, lessons learned and trends identified from system events tracked for the last three years that have been causal or contributory to the severity of system disturbances are helping NERC focus efforts and provide the technical foundation for standards development and modification efforts on issues that are most critical to bulk power system reliability. NERC has developed a broad-based reliability initiative that addresses issues in the area of system protection and control which is the basis for Project 2010-05 System Protection and a number of other ongoing standards development projects in the area of system protection and control. That initiative identified a compendium of system protection and control



issues that have contributed to many system events. This ongoing collaborative effort between the Event Analysis program and Standards development will continue to be used to identify specific changes to reliability standards to ensure an Adequate Level of Reliability of the North American bulk power system.

### **Organization of the Plan**

The *Reliability Standards Development Plan: 2010-2012* is organized into three volumes:

- Volume I provides an overview of the plan and the modifications made to the plan as compared to the prior year.
- Volume II provides project descriptions for current and planned standards development project.
- Volume III summarizes the regional reliability standards development activity anticipated over the next three years.

## 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. [NERC's filings with FERC](#)<sup>1</sup> and the [Commission's orders](#)<sup>2</sup> can be found on the [NERC Web site](#).<sup>3</sup>

NERC has been similarly acknowledged to be the international electric reliability organization in many of the provinces in Canada and by the National Energy Board. NERC continues to formalize these relationships through Memoranda of Understanding (MOU) recognizing NERC as the ERO in Canada and hopes to achieve this status in all provinces by 2010.

### **Standards Development Process**

NERC uses a process for refining, developing, and approving reliability standards that has received national, formal accreditation and approval by federal regulators in the United States. A key element of the development plan is to review and upgrade all the existing standards based on the directives in the FERC's final rules on standards, previous industry comments, and actual experience gathered from using the standards. Additionally, NERC's rules and a condition of [accreditation by the](#) American National Standards Institute ([ANSI](#))<sup>4</sup> require that each standard be reviewed at least every five years. NERC received ANSI accreditation on March 24, 2003. Through the remaining projects in 2010, NERC anticipates completing its review and upgrade of standards identified in this development plan in support of these accreditation requirements.

The [Reliability Standards Development Procedure](#)<sup>5</sup> 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.

---


<sup>1</sup> NERC filings to FERC, <http://www.nerc.com/page.php?cid=1|8|170>

<sup>2</sup> FERC orders, <http://www.nerc.com/page.php?cid=1|8|170>

<sup>3</sup> NERC Web site, <http://www.nerc.com/>

<sup>4</sup> ANSI accreditation, <http://www.nerc.com/filez/ansi.html>

<sup>5</sup> Reliability Standards Development Procedure, [http://www.nerc.com/fileUploads/File/Standards/RSDP\\_V6\\_1\\_12Mar07.pdf](http://www.nerc.com/fileUploads/File/Standards/RSDP_V6_1_12Mar07.pdf)



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](#)<sup>6</sup> and the [Reliability Standards Development Procedure](#)<sup>7</sup>, which was incorporated into the Rules of Procedure 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 NERC Board action and regulatory approval.

Furthermore, NERC also coordinates its reliability standards development activities with the business practices developed by the [North American Energy Standards Board](#)<sup>8</sup> (NAESB).

### **Strategy for Project Resources**

*Reliability Standards Development Plan: 2010-2012* is designed recognizing there are limited available staff and industry resources to complete the projects immediately and concurrently. While the volume of work and schedules are aggressive, they are manageable because the work is being extended over several years, and because much of the work involves 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 proposed projects for 2010, 2011, and 2012. In 2009, NERC standards program staff includes seven project coordinators in support of the development plan activities, supported by various support and management resources, as well as consulting resources in support of the fast-track Order 706 Cyber Security project team.

---

<sup>6</sup> NERC Rules of Procedure, [http://www.nerc.com/files/NERC\\_Rules\\_of\\_Procedure\\_EFFECTIVE\\_20080321.pdf](http://www.nerc.com/files/NERC_Rules_of_Procedure_EFFECTIVE_20080321.pdf)

<sup>7</sup> Reliability Standards Development Procedure, [http://www.nerc.com/fileUploads/File/Standards/RSDP\\_V6\\_1\\_12Mar07.pdf](http://www.nerc.com/fileUploads/File/Standards/RSDP_V6_1_12Mar07.pdf)

<sup>8</sup> NAESB <http://www.nerc.com/page.php?cid=2|247|248>



## Global Improvements

The standard drafting team for each of the projects identified in this plan is 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 as described in this "Global Improvements" section.

### **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 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 directed NERC to define the term, "adequate level of reliability" as part of its January 18, 2007 Order on Compliance Filing. Accordingly, NERC's Operating and Planning Committees prepared the definition and the NERC Board approved it at its February 2008 meeting for filing with regulatory authorities. The NERC Standards Committee was then tasked to integrate the definition into the development of future reliability standards.

### **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<sup>9</sup> include: ERO, Regional 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 that does not apply to the entire North American bulk power system shall also identify the geographic applicability of the standard, such as an interconnection, or within a regional entity area. The applicability section of the standard should also include any limitations on the applicability of the standard based on electric facility characteristics, such as a requirement that applies only to the subset of distribution providers that own or operate underfrequency load shedding systems.
  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

---

<sup>9</sup> 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.





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**

“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**

“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**

“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**

“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**


“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**

“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**

“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**

“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**

“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**

“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**

“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**

“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**

“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**



“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**

“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.

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. 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 included requirements for Regional Reliability Organizations to develop regional criteria, procedures, and plans, and included requirements for entities within the region to follow those requirements. Section 215 of the FPA introduced a new term, called “Regional Entity.” Regional Entities have specific delegated authorities, under agreements 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 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 requirements for Regional Entities in those rare instances where the regions have 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 not users, owners, or operators of the bulk power system and cannot be held responsible for compliance through the compliance monitoring and enforcement program. 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.



## ***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.

Each requirement should identify a product or activity that makes a definite contribution to reliability.

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 issued an assessment on the then proposed reliability standards. The Commission 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 “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. Historically, there has been confusion about Levels of Non-Compliance. Some of the previously existing Levels of Non-Compliance incorporate reliability-related 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. A set of Commission-approved VSLs exists for each of the original 83 reliability standards as a result of the work of the Project 2007-23 drafting team.

**Criteria for determining which VSL to use:**


It is preferable to have four VSLs representing a spectrum of performance, but where that does not work, the VSLs should be defensible in supporting the criteria in the table below.

Lower VSL	Moderate VSL	High VSL	Severe VSL
The performance or product measured almost meets the full intent of the requirement.	The performance or product measured meets the majority of the intent of the requirement.	The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent.	The performance or product measured does not substantively meet the intent of the requirement.

**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 is administrative in nature and, a requirement that, if violated, would not be expected to 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 affect the electrical state or capability of the bulk power system, or the ability to effectively monitor, control, or restore the bulk power system.

**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.

### ***Coordination with NAESB***

Many of the existing NERC standards are related to business practices, although their primary purpose is to support 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). 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:

- Project 2006-08 — Transmission Loading Relief
- Project 2007-05 — Balancing Authority Controls
- Project 2007-18 — Reliability Based Control
- Project 2008-01 — Voltage and Reactive Control
- Project 2008-12 — Coordinate Interchange Standards
- Project 2009-03 — Emergency Operations
- Project 2010-02 — Connecting New Facilities to the Grid
- Project 2010-04 — Demand Data

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 Standards Authorization Request (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:** Section (F) provides a place to list associated references that support implementation of the standard. Drafting teams may develop or reference supporting documents with approval of the Standards Committee.
- **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 plan. These references provide detailed descriptions of the issues and comments that need to be considered by the drafting teams, which are included in the second volume of the work plan, as they work on the standards projects defined in the 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.](#)

# Appendix A — Summary of Industry Comments

Reliability Standards Development Plan 2010-2012

As of September 29, 2009

## Comment 1

Name: Carol Gerou

Organization: Midwest Reliability Organization

**Suggestion or Comment:** NERC should sponsor an industry triage of the standards to identify the core requirements and flag those that are minutia. This will allow all of industry (NERC, Regional Entities and Registered Entities) to focus resources on what will support reliability rather than push paper to demonstrate compliance with requirements that don't support reliability.

**Example:** A simple example is the DCS. The true core requirements are to recover from all reportable events in 15 minutes and replenish reserves in 90 minutes thereafter. The rest of the Rs are an explanation of what that means, how it's handled in a Reserve Sharing Group and also the procedural reporting items. However, we are now moving down a path to assign measures and sanctions to 20 different things in this standard.

**Recommendation for improvement:** A first step for any standards improvement effort would be the creation of a database companion to the standards. This would not only be a platform to capture the triage comments, the database could be used by registered entities to identify all the requirements that apply to them. Presently it is impossible to say with assurance you have found all applicable requirements. For example, there are several cases where an entity is mentioned in a requirement, but that entity is not identified in the "applicability" section of the standards.

Once you have the triage complete, format changes are just a matter of programming.

If you look at the present V0 and V1 standards, many things labeled as requirements are actually criteria, procedures, administrative directions and explanatory text.

As an example of what can be done to improve the final format after the triage, refer to Europe's Policy 1 at: <http://www.ucte.org/resources/publications/op handbook/>

The bullets in their policies are broken into a few categories:

- C for Criteria (goals and background of the standard)
- R for Requirements (generally attributes that are yes/no go/no-go)
- S for Standards (things measured on a scale)
- P for Procedures (administrative information)
- G for guides (while we have moved away from guides, the issue still remains what to do with the good practices that are being lost from institutional memory)

If there is information beyond this, it is likely reference information and should be moved to an appendix in the standard (using A for paragraph numbers).

The benefit in making such a format change is that the industry can focus on those things that are important for reliability. It also allows NERC and the Regions to focus on the important things.

Compliance elements would be applied to the requirements and standards. There still could be notification to regulatory bodies on procedural deficiencies.

This is not a suggestion for any change to content in the standards, just a reformatting.

<p><b>NERC Response:</b></p> <p>In response to your recommendation (as well as similar recommendations from others) we have added Project 2010-06 Results-based Reliability Standards to the <i>Reliability Standards Development Plan: 2010-2012</i> for a project focused on:</p> <ul style="list-style-type: none"> <li>• triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,</li> <li>• developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,</li> <li>• promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and</li> <li>• revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.</li> </ul> <p>Note that the "applicability" section of each standard doesn't identify all functional entities mentioned in a standard – the "applicability" section of the standard identifies just those functional entities with responsibility for compliance with one or more requirements in the standard.</p> <p>There is an effort underway to put the standards into a relational database, until this is ready for stakeholder use, we have published a list of all requirements in all standards that have been approved by FERC that can be sorted by functional entity. This excel spreadsheet is posted at the following site:  <a href="http://www.nerc.com/docs/standards/rs/VRF_Standards_Applicability_Matrix_2009June25.xls">http://www.nerc.com/docs/standards/rs/VRF_Standards_Applicability_Matrix_2009June25.xls</a></p>
<p><b>Project Number(s):</b> 2007-09</p>
<p><b>Project Title(s):</b> Generation Verification</p>
<p><b>Suggestion or Comment:</b> In Volume 2, Reliability Standards Development Plan Overall Project Schedules, the Generation Verification project looks like it's mislabeled as Project 2007-08.</p>
<p><b>Recommendation for improvement:</b> Update Overall Project Schedules or connect hyperlink to current project summary calendar (called "Standards Under Development Anticipated Posting Calendar") provided on the NERC sStandards Under Deveopment webpage.</p>
<p><b>NERC Response:</b></p> <p>The label for Project 2007-09 Generator Verification in the Overall Project Schedules in Volume II of the Reliability Standards Development Plan: 2010-2012 has been corrected.</p>
<p><b>Reliability Issue:</b> List of projects</p>
<p><b>Suggestion or Comment:</b> The plan lists several projects but it indicates that limited resources exist, it would seem partial to pick a set of projects which have a high priority and complete that set and then move on to less priority projects. Plus, in the plan Volume 1 mentions that some project have a higher priority than other. The plan even expresses the objectives for determining the priority (Volume 1, page 5, and section titled "Objectives as Part of the Goal") but the actual projects are not prioritized.</p>
<p><b>Example:</b> A set of projects would be the fill-in-the-blank standards. If the industry could take an approach on this set alone, it would not be spinning its wheels so to speak. The technical expertise used to develop both regional and continental wide standards could be free to work on other standards.</p>
<p><b>Recommendation for improvement:</b> Pick a set of projects which have a high priority and complete</p>

that set then work on less priority projects.
<p><b>NERC Response:</b></p> <p>You touch upon two distinct concepts in your comments above. The first being the need to work on high priority projects before moving on to lower priority projects. With respect to this issue, what might be a high priority project in the eyes of one entity might not be in the eyes of another entity. NERC staff coordinates all standards development activities through the NERC Standards Committee. In compliance with the <i>NERC Reliability Standards Development Procedure</i>, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. NERC staff works with the NERC Standards Committee to identify the projects of highest overall industry importance before working on lower priority projects. In some cases a high priority project is delayed while waiting for research or analysis needed to develop a set of technically-based requirements. This was the case with the Voltage and VAR Control project, the Real-time Tools project, and others. As we move forward, we are trying to have the technical foundation for each standard clearly identified before the SAR is initiated.</p> <p>The second concept you touch upon in your comments above is the statement that actual projects are not prioritized. It might not obviously appear that projects in the <i>Reliability Standards Development Plan: 2009-2011</i> are prioritized but in actuality the structure of the <i>Reliability Standards Development Plan: 2009-2011</i> as well as this revised plan is such that the projects are positioned in the plan so that the "higher priority" projects are designated to be initiated in the immediate year and the "lower priority" projects are designated to be initiated in the later years of the plan.</p>
<p><b>Suggestion or Comment:</b> The plan should be updated to show actual status of the projects. Only show last major milestone.</p>
<p><b>Example:</b> Starting from the Reliability Standards Development Plan Overall Project Schedule housed in the plan (Volume 2) add a diamond symbol to show latest milestone in the project. Milestones would be last posting for ballots or comments.</p>
<p><b>NERC Response:</b></p> <p>Links to the current project schedule for each of the active projects are provided at the end of each project description in Volume II of the Reliability Standards Development Plan. The on-line project schedules are updated monthly and should provide the level of detail you suggest in your comment above.</p>

<p><b>Comment 2</b>  <b>Name:</b> Denise Koehn  <b>Organization:</b> Bonneville Power Administration</p>
<p><b>Suggestion or Comment:</b> BPA has no dispute regarding the revision needs; however, this is an aggressive schedule and will require considerable effort to accomplish as many items per year as scheduled. The schedule seems a little aggressive. Otherwise, plan looks good.</p>
<p><b>NERC Response:</b></p> <p>We appreciate your comment relative to the "aggressiveness" of the schedules indicated in the <i>Reliability Standards Development Plan</i>. The standards development process continues to evolve as does the establishment of realistic project schedules to complement the process. With the publication of this <i>Reliability Standards Development Plan: 2010-2012</i> NERC staff, working in conjunction with the individual drafting teams, has attempted to publish more realistic schedules for each project.</p>



<b>Comment 3</b> <b>Name:</b> Dora Moreno <b>Organization:</b> Southern California Edison Company
<b>Standard Title(s):</b> NERC Reliability Standards Development Plan 2009-2011
<b>Suggestion or Comment:</b> Southern California Edison Company ("SCE") hereby submits its comments on the North American Electric Reliability Corporation's ("NERC") annual revision to the NERC Reliability Standards Development Plan (Plan).  SCE greatly appreciates the work that went into developing the Plan, and commends NERC for the extensive overview and depth it provides with respect to the development of reliability standards. This being said, SCE is generally supportive of the document and goals NERC has set for the development of reliability standards. The timelines identified in the Plan, like the Plan itself, are too dynamic (non-static/ever changing) to be used as targets, and may need to be modified as projects are launched and the drafting teams proceed forward with them.
<b>NERC Response:</b>  NERC staff appreciates your comments and concurs with your specific comment that the timelines identified in the plan, like the plan itself, is dynamic. NERC staff will continue to coordinate all standards development activities through the NERC Standards Committee and be responsive to industry needs and will publish more realistic schedules for each project in the future.

<b>Comment 4</b> <b>Name:</b> Doug Hohlbaugh <b>Organization:</b> FirstEnergy
<b>Project Number(s):</b> 2009-03
<b>Project Title(s):</b> Emergency Operations (Covers standards EOP-001 "Emergency Operations Planning", EOP-002 "Capacity & Energy Emergencies", EOP-003 "Load Shedding Plans" and IRO-001 "Reliability Coordinator - Responsibilities and Authorities")
<b>Suggestion or Comment</b> Consider advancing project 2009-03 and including it in a list of High Priority projects that need addressed within NERC 3-year Work Plan. See FE comment 4B below stating a need to establish a list of High Priority projects and suggestions on how such a list may be compiled.  Project 2009-03 is an example project that addresses core real-time operations requirements that should be considered for advancement in NERC's work plan. This project has yet to start and there are reliability and compliance ambiguities that require mitigation. For example, in EOP-003, R5 states the following "A Transmission Operator or Balancing Authority shall implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system



shutdown" This is a HIGH Violation Risk Factor requirement that should not lack clarity in compliance certainty related to who has the authority to shed load.

The purpose statement of the EOP-003 standard indicates that the BA and TOP must have the capability and authority to shed load. It is unclear what is meant by capability. Capability could range from ability to direct action to open breakers or an expectation to open breakers and drop load. However, the standard is not written clearly related to the expectations of the TOP and BA in regard to load shed. Within the EOP-003 standard, 50% of the requirements include a statement "A Transmission Operator or Balancing Authority shall ..." and should be revised on a more expeditious schedule to improve reliability and compliance certainty.

**Recommendation for improvement:** Consider advancing project 2009-03 and including it in a list of High Priority projects that need addressed within NERC 3-year Work Plan. See FE comment 4B below stating a need to establish a list of High Priority projects and suggestions on how such a list may be compiled.

**NERC Response:**

NERC staff agrees with FirstEnergy's suggestion of the importance of Project 2009-03 Emergency Operations. As of this writing, Project 2009-03 has not been initiated; however, it is one of the next projects waiting to be initiated once one of the currently active projects has completed and the appropriate resources are made available.

**Suggestion or Comment:**

A) The industry -BES users, owners and operators as well as regulatory enforcement staff - is overwhelmed with compliance enforcement actions based on little or no BES reliability gap related to violations that are largely documentation related. This inefficiency is wasting valuable resources with no measured improvement in NERC's vision of Adequate Level of Reliability which the standards collectively aim to achieve. Requirements that are largely administrative should not be subjected to the compliance Sanctions Matrix and should be partitioned within the standards.

B) We are concerned with the large volume of work within the NERC work plan and the stress placed on its limited staff and industry resources. NERC needs to re-assess its projects and develop a short list of key High Priority projects that will drive the greatest reliability improvements within the industry. These select projects should receive detailed attention and priority by NERC staff, NERC SC and industry as they move through the standards development process.

The key projects should be held to greater scrutiny from a project management view. It should be expected that team members on these teams are held to a higher level of accountability, committed to providing significant time and energy to advance the industry in the key areas that will raise the adequate level of reliability. One example where this has been used is the CIP project.

c) Interpretation Request - NERC should allow sufficient bandwidth in their schedule to address interpretation requests which seem to be on the rise. It should be understood that the use of existing drafting teams to respond to interpretation requests causes delays in standard development work progress.

D) The NERC Work plan should cast a clear picture of the ERO/industry vision that clearly articulates a future target for the reliability standards and the core BES reliability goals they aim to achieve.

**Recommendation for improvement:**

A) The standards should be scrubbed to remove or re-classify administrative and documentation related requirements that do not serve a reliability related goal. To the extent retained, two levels of requirements should exist within the standard 1) Reliability Requirements and 2) Administrative Requirements. For example many requirements direct entities to provide some sort of documentation

within X calendar days, upon a request to do so. These types of requirements, if violated, should not bog the industry down in paperwork moving through the normal compliance enforcement process and should only be subject to a penalty for repeat offenders. When a penalty is warranted for Administrative Requirements, it should have a separate expedited process and the fine should escalate for repeat offenders with some consideration of the length of time between repeat violations.

B) We suggest a leadership team with representative members of each of the NERC Standing Committees (SC, PC, OC, CCC and CIPC) direct a working group aimed at developing a methodical review of the existing standards to develop the High Priority list of reliability standards that require sharp focus from industry. The prioritization should be based on a number of different aspects such as: 1) frequency of interpretation requests for a given standard - this could point to lack of clear requirement language; 2) the frequency of violations for a given standard - could point to a need to re-evaluate the metrics used to gauge compliance and determine if the proper industry expectations regarding a particular reliability target is being achieved. The standards should not expect perfection as their goal; 3) requirement redundancy - this should remain a focus of the Work Plan to remove potential for multiple violations, the standards should remain clear and concise; 4) Clear expectations - many of the standards still lack measures. It's not clear why the industry is putting forth time and energy on developing both measures and Reliability Standards Audit Worksheets (RSAWs). It seems that clear written measures along with the requirements should suffice in providing a responsible entity the information needed to ensure compliance. The RSAWs should not be an on-going expectation of the standards and the Work Plan should clearly cast this vision. Creating both RSAWs and measures creates unnecessary effort to maintain two sets of information serving the same function.

A presentation was made by the NERC Standards Process Subcommittee (a subcommittee of the SC) at the April 15-16, 2009 NERC Standards Committee meeting that describe a potential method for establishing a list of criteria for evaluating the standards, prioritizing the work needed with a focused effort of trimming down the requirements to core reliability requirements aimed at a particular reliability goal. It's suggested that the work of the NERC Process Subcommittee form the basis of establishing the High Priority list of standards which should ultimately rise to the top of NERC's Work Plan.

C) FE well understands the benefits of utilizing an already formed standards drafting team (SDT) to expedite a response to a standard interpretation request as the team already assembles the SMEs to address a particular subject matter. The SDT also benefits from the experience by being made acutely aware of confusion that exists within an existing standard it is addressing for improvement.

A potential downside to using SDT personnel is the distraction created by the interpretation request and a delay in the standards development work. NERC should closely monitor the workload placed on SDT's being asked to respond to interpretation requests and poll the SDT members to see if they believe there would be any benefit in an alternative approach for interpretation responses.

One potential alternative would be to form a separate sub-committee or work group under the CIPC, OC and PC that would address all interpretation requests related to various class of standards that each of these standing committees would be expected to address. This would allow the SDTs to remain focused on their work in developing new/revised reliability requirements.

D) The Work Plan should set the vision of what the ERO/industry will achieve as a 5-year target. This vision should foretell a 5-year plan of a strong, self supporting industrial model that will triage the standards to separate critical core reliability requirements from the lesser administrative tasks, a dedicated focus of reducing the reliability requirements to those that support NERC's Adequate Level of Reliability and clearly identify the High Priority projects being addressed on an expedited schedule. The 5-year target should seek to continuously improve and adjust as needed to raise the BES reliability where warranted by clear metrics and should not anticipate perfect reliability.

#### **NERC Response:**

**A and B) In response to your recommendation (as well as similar recommendations from others) we**

have added Project 2010-06 Results-based Reliability Standards to the *Reliability Standards Development Plan: 2010-2012* for a project focused on:

- triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,
- developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,
- promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and
- revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.

C) We appreciate your concern related to the process used for developing interpretations. This topic is one of many topics currently being vetted by the members of the NERC Standards Committee and your concerns are more appropriately addressed in that venue.

D) The Reliability Standards Development Plan is a short-term forward looking three-year plan for reliability standard development and not necessarily a master plan that sets the long-term goals of the standards program. NERC staff coordinates all standards development activities through the NERC Standards Committee whose membership consists of industry representatives. In compliance with the NERC Reliability Standards Development Procedure, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. The Standards Committee protects the integrity and credibility of the standards development process. NERC staff facilitation of the standards development process in coordination with the Standards Committee takes into consideration the potential impact on industry resources when planning standards related projects and activities.

**Comment 5**

**Name:** Frank Gaffney

**Organization:** Florida Municipal Power Agency

**Standard Number(s):** EOP-001-1, EOP-003-1, IRO-008-1, IRO-009-1, IRO-010-1, PRC-006-0, PRC-007-0, TOP-001-1, TOP-002-2a, TOP-003-1, TOP-006-2, VAR-001-1a

**Standard Title(s):** Emergency Operations Planning, Load Shedding Plans, Reliability Coordinator Operational Analyses and Real-Time Assessments, Reliability Coordinator Actions to Operate Within IROs, Reliability Coordinator Data Specifications and Collection, Development and Documentation of Regional UFLS Programs, Assuring Consistency with Regional UFLS Programs, Reliability Responsibilities and Authorities, Monitoring System Conditions, Voltage and Reactive Control

**Suggestion or Comment:** The current standards are inconsistent with each other in certain areas and confuse the roles of a Balancing Authority (BA), Transmission Operator (TOP), Reliability Coordinator (RC), Regional Entity (RE), Generation Operator (GOP) and Transmission Planner (TP). The confusion manifests in a few ways. First, it causes the BA to be responsible for requirements that ought to be only applicable to the TOP (such as managing transmission line outages), and visa versa (such as managing fuel supply), probably thinking that most BAs are also TOPs. However, there are BAs that are not TOPs and visa versa. Secondly, it causes redundancy in roles and confusion in leadership in causing certain activities to happen. For instance, both the TOP and RC are responsible for managing IROs without clear leadership between the two. Also, if a Load Serving Entity (LSE) or GOP receives directives from both the RC and the TOP that conflict with each other, what should the LSE or GOP do?

**Example:** The NERC Glossary of terms defines a BA as: "The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time." In other words, responsible for supply and demand balance in the operating horizon. With this definition in mind, why is the BA responsible for EOP-001-1 R2.2 "Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system"? Similarly, the TOP is defined as: "(t)he entity responsible for the reliability of its 'local' transmission system, and that operates or directs the operations of the transmission facilities." With this definition in mind, why is the TOP made responsible for EOP-001-1 R2.1: "(d)develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity"? There are more examples of this, and other inconsistencies between the BA, TOP, RC, RE, GOP and TP, as summarized below:

In EOP-001-1 R4, Appendix A includes items that are not applicable to the TOP and are only applicable to the BA, e.g., why is a TOP responsible for fuel supply? Why is a TOP responsible for R6.2 concerning emergency energy? Why is a TOP responsible for fuel supply in R6.4, and why is the TOP responsible for arranging energy delivery?

In EOP-003-1 R2, why is the BA responsible for Under Frequency Load Shedding (UFLS) when PRC-006-0 and PRC-007-0 make it the responsibility of the Regional Entities, the TOPs, the Distribution Providers and the LSEs? Why is the BA responsible for Under Voltage Load Shedding (UVLS) when the responsibility should probably be just the TOP's? Isn't this requirement redundant with PRC-006-0 and PRC-007-0?

IRO-008-1 and IRO-009-1 requires RCs to operationally plan for and operate within IROs. TOP-004-2 and VAR-001-1a R10 requires the TOPs to do the same, yet there is no discussion in the standards of coordination between the RC and TOPs in the standards. Note that VAR-001-1a R10 and R12 are dedundant with TOP standards such as TOP-004-2.

TOP-001-1 R8, the requirement ought to clearly delineate that the BA is responsible for restoring real power balance, and the TOP reactive power balance.

TOP-002-2a, the standard is for Transmission Operations Planning yet there are numerous requirements for the BA that should probably be set apart as separate requirements under a new BAL standard for operational planning for supply and demand balance, contingency reserves, and regulation service, which are not related to Transmission Operations Planning.

TOP-002-2a R8, why is it the BA's responsibility to meet voltage or reactive reserves, isn't that the role of the TOP, as spelled out in the VAR standards? If the issue is to ensure enough generation is on-line in specific areas that might need reactive support, isn't that still the TOP's responsibility to coordinate with the BA and issue direction if necessary?

TOP-003-1 R1.2, why is the TOP responsible for providing generator outage information? Isn't that the BA's or GOP's responsibility and isn't this redundant with IRO-010-1?

TOP-006-2 R1, R1.2, why are BAs responsible for information regarding transmission resources available for use? Isn't that the role of the TOP?

TOP-006-2 R2, why is the BA responsible for monitoring transmission line status, voltage, load tap changer settings, and reactive power in general? Monitoring and managing reactive resources, voltage and tap settings is clearly made the responsibility of the TOP in VAR-001-1a.

TOP-006-2 R3 why does the BA need to understand protective relaying? Isn't that the role of the TOP and GOP?

VAR-001-1a R2 requires the TOP to acquire sufficient reactive resources. The statement probably ought to clearly delineate that this requirement is applicable to the operating horizon only and that the TP is responsible for adequate reactive resources in the planning horizon.

**Recommendation for improvement:** Revise the standards to clearly delineate the responsibilities of the various entities and clear up the redundancy and inconsistencies between the standards. The examples provided include some suggestions for changes to help make roles and responsibilities more clear.

#### **NERC Response:**

There are some inconsistencies in identifying the responsible entity – during the development of the Version 0 standards, the drafting team sometimes converted the term, “control area” to “Balancing Authority and Transmission Operator” when the conversion should have clearly assigned the requirement to either the Transmission Operator or the Balancing Authority, but not to both. We are trying to correct these applicability errors as we modify the standards.

Several of the recommended modifications have already been addressed, including deletion of TOP-001-1, Requirement R8; removal of BA requirements from TOP-002; deletion of TOP-003 Requirement R1.2; removal of BA from TOP-006; IRO-008 and IRO-009 require the RC to develop action plans for preventing and mitigating instances of exceeding IROLs and require sharing this information with the entities that need to take these actions – so there is coordination between the IRO standards and the TOP standards.

The following items have been added to the Issues Database to be addressed by the standard drafting team responsible for revising the standard:

Source: Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012

EOP-001-1    Project 2009-03    The NERC Glossary of terms defines a BA as: "The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time." In other words, responsible for supply and demand balance in the operating

EOP-001-1	Project 2009-03	<p>horizon. With this definition in mind, why is the BA responsible for EOP-001-1 R2.2 "Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system"?</p> <p>The NERC Glossary of terms defines a TOP as: "(t)he entity responsible for the reliability of its 'local' transmission system, and that operates or directs the operations of the transmission facilities." With this definition in mind, why is the TOP made responsible for EOP-001-1 R2.1: "(d)develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity"?</p>
EOP-001-1	Project 2009-03	<p>Requirement R4 (and by reference Attachment 1-EOP-001-0) is applicable to both the Transmission Operator and Balancing Authority but includes items that are not applicable to the TOP and are only applicable to the BA, e.g., why is a TOP responsible for fuel supply? Why is a TOP responsible for R6.2 concerning emergency energy? Why is a TOP responsible for fuel supply in R6.4, and why is the TOP responsible for arranging energy delivery?</p>
EOP-003-1	Project 2009-03	<p>With regard to requirement R2, why is the BA responsible for Under Frequency Load Shedding (UFLS) when PRC-006-0 and PRC-007-0 make it the responsibility of the Regional Entities, the TOPs, the Distribution Providers and the LSEs? Why is the BA responsible for Under Voltage Load Shedding (UVLS) when the responsibility should probably be just the TOP's? Isn't this requirement redundant with PRC-006-0 and PRC-007-0?</p>
EOP-003-1	Project 2007-01	<p>Requirement R2 of EOP-003-1 states: "Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions." The standards drafting team for Project 2007-01 Underfrequency Load Shedding should consider modifying this requirement as part of their project.</p>
VAR-001-1a	Project 2008-01	<p>Requirement R2 requires the TOP to acquire sufficient reactive resources. The statement probably ought to clearly delineate that this requirement is applicable to the operating horizon only and that the TP is responsible for adequate reactive resources in the planning horizon.</p>
VAR-001-1a	Project 2008-01	<p>VAR-001-1a R10 and R12 are redundant with TOP standards such as TOP-004-2.</p>

**Comment 6**

**Name:** Guy Zito

**Organization:** Northeast Power Coordinating Council

**Suggestion or Comment:** The initial draft of the intended "final" version of the document should be posted for comment. "Fill in the blank" projects versus blackout recommendation projects should be appropriately prioritized.



**Recommendation for improvement:** The Reliability Standards Development Plan: 2010-2012 version should be the version that is posted for comments. Having the 2009-2011 version posted is contributing to industry confusion over what information to submit for comments.

**NERC Response:**

Thank you for your comment. We will consider incorporating your suggestion into next year's project for revising the *Reliability Standards Development Plan*.

**Comment 7**

**Name:** Hugh Francis

**Organization:** Southern Company

**Suggestion or Comment:** Page 9 of Appendix A has a list of projects that will be initiated each year. At the bottom of page 10 there is a strategy for project resources that addresses the resources needed to complete the standards projects in the project list. There are about the same number of projects in each year. What is not addressed is how these new projects are going to be started/completed without additional resources. This plan does not address the resources needed to keep the earlier projects revised and current. At this time there are 95 nation-wide standards and only 35 or less than 37% have not been revised.

**Recommendation for improvement:** The new Standards Development Plan needs to address current manpower requirements as well as future needs for manpower. Adjust the project list in the future years to levelize manpower needed to initiate new standards as well as keep the current standards up to date and revised as needed.

**NERC Response:**

NERC understands the amount of resources required (both industry and NERC specific resources) for the development of quality standards and is cognizant of the fact that industry resources are not limitless. NERC staff coordinates all standards development activities through the NERC Standards Committee whose membership consists of industry representatives. In compliance with the NERC Reliability Standards Development Procedure, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. NERC staff facilitation of the standards development process in coordination with the Standards Committee takes into consideration the potential impact on industry resources when planning standards related projects and activities.

One of the requirements of the Rules of Procedure of the North American Electric Reliability Corporation is to review each standard at least once every five years, and we are facing the "five-year" anniversary of the initial effective date for the "Version 0" standards. The majority of projects slated to commence in 2010 in this revised plan will enable NERC to meet this requirement as it relates to the initial set of reliability standards.

**Comment 8**

**Name:** Jalal Babik

**Organization:** Dominion Resources Inc.

<p><b>Project Number(s):</b> 2007-01-RE, 2007-05-RE, 2007-11-RE, 2008-04-RE.</p>
<p><b>Project Title(s):</b> Underfrequency Load Shedding, Balancing Authority Controls, Disturbance Monitoring, Protection System</p>
<p><b>Suggestion or Comment:</b> NERC must place more priority on fill-in the blank standards in its Reliability Standards Development Plan. Since several of these standards, have not gotten priority attention, Regional Councils are moving ahead with Regional Standards development on these standards, while a national standard would be more appropriate and prevent the development of unnecessary regional differences in standards that ultimately make standards compliance more difficult for registered entities operating in more than one Region. Further, a national standard on these important compliance topics would set the threshold and hence, regional differences or variances could be minimized. Without this prioritization, registered entities could face very different compliance requirements on similar equipment in their fleet, based solely on what Region the equipment resides; making compliance management more difficult, yet for little to no benefit to the bulk power system and compliance costs. Additionally, given several of these projects were started in 2007, that reason alone should move these projects into the highest priority on NERC Development Plan.</p>
<p><b>Recommendation for improvement:</b> These fill-in-the-blank standards should review top priority from NERC staff until they are balloted. Regional Standards that address the same compliance subjects should be put on hold until the national standard on the same compliance objective is addressed by ballot body. It is after that national balloting that Regions will know what regional differences are truly needed based on unique characteristics of their regional bulk electric system.</p>
<p><b>NERC Response:</b></p> <p>The projects in question relative to the above comments are:</p> <ul style="list-style-type: none"> <li>• Project 2007-01-RE — Underfrequency Load Shedding,</li> <li>• Project 2007-05-RE — Balancing Authority Controls,</li> <li>• Project 2007-11-RE — Disturbance Monitoring, and</li> <li>• Project 2008-04-RE — Protection Systems</li> </ul> <p>as described in Volume III of the <i>Reliability Standards Development Plan: 2009-2011</i> and the corresponding continent-wide projects currently underway or planned.</p> <p>Three of the four corresponding continent-wide projects are well underway (those being Project 2007-01 Underfrequency Load Shedding, Project 2007-05 Balancing Authority Controls, and Project 2007-11 Disturbance Monitoring) and are subject to the schedule established by the associated standard drafting team. The fourth continent-wide project was identified in Volume II of the Reliability Standards Development Plan: 2009-2011 as Project 2010-05 Protection Systems. The work being performed in parallel by any particular region is subject to the oversight of the regional standards organization for that region and is not controlled by NERC staff. NERC standards staff is in regular contact with the individuals at each of the Regional Entities responsible for developing regional reliability standards. Coordination of the four projects referenced above is ongoing. In many instances, the Regional Entity has decided to commence work on the four 'fill-in-the blank' standards in order to be able to better coordinate the development of the regional standard with the development of the continent-wide standard. This actually is to the benefit of those entities in the region affected by the standard.</p> <p>Each Regional Entity has a FERC-approved regional standard development procedure. Embedded in the regional standard development process, a region seeking approval of a regional reliability standard must justify the need for the standard. It is incumbent on those that participate in the regional standards development process to determine the need to expend resources on developing a standard</p>



as they deem appropriate. Each of the regional standards development procedures mandates a fair and open process for the development of standards. As such any interested party in the region should have a voice in which standards development projects are pursued and which standards are not. NERC cannot require a Regional Entity to justify a regional standard before it is developed.

Also, please see the "Fill-in-the-blank Standards" section of this Volume I for additional information related to fill-in-the-blank standards.

With respect to your comment regarding regional differences, we respectfully disagree with the assertion that only after national balloting will the need for a regional difference be known. It is optimal for all regional differences to be identified whether as part of the continent-wide standards development process or as part of a regional standards development effort prior to the continent-wide standard being balloted.

#### Comment 9

**Name:** Jason Marshall

**Organization:** Midwest ISO

**Suggestion or Comment:** NERC should sponsor an industry triage of the standards to identify the core requirements and flag those that are minutia. This will allow all of industry (NERC, Regional Entities and Registered Entities) to focus resources on what will support reliability rather than push paper to demonstrate compliance with requirements that don't support reliability.

**Example:** A simple example is the DCS. The true core requirements are to recover from all reportable events in 15 minutes and replenish reserves in 90 minutes thereafter. The rest of the Requirements are an explanation of what that means, how it's handled in a Reserve Sharing Group and also the procedural reporting items. However, we are now moving down a path to assign measures and sanctions to 20 different things in this standard.

**Recommendation for improvement:** A first step for any standards improvement effort would be the creation of a database companion to the standards. This would not only be a platform to capture the triage comments, the database could be used by registered entities to identify all the requirements that apply to them. Presently, it is impossible to say with assurance you have found all applicable requirements. For example, there are several cases where an entity is mentioned in a requirement, but that entity is not identified in the "applicability" section of the standards. In addition, the database would help to identify where there are redundant requirements in multiple standards and help to eliminate these redundancies and streamline the standards.

Once you have the triage complete, format changes are just a matter of programming.

If you look at the present V0 and V1 standards, many things labeled as requirements are actually criteria, procedures, administrative directions and explanatory text.

As an example of what can be done to improve the final format after the triage, refer to Europe's Policy 1 at: <http://www.ucte.org/resources/publications/ophandbook/>

The bullets in their policies are broken into a few categories:

- C for Criteria (goals and background of the standard)
- R for Requirements (generally attributes that are yes/no go/no-go)
- S for Standards (things measured on a scale)

- P for Procedures (administrative information)
- G for guides (while we have moved away from guides, the issue still remains what to do with the good practices that are being lost from institutional memory)

If there is information beyond this, it is likely reference information and should be moved to an appendix in the standard (using A for paragraph numbers).

The benefit in making such a format change is that the industry can focus on those things that are important for reliability. It also allows NERC and the Regions to focus on the important things.

Compliance elements would be applied to the requirements and standards. There still could be notification to regulatory bodies on procedural deficiencies.

This is not a suggestion for any change to content in the standards, just a reformatting.

**NERC Response:**

In response to your recommendation (as well as similar recommendations from others) we have added Project 2010-06 Results-based Reliability Standards to the *Reliability Standards Development Plan: 2010-2012* for a project focused on:

- triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,
- developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,
- promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and
- revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.

**Project Number(s):** Project 2009-04, Project 2011-01

**Project Title(s):** Phasor Measurement Units, Equipment Monitoring and Diagnostic Services

**Suggestion or Comment:** Project 2009-04 Phasor Measurement Units - While Midwest ISO supports continued and expanded use of PMUs, we believe that any standard developed should be a technical standard that facilitates a common implementation.

Project 2011-01 Equipment Monitoring and Diagnostic Services - While this project has some merit, it needs to be prioritized among all of the existing on-going standards work. There does not appear to be an overwhelming industry need to implement this standard to prevent the next system disturbance. One could even argue this standard is not about improving BES reliability because the BES must already be operated to withstand the next contingency.

**Recommendation for improvement:** Ensure the SAR for Project 2009-04 proposes to develop a technical standard only. Delay Project 2011-01 indefinitely until all version 0 standards have been approved by FERC with no additional revisions required. Then evaluate to determine if it is needed for reliability.

**NERC Response:**

With respect to your comment regarding Project 2009-04 Phasor Measurement Units the following item has been added to the Issues Database to be addressed by the standard drafting team responsible for revising the standard:

Source: Jason Marshall (Midwest ISO) as input to the Reliability Standards Development Plan:2010-2012

Project No.: 2009-04 Phasor Measurement Units

Language: While Midwest ISO supports continued and expanded use of Phasor Measurement Units, we believe that any standard developed should be a technical standard that facilitates a common implementation. Ensure the SAR for Project 2009-04 proposes to develop a technical standard only.

With respect to your comment regarding Project 2011-01 Equipment Monitoring and Diagnostic Services, the priority of this particular project remains relatively low in the revised Reliability Standards Development Plan.

**Comment 10**

**Name:** Jianmei Chai

**Organization:** Consumers Energy Company

**Suggestion or Comment:** When there are revisions to the NERC Glossary of Terms (Glossary), NERC should notify stakeholders of the change. New or revised terms are not added to the Glossary until they are approved by the NERC Board of Trustees. However, due to the volume of standards that go through the Standard Development Process, providing notice to stakeholders when the Glossary is revised provides the opportunity to validate that stakeholders are, in fact, adhering to the appropriate definitions. This is especially important with regard to revised terms. Currently, NERC provides notice to stakeholders for ballot results and when Standard Authorization Requests (SARs) and proposed Standards have been posted for comment. However, to our knowledge, no notice is provided when the Glossary is revised.

With regard to the Glossary itself, we offer the following suggestions:

- 1) Glossary terms should reference the Standards to which they apply. Not only would this be helpful in identifying how stakeholders should revise their compliance process, it would assist the Standards Drafting Teams, because they are required to determine if any existing Standards would be affected by a revision.
- 2) Clean and redline versions of the Glossary should be posted to allow stakeholders to more accurately track revisions.
- 3) Regional terms should state the region(s) to which they apply. This is especially important with respect to terms that subsequently may be incorporated into another region's Standards or into national Standards, particularly since stakeholders outside the region associated with the specific term(s) generally would not have had an opportunity to comment, except when the Regional Standard is posted for ballot at NERC.
- 4) Each Glossary term should appear in at least one Standard. We have identified terms that are not associate with any Standard.
- 5) When a term is revised, an effective date should be noted, as well as a termination date for the old definition.
- 6) Historical versions of the Glossary should be readily available on the NERC web site.

\*\*\*\*\*

In addition, we suggest that Requirements NOT include reporting data for compliance monitoring (this

should be in Measures), but only include data reporting where the data is used by the recipient for other reliability purposes. In other words, providing data to the RE periodically to demonstrate compliance should be a measure, but providing data to the RE periodically for RE model development should be a requirement.

**NERC Response:**

With regard to your first suggestion that NERC should notify the industry when a change is made to the NERC Glossary of Terms Used in Reliability Standards, NERC staff appreciates your concern and has begun revising our internal process by modifying our announcements to notify stakeholders when the NERC Board of Trustees approves a new/revise/delisted definition.

With regard to your additional suggestions:

1. While this would be "nice" it is not "necessary." Each time a defined term is used in a reliability standard, the term is capitalized to indicate that the term uses the definition found in the glossary. If a drafting team proposes revising a standard, then the team must search all standards approved by the Board of Trustees and determine, with stakeholder feedback, if the modification to the term would adversely impact any of the already approved requirements. (You can see an example of this with the current posting for Project 2007-17 - Protection System Maintenance and Testing - the team is proposing to change the definition of Protection System and has provided a table with every instance where the term is used in an approved standard.)
2. While this would be "nice" it is not "necessary." The value of tracking past versions isn't clear.
3. We agree. The current version of the Glossary of Terms in Reliability Standards does not embed any regional definitions in the set of continent-wide definitions. In the future, additional sections may be added to the Glossary of Terms in Reliability Standards to provide a place to identify definitions that were developed and approved through a regional standards development process and approved by the NERC Board of Trustees.
4. We agree. We are unaware of any terms that aren't in any standards. Please forward the terms that you have discovered are no longer needed.
5. This is a good suggestion and can be adopted moving forward - however making this retroactive to provide the initial date for all terms would be labor intensive and isn't "necessary."
6. Because the glossary is updated after most Board of Trustee meetings, this would require retaining many versions of the glossary, and the benefit isn't clear.

**Comment 11**

**Name:** James H. Sorrels, Jr.

**Organization:** American Electric Power

**Reliability Issue:** With the addition of increasing volumes of new generation types and the current use of fossil fuel generation characteristics for such units, the accuracy of state estimator models are being adversely impacted.

**Suggestion or Comment:** Establish a Standards Drafting Team to address this reliability concern.

**Example:** Wind generators do not follow the typical reactive curves attributed to fossil fuel generator units. In fact, some types of wind units do not produce reactive support, while the state estimator model is reflecting that it does produce reactive support. Fossil fuel units produce dynamic reactor capability, while wind generators can be a combination of dynamic and static capability.

**Recommendation for improvement:** The developed standard, when effective, will improve the accuracy of state estimator models.

**NERC Response:**

[Project 2009-02 Real-time Tools](#) was initiated this year the Purpose of which states:

“The new standard or standards will establish requirements for the functionality, performance, and management of Real-time tools for Reliability Coordinators, Transmission Operators, and Balancing Authorities for use by their System Operators in support of reliable System operations.”

Please monitor and/or participate in this project to the extent possible with respect to the issue raised above. To encourage the drafting team to consider your concern we have added your issue to our Issues Database associated with the project.

**Comment 12**

**Name:** Laura Lee

**Organization:** Duke Energy

**Suggestion or Comment:**

#1 There are requirements in standards, and standards themselves, that do not clearly ensure the reliability of the bulk power system. Unnecessary requirements are detrimental to the reliability of the BES because they divert entities' resources from focusing on the core actions that are truly essential to maintaining reliability. In addition, there are so many standards development projects currently active that entities are devoting resources to, the industry has little time to reflect and identify what gaps may exist in the reliability standards or formulate recommendations for eliminating those gaps. The Reliability Standards Development Plan: 2009-2011 does not clearly identify the top few priorities and how the projects in the plan support those priorities.

#2 Development of regional standards in parallel with development of a continent wide standard on the same subject results in inefficiency.

#3 There appear to have been more interpretation requests than were anticipated in the past year, and it is reasonable to expect this trend to continue. There is currently not a process to control the amount of resources that are devoted to developing reliability standards interpretations.

**Recommendation for improvement:**

#1 Duke advocates pausing non-essential standard development activity in order for NERC to engage the industry in an effort to identify the standards and requirements that are truly essential for maintaining an adequate level of reliability of the BES. This could take the form of a "clean slate" approach, similar to the effort underway prior to development of the version 0 standards to define about 13 core standards, or a stop/start/continue review of the current slate of standards and requirements. The Standards Committee would be a logical lead for this effort, providing directional definition in addition to their process leadership. The result should be a clearly articulated vision of where the reliability standards development efforts need to be applied, a plan to achieve that vision and an explanation of how each project in the plan supports that vision.

#2 Regional standard development needs to be more closely coordinated with continent wide standard development.

#3 Either more allowance needs to be given in the subsequent Reliability Standards Development Plan

for the actual and anticipated increase in reliability standards interpretation requests by deferring the commencement of projects that have not been started or the process needs to be streamlined while still including industry input. A prioritization/classification effort as proposed in recommendation #1 above that resulted in fewer and more focused requirements would have the added benefit of reducing the volume of interpretation requests.

**NERC Response:**

#1 In response to your recommendation (as well as similar recommendations from others) we have added Project 2010-06 Results-based Reliability Standards to the Reliability Standards Development Plan: 2010-2012 for a project focused on:

- triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,
- developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,
- promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and
- revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.

#2 There are currently four continent-wide projects which may or may not require each regional entity to develop companion regional standards:

- Project 2007-01 Underfrequency Load Shedding
- Project 2007-05 Balancing Authority Controls
- Project 2007-11 Disturbance Monitoring
- Project 2010-05 Protection Systems (as identified in Volume II of *Reliability Standards Development Plan: 2009-2011*)

Three of the four corresponding continent-wide projects are well underway (those being Project 2007-01 Underfrequency Load Shedding, Project 2007-05 Balancing Authority Controls, and Project 2007-11 Disturbance Monitoring) and at this point in time may not even require regional standards. The fourth continent-wide project (Project 2010-05 Protection Systems) has yet to be initiated and it is unknown to what degree regional standards will need to be developed.

NERC standards staff is in regular contact with the individuals at each of the Regional Entities responsible for developing regional reliability standards. Coordination of the four projects referenced above is ongoing. In many instances, the Regional Entity has decided to commence work on the four 'fill-in-the blank' standards in order to be able to better coordinate the development of the regional standard with the development of the continent-wide standard. This actually is to the benefit of those entities in the region affected by the standard.

Each Regional Entity has a FERC-approved regional standard development procedure. Embedded in the regional standard development process, a region seeking approval of a regional reliability standard must justify the need for the standard. It is incumbent on those that participate in the regional standards development process to determine the need to expend resources on developing a standard as they deem appropriate. Each of the regional standards development procedure mandates a fair and open process for the development of standards. As such any interested party in the region should have a voice in which standards development projects are pursued and which standards are not. NERC cannot require a Regional Entity to justify a regional standard before it is developed.

#3 We appreciate your concern related to the process of developing interpretations. This topic is one of many topics currently being vetted by the members of the NERC Standards Committee and your

concerns are more appropriately addressed in that venue.

### Comment 13

Name: Michelle Rheault

Organization: Manitoba Hydro

#### Suggestion or Comment:

Over the past few years, there has been a modest improvement in the quality of some reliability standards. Manitoba Hydro would like to encourage NERC to continue its efforts at improving existing standards.

Manitoba Hydro is not satisfied with the Standards Under Development (SUD) 2009-2011 Plan. Many of our comments below mirror those previously provided to NERC from industry participants (Appendix A of the 2009-2011 plan). The fact that comments from previous years have not been addressed seems to indicate that the commenting process is a formality that consumes scarce entity resources with little reward for the effort. Nevertheless, we feel it is important to continue voicing our concerns.

We believe that the three issues outlined below are key to improving the SUD plan.

#### 1. Standard Quality

Manitoba Hydro feels that standard quality is vital to the reliability of the BES. More standards do not lead to better reliability; rather, this is achieved by fewer high-quality standards that focus on essentials for reliability.

As per the Standard Development Plan (Volume I, page 8), "Order No. 672 provides guidance on the factors the Commission will consider when determining whether proposed reliability standards meet the statutory criteria." It states that standards must be "clear and unambiguous." We recommend that this guidance be used to develop a method to measure the quality attributes of a standard. This would allow industry and NERC to determine when they are satisfied with a standard and can move on to allocating resources to create new standards. The number of Requests for Interpretation put forth by industry is an indication that there are many standards which are neither clear nor unambiguous.

#### 2. Project Prioritization

Manitoba Hydro believes that in order to best improve the reliability of the BES, NERC needs to change the way it prioritizes projects.

New projects are questionable given the greater need to improve the clarity of existing standards that are already auditable. Some proposed projects may be a good idea, but are not an immediate necessity for BES reliability and dilute the resources available to more critical projects. Some examples from the 2009-2011 plan include:

- Project 2009-04 Phasor Measurement Units
- Project 2010-01 Support Personnel Training
- Project 2011-01 Equipment Monitoring and Diagnostic Devices
- Project 2009-02: Real-time Tools

Prioritization can be improved by developing a priority ranking tool. The Blackout report is getting stale as a source of priority in a changing environment. In developing the ranking tool, Manitoba Hydro has several suggestions to improve the prioritization of projects:

- Survey the industry to obtain an indication of the greatest need for the reliability standards.



Focus on value added projects where deficiencies clearly exist today.

- Focus on cleaning up existing standards, rather than merging multiple standards, which requires significantly more effort to achieve a “clear and unambiguous” result.
- Limit the number of standards involved in the standards under development process: This type of limit would prevent the plan from using too many resources. Unless there is a high priority for it, new projects should not be added to the plan or started until old projects are finished. As an example, there are still nine projects initiated in 2006 which have not been completed, while limited NERC and industry resources are assigned to the start of 2009 projects.
- Do not create new standards which duplicate what is already found in other standards and only serve to prescribe the method to meet the original requirement. If requirements are clear and unambiguous, any method used by entities to comply with the standards will be appropriate and mitigate risk to the BES.
- Low-priority projects should not be scheduled for future years, but rather put on a to-do list which can be reviewed when resources are available.
- Develop a risk profile for the entirety of NERC Standards. NERC needs a more holistic approach to risk management. While VRFs identify risk for each requirement and are used for enforcement purposes, they do not lend themselves to a “big picture” assessment of risk and comparison of standards on a risk basis. Selecting projects for the current work plan based on the associated risk to the BES is very difficult using the VRFs. The Standards Committee should develop a risk profile that effectively compares standards on a risk basis and facilitates the targeting of activities on those key standards that mitigate the greatest risk to the reliability of the BES.

### 3. Management of the Plan

Like any project, the Standard Under Development plan must be properly managed. This includes three components as outlined below:

- **Resourcing**

There are currently too many projects drawing on limited industry resources for both participation on drafting teams as well as commenting and voting on standards under development. An excessive number of projects may result in industry fatigue in the standards development process. If fewer requests for comments were sent out, the quality of the feedback received would be higher, which would lead to better quality standards.

The SUD Plan must reflect the need for resources to focus on interpretation requests which come up during the year. The number of interpretations will not decrease until existing standards are updated to improve clarity and measures of compliance. Hence, this should be the focus of activities in the short term.

- **Cost**

NERC should publish the cost of the SUD program implementation, so that industry can weigh the benefits of new projects versus the cost of implementing them.

- **Metrics**

There is a need for metrics to evaluate the standards development process in order to understand how long it takes to complete a project and how many can be completed per year in order to better plan future work. Past performance is an indication of future performance; therefore, plans should not encompass more work than has been shown to be completed in the past. For example, only one project identified in the 2008-2010 plan has been completed, but four projects have been added. The concern is that as more projects are added than completed,



the plan will become unachievable and projects that actually improve reliability will not be completed.

These metrics should be published in the Standards Development Plan in an easy to understand format (tables, graphs, etc) to demonstrate what is achieved from year to year and predict what is achievable for future years. Possible metrics include:

- Number of projects completed each year
- Number of projects added each year
- Number of projects failed/withdrawn each year
- Number of projects rescheduled to future years
- Average time to complete a project
- Number of new requests for interpretations each year
- Summary of what phase the projects are at (i.e. percent started, percent voted on, percent waiting for BOT approval, etc)

#### NERC Response:

##### 1. Standard Quality

In response to your recommendation (as well as similar recommendations from others) we have added Project 2010-06 Results-based Reliability Standards to the Reliability Standards Development Plan: 2010-2012 for a project focused on:

- triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,
- developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,
- promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and
- revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.

##### 2. Project Prioritization

The concept of project prioritization is paramount to a successful reliability standards development plan. A high priority project in the eyes of one entity might not be in the eyes of another entity. NERC staff coordinates all standards development activities through the NERC Standards Committee. In compliance with the *NERC Reliability Standards Development Procedure*, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. NERC staff works with the NERC Standards Committee to identify the projects of highest overall industry importance before working on lower priority projects. In fact, the Standards Committee Process Subcommittee is currently discussing methodologies for prioritizing standards development projects. We encourage your company's participation on that subcommittee.

##### 3. Management of the Plan

- Resourcing

NERC appreciates the industry resources necessary for the development of quality standards and is cognizant of the fact that industry resources are not limitless. NERC staff coordinates all standards development activities through the NERC Standards Committee whose membership consists of industry representatives. In compliance with the NERC Reliability Standards

Development Procedure, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. NERC staff facilitation of the standards development process in coordination with the Standards Committee takes into consideration the potential impact on industry resources when planning standards related projects and activities. Specific comments in how this Reliability Standards Development Plan could be modified to more effectively use industry resources are welcome.

- **Costs**

The costs of the NERC Standards program are detailed in the [NERC Business Plan and Budget](#).

- **Metrics**

A set of metrics related to the length of time to complete a standards development process was provided in Appendix A to Attachment 1 of the [Three-Year Electric Reliability Organization Performance Assessment Report](#).

#### **Comment 14**

**Name:** Standards Review Subcommittee

**Organization:** North American Energy Standards Board

#### **Suggestion or Comment:**

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

Comment - NAESB completed its original work under FERC Order 890 for ATC, TTC, CBM, and TRM, which was coordinated with NERC. In the NERC NOPR related to this project there was the identification of potential for additional work. NAESB requests that NERC continue to coordinate and notify NAESB if there are any addition changes to the NERC standards affected under this project which could have an impact on the NAESB Business Practice Standards.

A potential area of additional coordination between the NERC drafting team and NAESB's WEQ ESS/ITS may arise in the handling of designation and undesignation of network resources under NAESB WEQ 2009 Annual Plan item 3.a.i "Group 3: Network Service On OASIS." The ESS/ITS is developing business practice standards for Network Service on OASIS, that include OASIS formats and requirements for capturing information on designation and undesignation of network resources. The information captured in the NAESB standards may provide useful data for inter-BA communication of resource allocations.

2006-08 Transmission Loading Relief

Comment - This project has ongoing coordination with NAESB since it directly impact the NAESB Business Practice Standard WEQ-008 (Transmission Loading Relief - Eastern Interconnection). NAESB expects this coordination will continue as the project moves forward.

2007- 05 Balancing Authority Control

This project is currently being coordinated with the NAESB Time and Inadvertent Management Task Force. Changes to the NERC standards may have an impact on the NAESB Business Practice Standards WEQ-006 (Time Error Correction) and WEQ-007 (Inadvertent Interchange Payback). We request that the Reliability Standards Development Plan continue to reflect that the project be coordinated with NAESB and reference the NAESB WEQ 2009 Annual Plan Items:

1.d Time Error and Inadvertent (BAL-004 and BAL-006) Coordination with NERC

1.e DCS and AGC (BAL-002 and BAL-005) Coordination with NERC



**2007-18 Reliability Based Controls**

Comment - The Joint Interchange Scheduling Working Group in first quarter 2009 reviewed EOP-002 and determined that there should be some level of coordination between NERC and NAESB. As a result of this review the NAESB WEQ 2009 Annual Plan item (3.a.viii) "Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6" was added. We request that this project reference that coordination between NERC and NAESB needs to occur and the cross reference to the NAESB WEQ 2009 Annual Plan item be added in the 2010-2012 Reliability Standards Development Plan.

**2008-12 Coordinate Interchange**

Comment - The Joint Interchange Scheduling Working Group in first quarter 2009 reviewed EOP-002 and determined that there should be some level of coordination between NERC and NAESB. As a result of this review the NAESB WEQ 2009 Annual Plan item (3.a.viii) "Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6" was added. We request that this project reference that coordination between NERC and NAESB needs to occur and the cross reference to the NAESB WEQ 2009 Annual Plan item be included in the 2010-2012 Reliability Standards Development Plan.

**2009-03 Emergency Operations**

Comment - This project indicates that it will affect EOP-002-2. As a result of the Joint Interchange Scheduling Working Group's review of EOP-002-2 R4 and R6 and the issues noted in the project could affect R6 this project should be coordinated with NAESB and reference the NAESB WEQ 2009 Annual Plan item (3.a.viii) "Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6."

**2009-05 Resource Adequacy**

Comment - NAESB created Provisional Item 1 "Develop and or modify business practices related to support of NERC effort on the NERC Resources and Transmission Adequacy (Project 2009-05 Resource Adequacy Assessment)" in its NAESB WEQ 2009 Annual Plan. We are requesting that this project be noted as one which may require coordination with NAESB.

**Reliability Issue:** Gas/Electric Coordination

**Suggestion or Comment:** Coordinate with NAESB to determine if some or all of the requirements contained in the NAESB Business Practice Standards WEQ-011 (Gas/Electric Coordination) should be transitioned to NERC.

**Example:** Refer to WEQ-011-1.3 through WEQ-011-1.6

**Recommendation for improvement:** The WEQ-011 was developed so that entities received critical notices from gas Transportation Service Providers, such that the Power Plant Operators were notified of material changes in circumstances that may impact hourly flow rates. The ISO/RTOS and/or BAs, and/or Power Plant Operators are to develop procedures when extreme conditions occur. These NAESB standards appear to be of a reliability nature rather than commercial. NERC and NAESB should review the standards to determine if all or part of WEQ-011 should be transitioned to NERC.

**NERC Response:**

[NERC believes that continued coordination with NAESB is an important component of bulk power](#)



operations, and remains committed to work with NAESB as needed.

With regard to project 2006-07 Transfer Capabilities, NERC will work with NAESB to ensure that any changes to these standards, directed by the Commission in its final rule or otherwise, will be coordinated between the two organizations. NERC will add a statement to this effect in our Plan.

With regard to projects 2006-08 Transmission Loading Relief, 2007-05 Balancing Authority Controls, and 2008-12 Coordinate Interchange, NERC will add statements to our Annual Work Plan about NERC/NAESB Coordination.

Regarding Projects 2007-18 Reliability Based Controls, 2009-03 Emergency Operations, and 2009-05 Resource Adequacy, NERC agrees that continued coordination with NAESB is important and work with NAESB as needed to ensure our work products are complementary. Should any changes to standards occur related to these projects that have business practice implications, NERC will work to coordinate with NAESB. If the NAESB SRS is aware of proposed changes that they feel would impact business practices, please advise the NERC Manager of Business Practice Coordination.

As far as Gas/Electric Coordination, NERC appreciates this suggestion, and welcomes further discussion related to this item. NERC suggests that one or more members of the NAESB SRS develop a NERC Standards Authorization Request that proposes this transfer, at which point NERC can establish a team of industry representatives to work with the requester(s) and discuss this item in depth.

## Comment 15

**Name:** Stephanie Monzon - Regional Reliability Standards Working Group  
**Organization:** NERC, RFC, MRO, WECC, NPCC, SPP, TRE, SERC, FRCC

### Suggestion or Comment:

- The process for updating the NERC Workplan should begin with industry input prior to posting the workplan. The current process posts the existing, approved version of the work plan to solicit industry input. Instead, NERC staff should conduct an industry webinar to collect initial thoughts followed by a posting of the revised version of the workplan.
- A status of the existing approved projects in the workplan should be provided as reference material to the industry either during the webinar or before the posting to facilitate the commenting process. The status of the existing projects will provide the industry with an understanding of how many projects are still open, nearing completion, or completed.
- In 2006 the RRSWG assisted in the development of the original Work Plan by performing a sweeping assessment of the "fill in the blank" standards. It provided as input to the Plan recommendations on how the "fill in the blank" characteristics could be eliminated by modifying then existing standards and set forth the possibility of the need for stand-alone regional standards or regional standards in support of continent wide standards. Since that time the UFLS and DM SDTs have been formed and posted at least one draft of the respective standards. Both drafting teams are proposing continent wide requirements/ standards in these subject areas. Given the evolution of standards development the original RRSWG recommendations should be deleted from the Work Plan. Regarding the remaining fill in the blank standards (SPS and BAL) the NERC standards projects are either in the infancy stages of development or have not commenced. The RRSWG recommendations to create regional standards in these areas should be considered "on hold" until the drafting efforts have matured and a technical determination can be made for the need of regional standards that includes consideration by the Regions and NERC.

**Recommendation for improvement:** - Conduct a webinar or other similar activity to get initial suggestions for the next version of the workplan instead of posting the existing version of the workplan. This should be followed by the first posting of a revised workplan.

- Provide the industry with a status of the existing projects in the work plan
- Remove the RRSWG recommendations for the UFLS and DME standards and place "on hold" the recommendations for SPS and BAL fill in the blank standards.

### NERC Response:

- [Conduct a webinar...](#)

[Thank you for your comment. We will consider incorporating your suggestion into next year's project for revising the \*Reliability Standards Development Plan\*.](#)

- [Provide the industry with a status ...](#)

[Links to the current project schedule for each of the active projects are provided at the end of each project description in Volume II of the Reliability Standards Development Plan. The on-line project schedules are updated monthly and should provide the level of detail you suggest in your comment above.](#)

- [Remove the RRSWG recommendations for the UFLS and DME standards and place "on hold" the recommendations for SPS and BAL fill in the blank standards.](#)

[The recommendations of the RRSWG are noted in the Issues Database and do not need to be removed](#)

at this time. The recommendations will be treated as any other recommendation in the database in that the standard drafting team working on the applicable standard will consider the recommendation but is not obligated to implement the recommendation. Maintaining it in the Issues database ensures that the recommendation is tracked and not lost in the standards development process.

**Comment: 16**

**Name:** Wayne Pourciau

**Organization:** Georgia System Operations Corp.

**Reliability Issue:** Interfering with compliance and enforcement of requirements essential for reliability

**Suggestion or Comment:** There are a number of requirements that are not essential to the reliability of the bulk power system (e.g., needed to prevent cascading outages). These requirements interfere with compliance by reliability entities with requirements essential to reliability and interfere with compliance enforcement by regional entities of those essential requirements. There is a need to place primary focus on the essential requirements. Reporting and other lesser requirements should be a secondary focus and only as long as they do not take away the focus on the essential requirements.

**Example:** BAL-006-1, R5: "Adjacent Balancing Authorities that cannot mutually agree upon their respective Net Actual Interchange or Net Scheduled Interchange quantities by the 15th calendar day of the following month shall, for the purposes of dispute resolution, submit a REPORT to their respective Regional Reliability Organization Survey Contact. The REPORT shall describe the nature and the cause of the dispute as well as a process for correcting the discrepancy."

This reporting is not a reliability requirement. A reliability requirement is one that focuses on operating the elements of the BES within system thermal, voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a result of a sudden disturbance or unanticipated failure of system elements. A reliability requirement deals with the operation and maintenance of BES facilities and the design of planned additions or modifications to such facilities to the extent necessary to provide for reliable operation of the BES. The example above is an administrative requirement. It does not deal with current or future operation of the BES.

The reporting requirements of EOP-004, other than those relating to physical and cyber threats and attacks, are some more examples. These deal with information on past events (water under the bridge) and do not deal with operating the BES. This reporting is needed by NERC to investigate incidents, collect statistics on incidents, and other purposes relating to overseeing reliability (but such reporting is not needed for operating the BES).

Another example is TOP-005-1.1, R2 "As a condition of receiving data from the Interregional Security Network (ISN), each ISN data recipient shall sign the NERC Confidentiality Agreement for "Electric System Reliability Data." " This is not a reliability requirement.

**Recommendation for improvement:** Review all existing FERC approved Reliability Standards to eliminate Reliability Standards that are not essential to the reliability of the bulk power system (e.g., needed to prevent cascading outages). Reduce less significant Reliability Standards to a lesser category, such as operating guides, policies or criteria and remove documentation related requirements from the requirements of Reliability Standards. Move documentation related requirements to compliance measures or some other component of the Reliability Standards. This is a high priority along with eliminating duplicative requirements, making existing requirements more clear, and securing the nation's electric system from attacks.

Although the reliability of the electric system in the United States and Canada is one of the most (if not THE most) reliable system in the world, it is always good to keep improving. However, NERC projects aimed at adding requirements to try to improve the reliability of the system are a lower priority at this time than the high priorities listed above. Fixing the existing standards is the best way to improve reliability and improve the monitoring and enforcement of the essential requirements. Adding more requirements to try to improve reliability should be pursued only as time and available resources allow.

**NERC Response:**

In response to your recommendation (as well as similar recommendations from others) we have added Project 2010-06 Results-based Reliability Standards to the *Reliability Standards Development Plan: 2010-2012* for a project focused on:

- triaging the existing standards to identify those requirements that directly impact reliability, those that are of secondary importance, and those that shouldn't be requirements at all,
- developing performance-based requirements to fill any missing reliability objectives noted in the gap analysis,
- promoting and refining performance-based requirements in the existing reliability standards so as to preserve and enhance their value, such as improved clarity and measures, and
- revising existing prescriptive requirements to be more performance-based if practical and beneficial to reliability.

<b>Comment 17</b>
<b>Name:</b> Phillip R. Kleckley
<b>Organization:</b> SERC EC Planning Standards Subcommittee (PSS)
<b>Standard:</b> FAC-001-0 - Facility Connection Requirements
<b>Element(s) (i.e., Requirement R1.2., Measure M2., etc.):</b> R1.3. End-user facilities
<b>Suggestion or Comment:</b> add a definition of "end user" to the NERC Glossary
<b>Project:</b> 2010-02 Facility Connection Requirements
<b>Additional Information:</b> The recommendation was received as part of the comments on Question 3 of the comments form for the "Draft Revision 6 of the SERC Facility Connection Requirements (FCR) Guideline".
<b>NERC Response:</b>
Due to your comment above the following item has been added to the Issues Database to be addressed by the standard drafting team responsible for revising the standard:
Source: Phillip R. Kleckley (SERC EC Planning Standards Subcommittee (PSS)) as input to the Reliability Standards Development Plan: 2010-2012
Project No.: 2010-02 Facility Connection Requirements
Language: Consider adding a definition of "end user" to the NERC Glossary. (Note: This recommendation was received as part of the comments on Question 3 of the comments form for



**Comment 18**

**Name:** John Ciugo

**Organization:** NERC System Protection and Control Subcommittee (SPCS)

**Standards:**

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations
- PRC-012-0 — Special Protection System Review Procedure
- PRC-016-0.1 — Special Protection System Misoperations

**Suggestion or Comment:** The NERC System Protection and Control Subcommittee (SPCS) recommends creation of a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016

Consistent with the attached Standard Authorization Request (see Attachment 1) and Technical Review of Standards Prepared by the System Protection and Controls Subcommittee of the NERC Planning Committee dated May 2009 (see Attachment 2).

**NERC Response:**

In response to your comment we have modified Project 2010-05 Protection Systems in to the *Reliability Standards Development Plan: 2010-2012* to consider the recommendations of the NERC System Protection and Control Subcommittee as identified in the Technical Review of Standards Prepared by the System Protection and Controls Subcommittee of the NERC Planning Committee dated May 2009.

**Comment 19**

**Name:** Wayne E. Guthrie

**Organization:** Construction Specialty Services, Inc. & Critical Systems, LLC

**Standard:** ANSI NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations

**Reliability Issue:** Physical fire and blast protection of electrical transformers and other essential equipment, buildings and people located in power generation, transmission or distribution system locations.

**Suggestion or Comment:** Adopt a NFPA-850, which is a recommended fire protection practice for the power generation industry.



Example: If there is a catastrophic failure of a transformer it can shut down a site for an indefinite period of time for repairs or replacement of equipment and facility. In the US there exists an aging fleet of transformers that are becoming more unreliable everyday because of age and lack of maintenance. In addition, many power companies build new facilities without thought to protection of their assets. As an example, it requires between 24 and 48 months to receive a new replacement transformer, if it fails beyond repair. In addition, placing fire & blast rated barriers between transformers and also have in place a functioning transformer oil collection and containment system in accordance with FM Global recommendations can mean the difference between a single transformer failure incident and a catastrophic incident. There are also issues with where the generation transformers sit relative to the turbine building, that if a fire and or fire and blast event initiated could potentially preclude population of the building and control room in order to shut down the unit (s).

Recommendation for improvement: Consider adopting existing standards of performance so that a committee would not have to be formed to write something that already exists.

Suggestion or Comment: NERC may want to consider inviting professionals involved in the fire and blast protection engineering and assessments fields to assist in development of standards of performance or protection in accordance with readily obtainable existing recommendations, standards and codes.

Example: Go to NFPA and ask for assistance or I could put NERC in contact with individuals that could place NERC in contact.

Recommendation for improvement: As I understand the only reference to physical protection is that NERC states that utility entities are obligated to physically protect critical equipment and is not specific in reference to the measures that should be considered to improve or provide protection. Unfortunately in the utility industry many companies have eliminated or otherwise do not possess within their ranks individuals educated in the realm of physical fire and blast protection methodologies that exist, or even have the knowledge base to self assess and identify the potential need for protection.

Additional information: If further information or discussion is required, please contact the writer:

Wayne E. Guthrie

Construction Specialty Services, Inc. & Critical Systems, LLC

502-231-2402

[wguthrie@cssi.win.net](mailto:wguthrie@cssi.win.net)

#### NERC Response:


In response to your comment we have added Project 2012-02 *Physical Protection to the Reliability Standards Development Plan: 2010-2012* for a project to consider the development of a NERC Reliability Standard related to physical protection of essential equipment, buildings and people located in power generation, transmission or distribution system locations.

#### Comment 20

Name: Barry Lawson

Organization: National Rural Electric Cooperative Association (NRECA)

Suggestion or Comment: The industry cannot continue, without an end in sight, to support the development of the number of standards included in the current Reliability Standards Development



Plan. During the past year there has been an average of 30 to 40 Standard Drafting Teams (SDTs) functioning all at the same time. With this many SDTs in place, the expertise in the industry that voluntarily staffs these teams is spread too thin. NRECA believes that at any one time there should be an average of 10-15 SDTs in place. These SDTs should be focused on standards that are the most critical the enhancing the reliability of the Bulk Power System (BPS). Reducing the number of SDTs in place at one time will help to ensure that the best quality standards are developed by:

-- helping to ensure the best quality SDTs by increasing the number of available industry stakeholders; and

-- helping to ensure that the right industry experts are reviewing the posted standards they are most knowledgeable about.

The bottomline is that not every standard can be a top priority. There is not an endless supply of industry resources to staff SDTs and to review proposed/revised standards, and therefore, the present pace of an average of 30-40 SDTs in place at one time is not sustainable without the possibility of negative impacts on standards development activities. To address this a significant and urgent effort needs to be expended to determine the most critical standards development activities that are needed to enhance the reliability of the BPS. From this effort, the 10-15 most critical standards should be determined and these should be the standards that SDTs are formed to address in a particular year.

In addition, there should be particular attention placed on completing the fill-in-the-blank standards since many of the approved standards refer to the fill-in-the-blank standards that have not been approved.

Finally, several months ago the NERC Standards Committee approved a "Roles and Responsibilities" document which addressed the appropriate roles for SDT members, NERC and FERC staff regarding standards development activities. NRECA supported the development of this important document and is not yet confident that NERC and FERC staff are consistently operating under the roles identified in the document. We see a need to ensure that all parties involved clearly understand their appropriate roles and responsibilities and that they work in such a manner.

We look forward to working with you to make sure these issues are fully addressed.

**NERC Response:** With respect to your comments regarding the industry's ability to support the development of the number of standards included in the current Reliability Standards Development Plan, NERC understands the amount of resources required (both industry and NERC specific resources) for the development of quality standards and is cognizant of the fact that industry resources are not limitless. NERC staff coordinates all standards development activities through the NERC Standards Committee whose membership consists of industry representatives. In compliance with the NERC Reliability Standards Development Procedure, the Standards Committee manages the NERC standards development process to achieve broad bulk power system reliability goals for the industry. NERC staff facilitation of the standards development process in coordination with the Standards Committee takes into consideration the potential impact on industry resources when planning standards related projects and activities.

With respect to your comment regarding fill-in-the-blank standards NERC staff is working with staff representing each of the Regional Entities to develop a plan to address the issues with the fill-in-the-blank standards in the interim prior to the completion of the continent-wide revision of the standards. The interim plan for addressing the fill-in-the-blank standards will not replace the projects already identified in Volume II of this plan but rather will propose a solution to address the shortcomings of the existing fill-in-the-blank standards until the continent-wide revision of the standards can take place. It is anticipated that the interim plan will involve the use the standards development process in order that industry stakeholders will be able to participate in the process as it evolves.

With respect to your comments regarding the "Roles and Responsibilities" document, NERC staff does adhere to the document as it applies to the development of standards using the Reliability Standards

## Development Process.

### Comment 21

Name: Ben Li

Organization: IRC Standards Review Committee (Group)

Suggestion or Comment: We applaud the staff and the Standards Committee for taking a new approach to developing the 2010-2011 standards development work plan. We see changes that are a positive first step toward arriving at a consolidated set of reliability standards of good quality all of which contribute to reliability. In particular, we are encouraged by some of the objectives listed:

- Addressing quality issues to ensure each reliability 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 reliability standards and follow definitions outlined in the reliability standards template.

- Reorganizing the reliability standards based on topic.

- Eliminating requirements that do not have an impact on bulk power system reliability;

retiring redundant requirements; retiring or converting (into guidelines) lower-level

“facilitating” requirements that are already measured through compliance with higher level

requirements; and moving basic “capability” requirements that are routinely used

for the certification processes.

We wish to express our strong support for the proposal to move toward developing the performance-based reliability standards. This work, together with improved standard quality, will give rise to a set of sustainable reliability standards which in our view will meet with FERC's acceptance and reduce the revision/maintenance requirements, reduce the number of requests for interpretation and even eliminate a good number of assessed violations owing to lack of clarity.

We are also pleased to see some general reduction in the number of projects planned for future years. However, recognizing that some existing standards are still being revised and some of them may be remanded by FERC when they are submitted for approval (as evidenced in past performance), we suggest the number of planned projects to be further reduced to provide a much needed “buffer” to respond to the FERC directives - not just for the remanded standards but also for any proposed new standards as initiated by the FERC and the industry. We suggest a reduction of the amount of standards in the plan based upon the historical increased workload from FERC remands of proposed standards so that the 3 year Work Plan schedule can be more closely adhered to.

### NERC Response:

Thank you for your support of Project 2010-06 Performance-based Reliability Standards (recently renamed to Project 2010-06 Results-based Reliability Standards).

With respect to your comment regarding reducing the number of projects in the plan, at this point in time it is not practical to do so for the reasons stated in the “Priority of Projects” section of this report which begins on page 9 of Volume I. Certain projects are required to be initiated in 2010 pursuant to the Rules of Procedure of the North American Electric Reliability Corporation which state in part “each reliability standard shall be reviewed at least once every five years from the effective date of the

standard or the latest revision to the standard, whichever is later." Making a conscious decision to ignore these projects would cause NERC to violate the Rules of Procedure which NERC staff is not willing to do. NERC staff will continue to work with the Standards Committee to coordinate the initiation of future standards development projects.

**Comment 22**

**Name:** John Brockhan

**Organization:** CenterPoint Energy

**Project Number(s):** 2012-01 / 2012-02

**Project Title(s):** Equipment Monitoring and Diagnostic Devices / Physical Protection

**Suggestion or Comment:** CenterPoint Energy appreciates the efforts of the NERC Standards Program in recognizing the need to focus efforts and prioritize projects having the greatest impact on reliability. To that end, we believe that the two projects currently scheduled to begin in 2012 should be further delayed indefinitely or at least until the next Standards Development Plan cycle so that projects currently underway and those projects scheduled to begin later this year and in 2010 may be farther along (or completed) before additional projects are initiated.

**Recommendation for improvement:** CenterPoint Energy recommends delaying Projects 2012-01 and 2012-02 indefinitely or into 2013 or later and re-evaluating the need to begin these projects during the drafting of the 2011-2013 Reliability Standards Development Plan. The assessment of any new proposed standards should emphasize whether there is a true reliability need, or is simply a business growth opportunity. Furthermore, we recommend that no new projects be added to future Standards Development Plans until already identified projects are completed.

**NERC Response:**

The concept of project prioritization is paramount to a successful reliability standards development plan. NERC staff coordinates all standards development activities through the NERC Standards Committee. NERC staff works with the NERC Standards Committee to identify the projects of highest overall industry importance before working on lower priority projects. The Standards Committee Process Subcommittee is also currently discussing methodologies for prioritizing standards development projects. Consideration of delaying the initiation of Projects 2012-01 and 2012-02 will be given as other higher priority projects are completed and new projects are identified.

**Reliability Issue:** A. Proposed 2010-2012 Standards Development Plan / Developing Results-Based Standards as presented by the Ad Hoc Group on Results-Based Standards

B. Load Serving Entity/Distribution Provider Issue

**Suggestion or Comment:**

A. CenterPoint Energy shares the views of many previous commentors that the number of existing reliability standards and requirements should be reduced to only those that truly impact the reliability of the Bulk Electric System (BES). CenterPoint Energy also agrees that new projects should be prioritized and only those that truly improve the reliability of the BES should be included in the Standards Development Plan and initiated.

CenterPoint Energy supports efforts to alter (or, move away from) the current environment of prescriptive and unnecessary process-based reliability standards and requirements. As presented in the

webinar on September 17, the Ad Hoc Group proposal is promising in that results-based standards would be more likely to improve the reliability of the Bulk Electric System. In the current environment, the standards include many requirements that are overly prescriptive and are not necessary for the reliable operation of the BES.

B. CenterPoint Energy is concerned that there appears to be a lack of interest in resolving the Load Serving Entity (LSE)/Distribution Provider (DP) issue. The Functional Model SDT remarked that the LSE/DP issue is not a Functional Model issue but one of registration and commented that NERC was to begin a project to resolve this issue. NERC indicated it would begin a project to address this issue through the Reliability Standards Development Plan. CenterPoint Energy failed to see such a project in this draft and believes it is an important issue with impacts to many entities.

Example: A. Underfrequency load shedding (UFLS) is an example of overly prescriptive requirements. PRC-007 requires consistency with Regional Reliability Organization's UFLS program requirements. There is also standard PRC-008 requiring preventive maintenance of UFLS components. If PRC-007 contained results-based requirements it would be sufficient to address the reliability need. As an entity worked to meet the performance criteria, concerns such as design, maintenance, testing, etc. would be addressed with a single standard.

Recommendation for improvement: A. Focus NERC and industry resources by accelerating Project 2010-06 Performance-Based Reliability Standards in the queue. The work of the Ad Hoc Group on Results-based Standards could serve as a foundation for the Project team's efforts.

B. Add an accelerated project in the 2010-2012 Standards Development Plan to resolve the LSE/DP issue.

#### NERC Response:

A) Thank you for your support of Project 2010-06 Performance-based Reliability Standards (recently renamed to Project 2010-06 Results-based Reliability Standards).

B) As stated in last year's plan regarding this issue:

The following description has been incorporated into the scope for affected projects in this revised *Reliability Standards Development Plan* that includes a standard applicable to Load Serving Entities:

**Source:** FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000

**Issue:** In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:

- FERC's December 20, 2007 Order ([http://www.nerc.com/files/LSE\\_decision\\_order.pdf](http://www.nerc.com/files/LSE_decision_order.pdf))
- NERC's March 4, 2008 (<http://www.nerc.com/files/FinalFiledLSE3408.pdf>),
- FERC's April 4, 2008 Order (<http://www.nerc.com/files/AcceptLSECompFiling->

[040408.pdf](#) ), and

- NERC's July 31, 2008 (<http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf> ) compliance filings to FERC on this subject.

This issue is best addressed on a case-by-case basis when an affected standard is opened for revision.

#### Comment 23

**Name:** Denise Koehn

**Organization:** Bonneville Power Administration

**Project Number(s):** 2008-12

**Project Title(s):** Coordinate Interchange Standards

**Suggestion or Comment:** BPA supports the consolidation effort currently underway in the drafting team's workload. BPA believes the consolidation described thus far will yield a more efficient demonstration of compliance with each requirement. The existing Standards require considerable duplication of explanation and documentation to prove compliance.

**Recommendation for improvement:** Continue with current effort.

#### **NERC Response:**

[Thank you for your support of Project 2008-12 Coordinate Interchange Standards.](#)

**Suggestion or Comment:** BPA agrees with the recommendations from other stakeholders that the industry should focus existing reliability standards and reliability standards development on areas that will lead to the greatest improvement in bulk power system reliability. BPA fully supports the suggestions that the industry should:

- (1) focus the development of new reliability standards on those that will lead to the greatest improvement in reliability; i.e., address the greatest risks of widearea cascading outages;
- (2) reduce the number of existing reliability standards to just those that have a critical impact on reliability of the bulk power system and convert the remaining reliability standards to guidelines; and
- (3) develop a more systematic process for prioritizing new reliability standards development projects based on risks to the bulk power system.

However, BPA feels that it is an aggressive schedule and will require considerable effort to accomplish as many items per year as scheduled. The industry needs improved, clear, concise Standards asap, but it is the same staff that is needed to work on the improvements for nearly each of the revisions. Really tough balancing acts to get everything accomplished within the timeframes.

#### **NERC Response:**

[Thank you for your support of Project 2010-06 Performance-based Reliability Standards \(recently renamed to Project 2010-06 Results-based Reliability Standards\).](#)

[We also appreciate your comment relative to the challenge we face for coordinating the implementation of Project 2010-06 Results-based Reliability Standards with the other standards development activities. It will be a challenge but one I'm sure NERC working with industry will be able to overcome.](#)



## Comment 24

**Name:** Ed Skiba, Co-chair, Narinder Saini, Co-chair

**Organization:** North American Energy Standard Board Wholesale Electric Quadrant Standards Review Subcommittee

**Suggestion or Comment:** Project 2006-08 Transmission Loading Relief - The Related NAESB Projects should be updated to reference the NAESB WEQ 2009 Annual Plan and the Annual Plan Item 1.b "Continuous support of TLR Procedure in alignment with NERC efforts on TLR Phase II and Phase III development." Additionally the reference to Annual Plan Item 1.d should be changed to 1.b under the section labeled SRS recommendation.

**Project 2007-05 Balancing Authority Controls** - The related NAESB Projects should be updated to reference the NAESB WEQ 2009 Annual Plan and the Annual Plan Items listed should include 1.d and 1.e. Under the SRS recommendation it should be noted that there is ongoing coordination between the BAC Standards Drafting Team and the NAESB WEQ Time and Inadvertent Management Task Force.

**Project 2007-18 Reliability-based Control** - Related NAESB projects should be updated to reference the NAESB WEQ 2009 Annual Plan and the Annual Plan Item listed should be 3.a.viii. Under the SRS Recommendation the language should be changed to indicate that the NERC/NAESB JESS has reviewed EOP-002-2 and identified that there is potential coordination opportunities.

**Project 2008-01 Voltage and Reactive Control** - The Related NAESB Projects should be updated to reference the NAESB WEQ 2009 Annual Plan. There is no need to change the Annual Plan Item Number. Under SRS Recommendation, the last sentence should be deleted since the project is now included on the NERC Standards Under Development webpage.

**Project 2008-12 Coordinate Interchange Standards** - The Related NAESB Projects should be updated to reference the NAESB WEQ 2009 Annual Plan. Additionally, the Annual Plan Items currently listed should be deleted and Annual Plan Item 3.a.viii should be added. Under the SRS recommendation it should state that the NERC/NAESB JESS was assigned an annual plan to "Review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6."

**2009-03 Emergency Operations** - The Related NAESB Projects should be updated to reference the NAESB 2009 WEQ Annual Plan. Additionally, the Annual Plan Item listed should be 3.a.viii.

**Project 2010-02 Connecting NeW Facilities to the Grid** - The Related NAESB Projects should be updated to reference the NAESB 2009 WEQ Annual Plan.

**Project 2010-Demand Data** - Suggest the following language be added:

**Coordination with NAESB:**

The NAESB WEQ Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

**Related NAESB WEQ Projects (See NAESB WEQ 2009 Annual Plan\_:**

**Annual Plan Item**

#### Justification for NAESB Consideration

NAESB has developed Demand Response Measurement and Verification standards and have additional annual plan items related to Demand Response.

#### SRS Recommendation

Since this project has not started the WEQ will add this project to its watch list.

#### NERC Response:

Thank you for your comments. Volume II of the *Reliability Standards Development Plan: 2010-2012* has been modified to reflect the suggested changes.

#### Comment 25

**Name:** Jack Cashin

**Organization:** EPSA

**Project Number(s):** 2010-06

**Project Title(s):** Performance Based Reliability Standards

**Suggestion or Comment:** Based on the presentation by Gerry Cauley during the webinar on Sept. 17th, it appears that a great deal of work related to this project is currently underway. What is not clear is the sectoral composition of the ad hoc group carrying out this work to be presented to the Standards Committee in November 2009.

**Recommendation for improvement:** While EPSA is generally supportive of the direction in which this ad hoc group appears to be headed, we are concerned about the lack of broad stakeholder representation. It would be our expectation, that once this work product is presented to the Standards Committee and before it is used in any standard development work, there will be an opportunity for substantive stakeholder review and comment.

#### NERC Response:

In August 2009 an ad-hoc group was organized made up of representatives from the Standards Committee, Regional Entity staff, and NERC standards staff for developing a plan for transitioning the exiting set of NERC reliability standards into a set of revised reliability standards. As of the middle of September the ad hoc group consisted of:

- Gerry Cauley, SERC
- Ben Li\*, Consultant
- Terry Bilke\*, MISO
- Pete Heidrich, FRCC
- Carter Edge, SERC
- Gerry Adamski, NERC
- Dave Taylor, NERC
- Steve Rueckert\*, WECC
- Pat Huntley, SERC
- Allen Mosher\*, APPA

Since then others have either officially joined or are observing the activities of the group. It is not the intent to exclude participation on this group; however, it is desired that the group remain a manageable



<p>size so that work can be performed quickly and efficiently. The intent is to turn over all aspects of implementing the project (including substantive stakeholder review and comment) to the Standards Committee once the NERC BOT considers the plan during their November 4, 2009 meeting.</p>
<p>Reliability Issue: Work of the GO/TO Team</p>
<p>Recommendation for improvement: At the May 2009 Board of Trustees meeting, a Task Force was established to review the applicability of a number of Transmission Owner/Operator standards to Generator Owners and Operators with respect to Generator Interconnections to the Transmission System. While the work of this group is still proceeding, it can be anticipated that their recommendations will necessitate standard development and the Standards Development Plan should take this into account. Given that this Task Force resulted from action of the Board of Trustees, this work should receive high priority.</p>
<p><b>NERC Response:</b></p> <p>The work of the Ad Hoc Group for Transmission Requirements at the Generator Interface expects to complete its work in Fall 2009. In its report, the team expects to include a proposed SAR and associated standards changes to address the recommendations of the team. As such, Project 2010-07 Transmission Requirements at the Generator Interface has been added to reflect this expectation.</p>
<p>Suggestion or Comment: Review of standards related to Generator Relaying</p>
<p>Recommendation for improvement: The general subject of generator relaying has been the subject of numerous technical reviews over the last several months. The list of such reviews would include, FERC NOPR on PRC-023 issued May 21st, NERC Technical Reference on Power Plant and Transmission System Protection Coordination issued Sept. 2009 referencing PRC-001, Reliability of Protection Systems (Project 2009-07) and possibly others. EPSA would recommend that there be greater coordination of all of the work underway reviewing generator protection generally so that generator owners and operators may more rationally contribute to the development of any new or revised standards</p>
<p><b>NERC Response:</b></p> <p>There continues to be a great interest in properly evaluating and if necessary developing reliability standards that address relaying and control aspects for generators. This work is largely been under the custody of the System Protection and Control Subcommittee. We agree that a consolidated approach is most efficient and effective in this regard and are awaiting further input regarding the expected availability of additional technical guidance upon which future standards development work will be based.</p>

<p><b>Comment 26</b></p> <p><b>Name:</b> Dan Rochester</p> <p><b>Organization:</b> Independent Electricity System Operator</p>
<p>Suggestion or Comment: Our comments are of a general nature and address the important issues of prioritization and scheduling. We commend the NERC Reliability Standards Program for their efforts to respond to industry comment and to develop a more realistic overall project schedule. By my count, there are 8 project scheduled for completion in 2010 with numerous others either continuing or being initiated. It is left to be seen whether or not this "aggressive" schedule will be met, given the unpredictable impact of requests for interpretation and SARs.</p>



We support the effort to develop Performance-based reliability standards and believe this will produce standards that ultimately achieve their desired end.

**NERC Response:**

Thank you for your comments regarding the “aggressive” nature of the overall standards development effort. We have made a concerted effort over the past year to analyze the time it takes for a standards development project along with the timing of tasks for coordinating the projects more efficiently. Using the information we collected we adjusted all the project schedules in an attempt to provide the industry a more accurate representation of expectations. Even though not perfect, the revised schedules are a better representation of future expectations. We hope to continue to work closely with the industry to drive the projects to a timely and successful completion.

Thank you for your support of Project 2010-06 Performance-based Reliability Standards (recently renamed to Project 2010-06 Results-based Reliability Standards).

**Comment 27**

**Name:** Laura Lee

**Organization:** Duke Energy

**Project Number(s):** 2010-06

**Project Title(s):** Performance-based Reliability Standards

**Suggestion or Comment:** Duke would like to commend NERC for initiation of this project in response to industry input. It is vital that the industry concentrate its resources and attention on requirements that preserve BES reliability. We also appreciate the fact that no projects are currently scheduled to start in 2011 to facilitate concentration on this project and the others that will still be in progress.

**Suggestion or Comment:** No new standards should be initiated until completion of Project 2010-06. It is likely that the work on this project will result in a clearer consensus of what type of requirements and standards are truly essential for ensuring reliability of the BES, so it seems premature to initiate development of new standards until this work is nearing completion. This would defer commencement of Projects 2009-04 and 2010-01.

Addition of a section explicitly specifying the alignment of the projects to NERC's priority initiatives (i.e., System Protection Initiative, System Modeling Improvement Initiative, etc.) would enhance the report - perhaps expand the last paragraph of "Other modifications" in the Summary section with additional specific details.

Another enhancement to the report would be an additional header in the Summary section explaining how reliability issues surrounding emerging technologies such as smart grid, energy efficiency, renewable resources, etc. are being addressed.

**NERC Response:**

Your suggestion that no new standards be initiated until completion of Project 2010-06 is not practical for the reasons stated in the “Priority of Projects” section of this report which begins on page 9 of Volume I. Certain projects are required to be initiated in 2010 pursuant to the Rules of Procedure of the North American Electric Reliability Corporation which state in part “each reliability standard shall be reviewed at least once every five years from the effective date of the standard or the latest revision to the standard, whichever is later.” Making a conscious decision to ignore these projects would cause

NERC to violate the Rules of Procedure which NERC staff is not willing to do. NERC staff will continue to work with the Standards Committee to coordinate the initiation of future standards development projects.

With respect to your suggestions to add a section explicitly specifying the alignment of the projects to NERC's priority initiatives and to add an additional header in the Summary section explaining how reliability issues surrounding emerging technologies such as smart grid, energy efficiency, renewable resources, etc. are being addressed, we will consider these suggestion during next year's annual revision to the *Reliability Standards Development Plan*.

**Comment 28**

**Name:** Guy Zito

**Organization:** Northeast Power Coordinating Council

**Suggestion or Comment:** The document is primarily informational. The timelines for project development cannot be firm, given the statement on p. 10 in Volume I that the six projects anticipated to be started in 2010 will be worked on when "appropriate NERC staff and industry resources are freed up from other projects".

On p 16--It is stated "Reliability Standards Development Plan: 2009-2012." Shouldn't this be 2010-2012?

For project prioritization, on p. 10 (Volume I) it is stated that there are projects to have existing projects revised while there are high priority reliability projects still waiting to be developed. Projects important for system reliability that haven't been developed yet should be given priority over existing projects.

**Recommendation for improvement:** Add the criteria for determining the priority of projects. If this information is in another document, it should be repeated in the Reliability Standards Development Plan for ease of reference.

**NERC Response:**

Your comment that the document "document is primarily informational" is accurate and is consistent with the second sentence of the first paragraph in the "Purpose" section of this Volume I which states "The plan serves as the management tool that guides, prioritizes, and coordinates revision or retirement of existing reliability standards and the development of new reliability standards for the immediate 3-year time horizon." This is a dynamic document and is meant to change as circumstances change.

With respect to your comment regarding page 16 of this volume, the typographical error has been corrected.

With respect to your suggesting for adding the criteria for determining the priority of projects, once the Standards Committee Process Subcommittee and/or Communications and Planning Subcommittee finalize the criteria we can include it in a future revision to the plan.

**Comment 29**

**Name:** Martin Bauer

**Organization:** US Bureau of Reclamation

**Reliability Issue:** Report from the Ad Hoc Group for Generator Requirements at the Transmission



<b>Interface</b>
<b>Suggestion or Comment:</b> The report addresses a serious problem in the construction of the existing reliability standards. The recommendations in the report should be incorporated into the various projects currently underway. A new project should be initiated for those standards who have already been vetted and balloted. The recommendations should be added to the project description for all other standards.
<b>Suggestion or Comment:</b> This comment is reference to the lack of bilateral communication or coordination evident in the standards between the TO/TOP and GO/GOP entities. In most of the standards the communication or coordination requirement is from the GO/GOP to the TO/TOP. This unilateral requirement does not promote reliability and can result in the exclusion of the GO/GOP in critical system operation decisions or planning functions. In the cases cited below, there is no consideration that Transmission facilities could affect the Generator facilities.
<b>Example:</b> FAC008 R2, FAC 009 R2, PRC 001 R 2.1, R2.2, R3.1, R3.2, R5.1, R5.2, TOP 001 R7.2, R7.3, and TOP 003 R1.1
<b>Recommendation for improvement:</b> Review the listed standards and develop an appropriate requirements for communication and coordination for the TO/TOP with the GO/GOP entities.
<b>NERC Response:</b> The work of the Ad Hoc Group for Generator Requirements at the Transmission Interface expects to complete its work in the Fall 2009. In its report, the team expects to include a proposed SAR and associated standards changes to address the recommendations of the team. As such, a new project 2010-07 has been added to reflect this expectation. To the point regarding bilateral communication relative to the listed requirements, NERC will forward these comments to the ad hoc team for their consideration prior to completion of their activities.

<b>Comment 30</b>
<b>Name:</b> Wayne Pourciau
<b>Organization:</b> Georgia System Operations Corp.
<b>Suggestion or Comment:</b> Project 2010-06 Performance-based Reliability Standards is the most important project for the 2010 to 2012 development period.
<b>Recommendation for improvement:</b> Implement the plan for improving the set of NERC reliability standards to be more focused on reliability performance with a direct relation to bulk power system reliability.
<b>Project Number(s):</b> Project 2010-06
<b>Project Title(s):</b> Performance-based Reliability Standards
<b>Suggestion or Comment:</b> Project 2010-06 Performance-based Reliability Standards is the most important project for the 2010 to 2012 development period.
<b>Recommendation for improvement:</b> Implement the plan for improving the set of NERC reliability

standards to be more focused on reliability performance.
<p>Reliability Issue: Existing standards are unclear and confusing. Many requirements are repeated throughout the set of standards. There are many requirements that are administrative in nature or are simply explanatory text and which do not appear to contribute directly to meeting reliability objectives. The resources of NERC, the Regional Entities, and the Registered Entities are wasted on duplicate and unnecessary requirements.</p>
<p>Suggestion or Comment: Implement the Project 2010-06 Performance-based Reliability Standards for improving the set of NERC reliability standards to be more focused on reliability performance with a direct relation to bulk power system reliability. Failing to address this issue at this time in the standards development work plan serves to perpetuate the current course of adding requirements and detail to a set of requirements that has no discernable distinction between bulk power system performance-based outcomes and the other types of requirements. This current approach will continue to dilute resources needed for standards development, compliance monitoring and enforcement, and the compliance resources at registered entities across a spectrum of requirements that have mixed value for ensuring reliability. A plan is needed to shift the standards, and the efforts needed to develop and implement them, toward performance-based requirements that have a clear beneficial impact on reliability of the bulk power system. The same public interest that is served by having reliability standards is best served if the standards have a direct and material impact on the reliability of the bulk power system.</p>
<p>Recommendation for improvement: Implement the Project 2010-06 Performance-based Reliability Standards for improving the set of NERC reliability standards to be more focused on reliability performance with a direct relation to bulk power system reliability.</p>
<p>Additional information: A lack of clarity and direction with regard to some of the reliability standards has resulted in confusion. Where we once used language somewhat loosely in a voluntary environment and everyone had a general idea of what was meant, now sanctions and penalties are dependent on the exact meaning of the words. Under the mandatory enforceable environment, words which were generally used are now being scrutinized and called into question. This is a result of the environment of exactly following prescribed actions. A change to a focus on the end result would change the environment from a legalistic, "letter of the law" environment to a more technical, reliability-based, "intent of the law" environment.</p> <p>Additionally, this project should include an effort to develop at least one objective measurement for each requirement.</p>
<p><b>NERC Response:</b></p> <p>Thank you for your support of Project 2010-06 Performance-based Reliability Standards (recently renamed to Project 2010-06 Results-based Reliability Standards). Noting your apparent intense interest in the project we look forward to your active participation in the project.</p>

## Standard Authorization Request Form

Title of Proposed Standard: Protection Misoperations Revisions to PRC-003, PRC-004, PRC-012, and PRC-016	
Request Date:	June 10, 2009

SAR Requester Information	SAR Type <i>(Check a box for each one that applies.)</i>
Name: System Protection and Control Subcommittee	<input type="checkbox"/> New Standard
Primary Contact: John Ciuffo, Chairman	<input checked="" type="checkbox"/> Revision to existing Standard
Telephone: (416) 345-5258 Fax: (416) 345-5406	<input checked="" type="checkbox"/> Withdrawal of existing Standard (PRC-016)
E-mail: <a href="mailto:john.ciuffo@HydroOne.com">john.ciuffo@HydroOne.com</a>	<input type="checkbox"/> Urgent Action

<p><b>Purpose</b> (Describe what the standard action will achieve in support of bulk power system reliability.)</p> <p>A key element of bulk power system reliability is the performance of the Protection Systems. To properly gage Protection System performance, is necessary to have a consistent set of metrics on Protection System Misoperations. Current PRC standards and definitions related to Protection System Misoperations are confusing and do not support a good metric for measurement of Protection System performance.</p>
<p><b>Industry Need</b> (Provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)</p> <p>Current PRC standards and definitions related to Protection System Misoperations are confusing and do not support a good metric for measurement of Protection System performance.</p>
<p><b>Brief Description</b> (Provide a paragraph that describes the scope of this standard action.)</p> <p>SPCS recommends creation of a standards project to:</p> <ul style="list-style-type: none"> <li>▪ Revise the definition of Misoperation (Reportable Protection Misoperation)</li> <li>▪ Modify PRC-003, PRC-004, and PRC-012</li> </ul>

- Retire PRC-016.

**Detailed Description** (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR.)

Standard PRC-003 is intended to ensure that all System Protection Misoperations are analyzed and mitigated according to guidelines established by the regions. The FERC, in Order 693, dated March 16, 2007, declared this standard as a “fill in the blank” type of standard that does not merit approval unless it is modified to make it more specific and consistent for all Regions. The SPCS concurs with the FERC order and provides recommendations on how the standard can be rewritten.

Because the procedures for analyzing and mitigating Misoperations were to be established by the regions, there is significant dissimilarity between the Misoperation data reported by each region, resulting in a virtually unusable misoperation metric for North America. SPCS recommends a change to the definition of Misoperation (Reportable Protection Misoperation) to provide uniformity to the misoperation data reported to the regions and NERC.

Protection System elements used for Special Protection Systems (SPS) or Remedial Action Schemes (RAS) are no different from those used for non Special Protection Systems. The revision to Standard PRC-003 should therefore apply to all Protection Systems, including SPS and RAS.

The SPCS also recommends that Standard PRC-016-0 – Special Protection System Misoperations, be requirements, merging its SPS/RAS Misoperation reporting, Corrective Action Plans, and tracking requirements into PRC-004 – Analysis and Mitigation of Transmission and Generation Protection System Misoperations.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and is coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should be modified to refer to that review process.

SPCS recommends creation of a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016.

See attached Technical Review document for additional details.



**Reliability Functions**

The Standard will Apply to the Following Functions <i>(Check box for each one that applies.)</i>		
<input type="checkbox"/>	Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator's wide area view.
<input type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/>	Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/>	Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/>	Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/>	Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/>	Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
X	Transmission Owner	Owns and maintains transmission facilities.
<input type="checkbox"/>	Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
X	Distribution Provider	Delivers electrical energy to the End-use customer.
X	Generator Owner	Owns and maintains generation facilities.
<input type="checkbox"/>	Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/>	Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/>	Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/>	Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.



**Reliability and Market Interface Principles**

**Applicable Reliability Principles (Check box for all that apply.)**

X	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
X	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

**Does the proposed Standard comply with all of the following Market Interface Principles? (Select 'yes' or 'no' from the drop-down box.)**

1. A reliability standard shall not give any market participant an unfair competitive advantage. Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure. Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. Yes
4. 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. Yes

**Related Standards**

Standard No.	Explanation
PRC-003	Revise
PRC-004	Revise
PRC-012	Revise

PRC-016	Retire
---------	--------

***Related SARs***

SAR ID	Explanation

***Regional Variances***

Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
SERC	
RFC	
SPP	
WECC	

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

## NERC SPCS Assessment of Standards:

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations
- PRC-016-1 — Special Protection System Misoperations

A Technical Review of Standards Prepared by the System Protection  
and Controls Subcommittee of the NERC Planning Committee

May 2009

to ensure  
the reliability of the  
bulk power system

## Table of Contents

Executive Summary .....	78
Assessment of PRC-003-1 .....	79
Assessment of PRC-004 and PRC-016-0 .....	82
SPS Corrective Action Plan Review .....	82
Proposed PRC-004-1 Revisions.....	82

This report was approved by the Planning Committee on June 10, 2009, for forwarding to the Standards Committee.

## **Introduction**

When the original scope for the System Protection and Control Task Force (SPCTF, now the System Protection and Control Subcommittee – SPCS) was developed, one of the assigned items was to review all of the existing PRC-series of Reliability Standards, to advise the Planning Committee, and to develop Standards Authorization Requests, as appropriate, to address any perceived deficiencies.

This report presents the SPCS' assessment of three of the PRC standards pertaining to relay misoperations:

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations
- PRC-016-1 — Special Protection System Misoperations

This report serves as a precursor for a Standards Authorization Request (SAR) for modifications to PRC-003 that will be submitted by the SPCS.

## **Executive Summary**

Standard PRC-003 is intended to ensure that all System Protection Misoperations are analyzed and mitigated according to guidelines established by the regions. The FERC, in Order 693, dated March 16, 2007, declared this standard as a “fill in the blank” type of standard that does not merit approval unless it is modified to make it more specific and consistent for all Regions. The SPCS concurs with the FERC order and provides recommendations on how the standard can be rewritten.

Because the procedures for analyzing and mitigating Misoperations were to be established by the regions, there is significant dissimilarity between the Misoperation data reported by each region, resulting in a virtually unusable misoperation metric for North America. SPCS recommends a change to the definition of Misoperation (Reportable Protection Misoperation) to provide uniformity to the misoperation data reported to the regions and NERC.

Protection System elements used for Special Protection Systems (SPS) or Remedial Action Schemes (RAS) are no different from those used for non Special Protection Systems. The revision to Standard PRC-003 should therefore apply to all Protection Systems, including SPS and RAS.

The SPCS also recommends that Standard PRC-016-0 — Special Protection System Misoperations, be requirements, merging its SPS/RAS Misoperation reporting, Corrective Action Plans, and tracking requirements into PRC-004 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and is coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should be modified to refer to that review process.

A Standards Authorization Request (SAR) will be submitted by the SPCS calling for a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016.

### **Assessment of PRC-003-1**

PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems requires the regions to establish procedures for analysis of Misoperations. This has resulted in significant and substantive differences in regional procedures and this was noted in FERC’s recommendation for “greater uniformity.”

SPCS proposes updating the PRC-003-1 standard to be applicable to all regions based on following tenets:

1. **Applicability** — The existing standard says that the Protection Systems shall be reviewed but does not specify which systems apply to this standard.

It is necessary for the new standard to define the protections systems to which the standard applies:

- Transmission Protection Systems which trip:
  - a. Transmission system elements 200-kV and above
  - b. Operationally significant system elements 100-kV to 200-kV
  - c. Transformers with 100-kV or higher on the low side
  - d. GSU transformers with high side voltages of 100-kV or higher
- Generation Protection Systems which trip:
  - a. Transmission system elements 200-kV and above
  - b. Operationally significant system elements 100-kV to 200-kV
  - c. Transformers with 100-kV or higher on the low side
  - d. GSU transformers with high side voltages of 100-kV or higher
  - e. Generators connected through GSU transformers with high side voltages of 100-kV or higher
- Protection Systems that trip aggregate generation of 75 MW or more (such as wind farms, geothermal, or solar) connected to the transmission system at 100-kV or higher.

2. **Definitions** — The NERC Glossary of Terms currently defines Misoperation as:

#### **Misoperation (current definition)**

- Any failure of a Protection System element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection.
- Any operation for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone).
- Any unintentional Protection System operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity

The existing definition does not address what are reportable and non-reportable misoperations. Reportable misoperations should be redefined in terms of both dependability and security, as a function of the impact of the Protection Systems on the electric system performance. SPCS recommends the following definition:

#### **Reportable Protection Misoperation (proposed definition)**



Dependability (failure to operate):

- Failure of the composite Protection System to initiate the isolation of a faulted power system Element as designed or within its designed operating time.
- Failure of the composite Protection System to operate as intended for a non-fault condition, such as out-of-step, overload, etc., within its designed operating time.
- Failure of an SPS/RAS, UVLS system, or UFLS system to operate for an intended condition or within its designed operating time.

Security (false or undesirable operations):

- Improper operation of a Protection System in absence of a fault on the power system Element it is designed to protect.
- Improper operation of a Protection System during a fault on any other power system Element it is not designed to protect.
- Improper operation of an SPS/RAS, UVLS system, or UFLS system in absence of its designed trigger conditions.
- Over-response of an SPS/RAS, UVLS system, or UFLS system

*Notes to the proposed definition:*

- A. *The composite Protection System in the context of this standard is the total complement of protection for a system Element (line, bus, transformer, generator, etc). Primary and secondary protection of a given Element is considered as the composite Protection System, not two separate Protection Systems.*
  - B. *Delayed clearing, where a high-speed system is employed and is essential for transmission system performance, is considered a reportable misoperation of the high-speed system.*
  - C. *Lack of targeting of the high-speed system, such as when it is beat out by a high-speed zone, is not considered a reportable misoperation.*
  - D. *Multiple misoperations of a Protection System before it can be reasonably investigated and remedied should be considered as a single misoperation.*
  - E. *Failure to automatically reclose after a fault is not a reportable misoperation.*
  - F. *Human errors made in protection settings either as calculated or as installed, or wiring errors, which result in a misoperation are reportable.*
  - G. *Protection System operations related to on-site maintenance, testing, construction and or commissioning activities for that Protection System, when no fault or other abnormal condition has occurred, are not considered reportable Protection System misoperations.*
  - H. *Operations which are initiated by control systems (not by the Protection Systems), such as those associated with generator controls or turbine/boiler controls, SVCs, FACTS, HVDC, circuit breaker mechanism, or insulation media, or other facility control systems, are not reportable Protection System misoperations.*
  - I. *Protection System operations which occur with the protected element already out of service, that do not trip any in-service elements, are not reportable Protection System misoperations.*
3. **Reporting of Misoperations** — Because the current PRC-003 calls for regional procedures and reporting requirements, there is a wide variation in those requirements from region to region, making comparison of misoperations metrics at the NERC level virtually impossible. Since any



assessment of the success or failure of the NERC protection-related standards to maintain or improve reliability depends on those metrics, it is important to provide for uniformity. The variations in definitions can be corrected by the adoption of the Reportable Protection Misoperation definition above. Uniform reporting can be addressed by following proposed reporting requirements:

- Transmission Owner or Generation Owners that own Protection Systems shall submit a quarterly report of the total number of events, the number of Protection System misoperations, and the number of events still under analysis, in a prescribed format (to be part of the revised PRC-003 standard) no later than two calendar months after each quarter.
  - The regions shall, in turn, submit a quarterly report to NERC – consolidated data for the Region in a prescribed format (also part of the revised PRC-003 standard).
  - The regions shall provide any additional information on misoperations to NERC as requested.
4. **Peer Review of Misoperations** — Peer review of misoperations and tracking of mitigation plans is an important part of improving Protection System performance. Logically, that function should be done by the Regional Entities. However, since standards requirements cannot be placed on the Regional Entities, the following suggestions are made but the mechanics are left open.
- The regions, through their appropriate committees or subcommittee, shall review the misoperation reports. This review should determine whether further analysis, data, or other documentation is required, and it will confirm that appropriate mitigation is defined and scheduled.
  - The regions should maintain records of the quarterly reports and confirm the implementation of any proposed mitigation plan.
  - The regions should track the mitigation of reported misoperations to avoid further occurrences.

### **Assessment of PRC-004 and PRC-016-0**

NERC standards PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations, and PRC-016 – Special Protection System Misoperations both require that Protection System misoperations are analyzed and reported, and that corrective actions are taken where necessary. However, PRC-016 exclusively applies to special protection systems (SPS) also known as remedial action schemes (RAS). Since analysis and reporting of protection system misoperations is the same regardless of whether or not a SPS/RAS is involved; there is no need for a separate standard. Standard PRC-004-1 should be revised to include SPS/RAS, and PRC-016 should be retired.

### ***SPS Corrective Action Plan Review***

PRC-012-0 — Special Protection System Review Procedure is intended to provide a review procedure to ensure that all SPS/RAS are properly designed, meet performance requirements, and are coordinated with other Protection Systems.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and are coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should refer to that review process.

### ***Proposed PRC-004-1 Revisions***

SPCS recommends the following revisions to PRC-004-1 requirements to encompass those of PRC-016:

- R1. The Transmission Owner and any Distribution Provider that owns a transmission Protection System or SPS shall each analyze its transmission Protection System or SPS Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature in accordance with Standard PRC-003 (revised).
- R2. The Generator Owner shall analyze its generator Protection System or SPS Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature in accordance with Standard PRC-003 (revised).
- R3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission Protection System or an SPS shall provide documentation of the misoperation analyses and the Corrective Action Plans to its Regional Reliability Organization and NERC upon request (within 90 calendar days).
- R4. All Corrective Action Plans for SPS shall be subject to SPS Review Procedures in accordance with Standard PRC-012.

## Appendix A — System Protection and Control Subcommittee

**Henry (Hank) Miller**

*RE – RFC*  
Principal Electrical Engineer  
American Electric Power

**Deven Bhan**

*RE – MRO*  
Electrical Engineer, System Protection  
Western Area Power Administration

**John Mulhausen**

*RE – FRCC*  
Manager, Design and Standards  
Florida Power & Light Co.

**Philip B. Winston**

*RE – SERC*  
Manager, Protection and Control  
Georgia Power Company

**Dean Sikes**

*RE – SPP*  
Manager - Transmission Protection, Apparatus, & Metering  
Cleco Power

**Samuel Francis**

*RE – TRE*  
Senior Director of Engineering  
Oncor Electric Delivery

**Baj Agrawal**

*RE – WECC*  
Principal Engineer  
Arizona Public Service Company

**Josh Wooten**

*U.S. Federal Alternate*  
System Protection and Analysis  
Tennessee Valley Authority

**W. O. (Bill) Kennedy**

*Canada Member-at-Large*  
Principal  
b7kennedy & Associates Inc.

**Robert W. Cummings**

*NERC Staff Coordinator*  
Director of Event Analysis & Information Exchange  
NERC

**Tom Wiedman**

*Subject Matter Expert – NERC Consultant*  
President  
Wiedman Power System Consulting, Ltd.

**Jonathan D Gardell**

*Subject Matter Expert – NERC Consultant*  
Executive Advisor  
Quanta Technology

**Eric A Udren**

*Subject Matter Expert*  
Executive Advisor  
Quanta Technology

**Murty Yalla**

*Subject Matter Expert*  
President  
Beckwith Electric Company Inc.

**David Angell**

*Correspondent*  
T&D Planning Engineering Leader  
Idaho Power Company

**Hasnain Ashrafi**

*Correspondent*  
Engineer  
Sargent & Lundy

**Dac-Phuoc Bui**

*Correspondent*  
Engineer  
Hydro-Québec TransEnergie

**Jeanne Harshbarger**

*Correspondent*  
System Protection Engineer  
Puget Sound Energy, Inc.

**Fred Ipock**

*Correspondent*  
Senior Engineer - Substations & Protection  
City Utilities of Springfield, Missouri

**Evan T. Sage**

*Correspondent*  
Senior Engineer  
Potomac Electric Power Company

**Joe Spencer**

*Correspondent*  
Manager of Planning and Engineering  
SERC Reliability Corporation

**Bob Stuart**

*Correspondent*  
Senior Director - Transmission  
BrightSource Energy, Inc.

**James D. Roberts**

*Correspondent*  
Transmission Planning  
Tennessee Valley Authority

The logo for NERC, consisting of the letters "NERC" in a bold, black, sans-serif font. A horizontal blue bar is positioned below the letters.

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

A tall, lattice-structured metal tower for a high-voltage power line, with several cross-arms and insulators. The tower is set against a light blue sky with a large, bright sun or moon in the background. The image is partially obscured by a dark blue curved shape in the top right corner.

---

# Reliability Standards Development Plan: 2010–2012

Volume II — List of Projects

---

A faint, light blue map of North America is visible in the background of the lower half of the cover. The map shows the outlines of the United States and Canada.

to ensure  
the reliability of the  
bulk power system

October 7, 2009

116-390 Village Blvd., Princeton, NJ 08540  
609.452.8060 | 609.452.9550 fax  
[www.nerc.com](http://www.nerc.com)

# Table of Contents:

Introduction .....	3
Reliability Standards Development Plan Overall Project Schedules .....	4
Reference Identifying the Standard in each Project Sorted by Standard Number .....	5
Reference Identifying the Standard in each Project Sorted by Project Number .....	9
Project Descriptions .....	13
Project 2006-02 Assess Transmission and Future Needs .....	15
Project 2006-04 Backup Facilities .....	21
Project 2006-06 Reliability Coordination .....	24
Project 2006-08 Transmission Loading Relief .....	32
Project 2007-01 Underfrequency Load Shedding .....	37
Project 2007-02 Operating Personnel Communications Protocols .....	41
Project 2007-03 Real-time Operations .....	44
Project 2007-04 Certifying System Operators .....	51
Project 2007-05 Balancing Authority Controls .....	54
Project 2007-06 System Protection Coordination .....	60
Project 2007-07 Vegetation Management .....	63
Project 2007-09 Generator Verification .....	68
Project 2007-11 Disturbance Monitoring .....	73
Project 2007-12 Frequency Response .....	76
Project 2007-17 Protection System Maintenance & Testing .....	79
Project 2007-18 Reliability-based Control .....	83
Project 2008-01 Voltage and Reactive Control .....	87
Project 2008-02 Undervoltage Load Shedding .....	95
Project 2008-06 Cyber Security — Order 706 .....	99
Project 2008-12 Coordinate Interchange Standards .....	110
Project 2009-01 Disturbance and Sabotage Reporting .....	116
Project 2009-02 Real-time Tools .....	120
Project 2009-03 Emergency Operations .....	122
Project 2009-04 Phasor Measurement Units .....	128
Project 2009-05 Resource Adequacy Assessments .....	129
Project 2009-06 Facility Ratings .....	131
Project 2009-07 Reliability of Protection Systems .....	133
Project 2009-18 Withdraw Three Midwest ISO Waivers .....	135
Project 2010-01 Support Personnel Training .....	136
Project 2010-02 Connecting New Facilities to the Grid .....	137
Project 2010-03 Modeling Data .....	139
Project 2010-04 Demand Data .....	145
Project 2010-05 Protection Systems .....	148
Project 2010-06 Results-based Reliability Standards .....	151
Project 2010-07 Transmission Requirements at the Generator Interface .....	152
Project 2012-01 Equipment Monitoring and Diagnostic Devices .....	153
Project 2012-02 Physical Protection .....	154

## Introduction

---

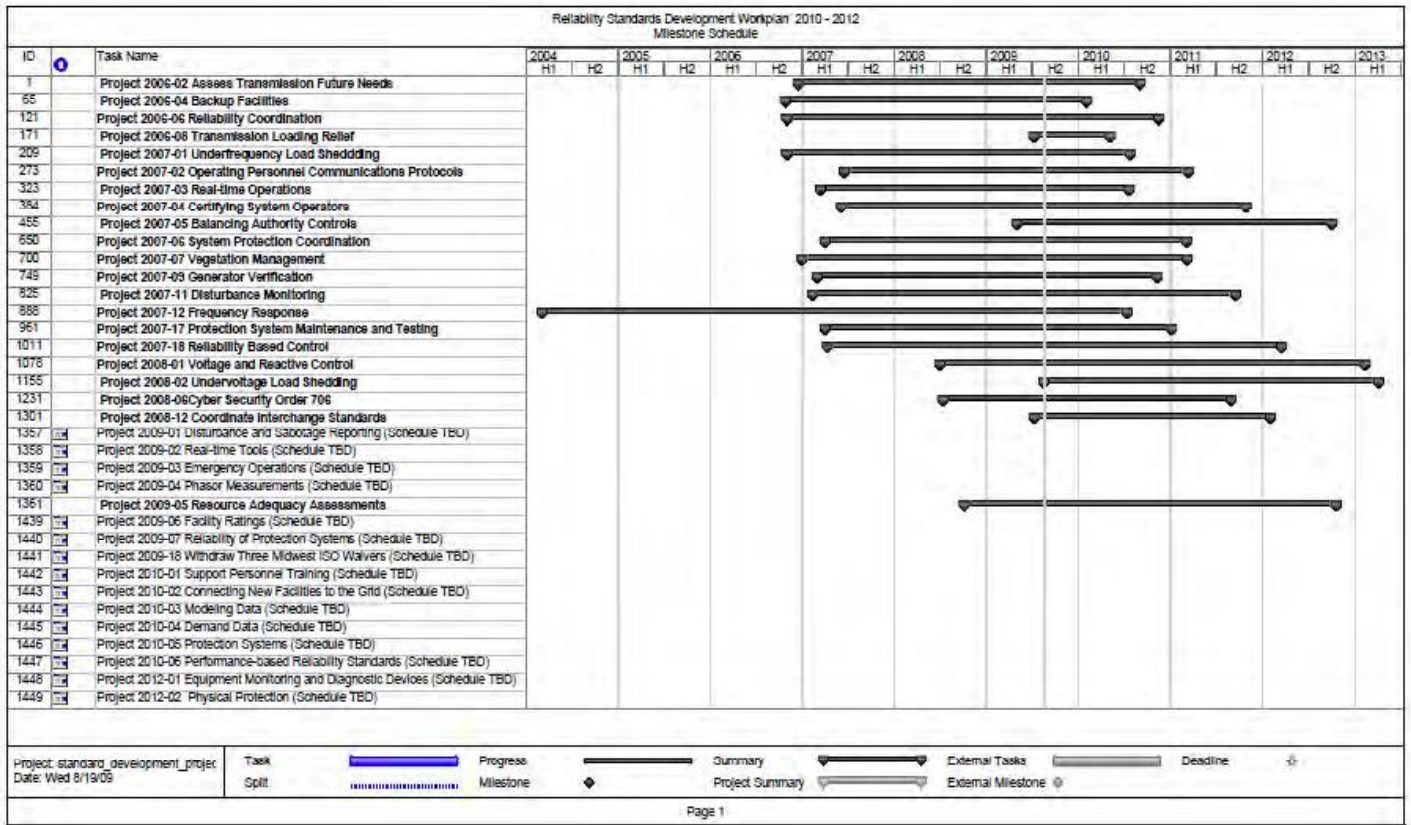
This Volume II of the *Reliability Standards Development Plan* contains the project descriptions for each of the currently opened and planned reliability standards development projects. There are 37 projects in this plan. For each project, a description is provided that outlines the general overview and scope of improvements to be considered in conjunction with the project.

The three charts and tables on the pages which immediately follow have been provided as additional information for helping better understand each project:

- The first chart provides an overall Gantt chart for all currently open projects. More detailed project schedules are posted on the “Related Files” of each project. The intent of this overall Gantt chart is to provide a quick reference of the overall project schedule for each project.
- The next table provides a quick reference identifying which project is associated with a particular standard and is sorted by standard number.
- The final table provides a quick reference identifying which standards are associated with each project and is sorted by project number for those projects that have specifically identified standards to be included in their scope.



# Reliability Standards Development Plan Overall Project Schedules



## Reference Identifying the Standard in each Project Sorted by Standard Number

Standard	Standard Name	Project Number
<b>Resource and Demand Balancing (BAL) Standards</b>		
BAL-001-0a	Real Power Balancing Control Performance	Project 2007-18
BAL-002-0	Disturbance Control Performance	Project 2007-05, Project 2009-02, and Project 2007-18
BAL-003-0a	Frequency Response and Bias	Project 2007-12
BAL-004-0	Time Error Correction	Project 2007-05
BAL-004-1	Time Error Correction	Project 2007-05
BAL-005-0b	Automatic Generation Control	Project 2007-05 and Project 2009-02
BAL-006-1	Inadvertent Interchange	Project 2007-05
<b>Critical Infrastructure Protection (CIP) Standards</b>		
CIP-001-1	Sabotage Reporting	Project 2009-01
CIP-002-2	Critical Cyber Asset Identification	Project 2008-06
CIP-003-2	Security Management Controls	Project 2008-06
CIP-004-2	Personnel and Training	Project 2008-06
CIP-005-2	Electronic Security Perimeter(s)	Project 2008-06
CIP-006-2	Physical Security	Project 2008-06
CIP-006-1a	Cyber Security — Physical Security	Project 2008-06
CIP-007-2	Systems Security Management	Project 2008-06
CIP-008-2	Incident Reporting and Response Planning	Project 2008-06
CIP-009-2	Recovery Plans for Critical Cyber Assets	Project 2008-06
<b>Communications (COM) Standards</b>		
COM-001-1	Telecommunications	Project 2006-06 and Project 2009-02
COM-002-2	Communications and Coordination	Project 2006-06 and Project 2007-02
<b>Emergency Preparedness and Operations (EOP) Standards</b>		
EOP-001-0	Emergency Operations Planning	Project 2006-04, Project 2008-08 (VSLs only), and Project 2009-03
EOP-002-2	Capacity and Energy Emergencies	Project 2007-18, Project 2008-08 (VSLs only) and Project 2009-03
EOP-003-1	Load Shedding Plans	Project 2008-08 (VSLs only), Project 2009-02, and Project 2009-03
EOP-004-1	Disturbance Reporting	Project 2008-08 (VSLs only) and Project 2009-01
EOP-008-0	Plans for Loss of Control Center Functionality	Project 2006-04
<b>Facilities Design, Connections, and Maintenance (FAC) Standards</b>		



Standard	Standard Name	Project Number
FAC-001-0	Facility Connection Requirements	Project 2010-02
FAC-002-0	Coordination of Plans for New Facilities	Project 2010-02
FAC-003-1	Transmission Vegetation Management Program	Project 2007-07
FAC-008-1	Facility Ratings Methodology	Project 2009-06
FAC-009-1	Establish and Communicate Facility Ratings	Project 2009-06
FAC-010-2	System Operating Limits Methodology for the Planning Horizon	Project 2008-04
FAC-011-1	System Operating Limits Methodology for the Operations Horizon	Project 2008-05
FAC-011-2	System Operating Limits Methodology for the Operations Horizon	Project 2008-05 and Project 2008-04
FAC-012-1	Transfer Capability Methodology	Project 2006-07
FAC-013-1	Establish and Communicate Transfer Capabilities	Project 2006-07
FAC-014-2	Establish and Communicate System Operating Limits	Project 2008-04
<b>Interchange Scheduling and Coordination (INT) Standards</b>		
INT-001-3	Interchange Information	Project 2008-12
INT-003-2	Interchange Transaction Implementation	Project 2008-12
INT-004-1	Dynamic Interchange Transaction Modifications	Project 2008-12
INT-005-1	Interchange Authority Distributes Arranged Interchange	Project 2008-12 and Project 2010-03
INT-005-2	Interchange Authority Distributes Arranged Interchange	Project 2008-12
INT-006-2	Response to Interchange Authority	Project 2008-12
INT-007-1	Interchange Confirmation	Project 2008-12
INT-008-1	Interchange Authority Distributes Status	Project 2008-12
INT-008-2	Interchange Authority Distributes Status	Project 2008-12
INT-009-1	Implementation of Interchange	Project 2008-12
INT-010-1	Interchange Coordination Exemptions	Project 2008-12
<b>Interconnection Reliability Operations and Coordination (IRO) Standards</b>		
IRO-001-1	Reliability Coordination — Responsibilities and Authorities	Project 2006-06 and Project 2009-03
IRO-002-1	Reliability Coordination — Facilities	Project 2006-06 and Project 2009-02
IRO-003-2	Reliability Coordination — Wide-Area View	Project 2009-02
IRO-004-1	Reliability Coordination — Operations Planning	Project 2009-02
IRO-005-2	Reliability Coordination — Current-Day Operations	Project 2006-06, Project 2007-18, and Project 2009-02
IRO-006-4	Reliability Coordination — Transmission Loading Relief	Project 2006-08
IRO-014-1	Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators	Project 2006-06
IRO-015-1	Notifications and Information Exchange Between Reliability Coordinators	Project 2006-06
IRO-016-1	Coordination of Real-time Activities Between Reliability Coordinators	Project 2006-06
<b>Modeling, Data, and Analysis (MOD) Standards</b>		
MOD-010-0	Steady-State Data for Transmission System Modeling and Simulation	Project 2010-03

Standard	Standard Name	Project Number
MOD-011-0	Regional Steady-State Data Requirements and Reporting Procedures	Project 2010-03
MOD-012-0	Dynamics Data for Transmission System Modeling and Simulation	Project 2010-03
MOD-013-1	RRO Dynamics Data Requirements and Reporting Procedures	Project 2010-03
MOD-014-0	Development of Interconnection-Specific Steady State System Models	Project 2010-03
MOD-015-0	Development of Interconnection-Specific Dynamics System Models	Project 2010-03
MOD-016-1	Actual and Forecast Demands, Net Energy for Load, Controllable DSM	Project 2010-04
MOD-017-0	Aggregated Actual and Forecast Demands and Net Energy for Load	Project 2010-04
MOD-018-0	Reports of Actual and Forecast Demand Data	Project 2010-04
MOD 019-0	Forecasts of Interruptible Demands and DCLM Data	Project 2010-04
MOD-020-0	Providing Interruptible Demands and DCLM Data	Project 2010-04
MOD-021-0	Accounting Methodology for Effects of Controllable DSM in Forecasts	Project 2010-04
MOD-024-1	Verification of Generator Gross and Net Real Power Capability	Project 2007-09
MOD-025-1	Verification of Generator Gross and Net Reactive Power Capability	Project 2007-09
MOD-026-1	Verification of Models and Data for Generator Excitation System Functions	Project 2007-09
MOD-027-1	Verification of Generator Unit Frequency Response	Project 2007-09
<b>Personnel Performance, Training, and Qualifications (PER) Standards</b>		
PER-001-0	Operating Personnel Responsibility and Authority	Project 2007-03
PER-003-0	Operating Personnel Credentials	Project 2007-04
<b>Protection and Control (PRC) Standards</b>		
PRC-001-1	System Protection Coordination	Project 2007-06 and Project 2009-02
PRC-002-1	Define Regional Disturbance Monitoring and Reporting Requirements	Project 2007-11
PRC-003-1	Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems	Project 2010-05
PRC-004-1	Analysis and Mitigation of Transmission and Generation Protection System Misoperations	Project 2010-05
PRC-005-1	Transmission and Generation Protection System Maintenance and Testing	Project 2007-17
PRC-006-0	Development and Documentation of Regional UFLS Programs	Project 2007-01
PRC-007-0	Assuring Consistency with Regional UFLS Program Requirements	Project 2007-01
PRC-008-0	Underfrequency Load Shedding Equipment Maintenance Programs	Project 2007-17
PRC-009-0	UFLS Performance Following an Underfrequency Event	Project 2007-01
PRC-010-0	Assessment of the Design and Effectiveness of UVLS Program	Project 2008-02
PRC-011-0	UVLS System Maintenance and Testing	Project 2007-17
PRC-012-0	Special Protection System Review Procedure	Project 2010-05
PRC-013-0	Special Protection System Database	Project 2010-03
PRC-014-0	Special Protection System Assessment	Project 2010-05
PRC-015-0	Special Protection System Data and Documentation	Project 2010-03
PRC-016-0	Special Protection System Misoperations	Project 2010-05

Standard	Standard Name	Project Number
PRC-017-0	Special Protection System Maintenance and Testing	Project 2007-17
PRC-018-1	Disturbance Monitoring Equipment Installation and Data Reporting	Project 2007-11
PRC-019-1	Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection	Project 2007-09
PRC-020-1	Under-Voltage Load Shedding Program Database	Project 2010-03
PRC-021-1	Under-Voltage Load Shedding Program Data	Project 2010-03
PRC-022-1	Under-Voltage Load Shedding Program Performance	Project 2008-02
PRC-024-1	Generator Performance During Frequency and Voltage Excursions	Project 2007-09
<b>Transmission Operations (TOP) Standards</b>		
TOP-001-1	Reliability Responsibilities and Authorities	Project 2007-03
TOP-002-2	Normal Operations Planning	Project 2007-03
TOP-003-0	Planned Outage Coordination	Project 2007-03
TOP-004-2	Transmission Operations	Project 2007-03
TOP-005-1	Operational Reliability Information	Project 2007-03
TOP-006-1	Monitoring System Conditions	Project 2007-03
TOP-007-0	Reporting SOL and IROL Violations	Project 2007-03
TOP-008-1	Response to Transmission Limit Violations	Project 2007-03
<b>Transmission Planning (TPL) Standards</b>		
TPL-001-0	System Performance Under Normal Conditions	Project 2006-02
TPL-002-0	System Performance Following Loss of a Single BES Element	Project 2006-02
TPL-003-0	System Performance Following Loss of Two or More BES Elements	Project 2006-02
TPL-004-0	System Performance Following Extreme BES Events	Project 2006-02
TPL-005-0	Regional and Interregional Self-Assessment Reliability Reports	Project 2006-02
TPL-006-0	Assessment Data from Regional Reliability Organizations	Project 2006-02
<b>Voltage and Reactive (VAR) Standards</b>		
VAR-001-1a	Voltage and Reactive Control	Project 2008-01 and Project 2009-02
VAR-002-1a	Generator Operation for Maintaining Network Voltage Schedules	Project 2008-01

# Reference Identifying the Standard in each Project Sorted by Project Number

## **Project 2006-02 Assess Transmission Future Needs**

- 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

## **Project 2006-06 Reliability Coordination**

- 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, Processes, or Plans to Support Coordination Between Reliability Coordinators
- IRO-015-1 — Notifications and Information Exchange Between Reliability Coordinators
- IRO-016-1 — Coordination of Real-time Activities Between Reliability Coordinators

## **Project 2006-08 Transmission Loading Relief**

- IRO-006-3 — Reliability Coordination — Transmission Loading Relief
- IRO-006-4 — Reliability Coordination — Transmission Loading Relief

## **Project 2007-01 Underfrequency Load Shedding**

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

## **Project 2007-02 Operating Personnel Communications Protocols**

- COM-003-1 — Operating Personnel Communications Protocols

## **Project 2007-03 Real-time Operations**

- PER-001-0 — Operating Personnel Responsibility and Authority
- 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-004-2 — 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

## **Project 2007-04 Certifying System Operators**

- PER-003-0 — Operating Personnel Credentials

#### **Project 2007-05 Balancing Authority Controls**

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

#### **Project 2007-06 System Protection Coordination**

- PRC-001-1 — System Protection Coordination

#### **Project 2007-07 Vegetation Management**

- FAC-003-2 — Transmission Vegetation Management Program

#### **Project 2007-09 Generator Verification**

- MOD-024-1 — Verification of Generator Gross and Net Real Power Capability
- MOD-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
- PRC-019-1 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection
- PRC-024-1 — Generator Performance During Frequency and Voltage Excursions

#### **Project 2007-11 Disturbance Monitoring**

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

#### **Project 2007-17 Protection System Maintenance and Testing**

- 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

#### **Project 2007-18 Reliability-based Control**

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

#### **Project 2008-01 Voltage and Reactive Control**

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

#### **Project 2008-02 Undervoltage Load Shedding**

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

#### **Project 2008-06 Cyber Security — Order 706**

- CIP-002-2 — Critical Cyber Asset Identification
- CIP-003-2 — Security Management Controls
- CIP-004-2 — Personnel and Training
- CIP-005-2 — Electronic Security Perimeter(s)
- CIP-006-2a — Cyber Security — Physical Security
- CIP-007-2 — Systems Security Management
- CIP-008-2 — Incident Reporting and Response Planning
- CIP-009-2 — Recovery Plans for Critical Cyber Assets

**Project 2008-08 EOP VSL Revisions**

- EOP-001-0 — Emergency Operations Planning
- EOP-002-2 — Capacity and Energy Emergencies
- EOP-003-1 — Load Shedding Plans

**Project 2008-12 Coordinate Interchange Standards**

- INT-001-3 — Interchange Information
- INT-003-2 — Interchange Transaction Implementation
- INT-004-1 — Dynamic 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

**Project 2009-01 Disturbance and Sabotage Reporting**

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

**Project 2009-02 Real-time Tools**

- New Standard

**Project 2009-05 Resource Adequacy Assessments**

- New Standard

**Project 2009-06 Facility Ratings**

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

**Project 2010-02 Connecting New Facilities to the Grid**

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



---

**Project 2010-03 Modeling Data**

- 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 — RRO 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

---

**Project 2010-04 Demand Data**

- 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

---

**Project 2010-05 Protection Systems**

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- 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

## Project Descriptions

The following pages contain the project descriptions for each of the currently opened or planned Reliability Standards development projects. 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 the drafting team roster for the project (if one exists – future/planned projects will not have a roster) and a list of “Issues to be Considered by Drafting Team” for each reliability standard 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 as described in the “Global Improvements” section of Volume I of this *Reliability Standards Development Plan*.

Each list of “Issues to be Considered by Drafting Team” identifies the FERC directives from various orders, items from the Issues Database, and also includes comments provided by:

- The team working on identifying the “fill-in-the-blank” characteristics of the NERC reliability standards,
- Industry stakeholders,
- NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS),
- Version 0, Phase III & IV, Violation Risk Factors (VRFs), and Missing Measures and Compliance Elements drafting teams and others as noted.

The majority of comments provided by these entities can be found in the following references:

- [FERC Order 693 Mandatory Reliability Standards for the Bulk-Power System](#)
- [FERC Order 693 — A, Order on Rehearing](#)
- [FERC Order 706 Mandatory Reliability Standards for Critical Infrastructure Protection](#)
- [FERC Order 706–A Mandatory Reliability Standards for Critical Infrastructure Protection](#)
- [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 in each list of “Issues to be Considered by Drafting Team.” Each standard drafting team for the specific project is expected to further investigate and properly address each of the issues listed.

## **Project 2006-02 Assess Transmission and Future Needs**

### **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 Assess Transmission and Future Needs Web Page](#)

### **Project Schedule:**

[Project 2006-02 Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	John E. Odom, Jr.	Florida Reliability Coordinating Council
<b>Vice Chairman</b>	Douglas Hohlbaugh	FirstEnergy Corp.
	D. Darrin Church	Tennessee Valley Authority
	William Harm	PJM Interconnection, L.L.C.
	Julius Horvath	Lower Colorado River Authority
	Robert A. Jones	Southern Company Services, Inc.
	R. W. Mazur	Manitoba Hydro
	Thomas C. Mielnik	MidAmerican Energy Co.
	Bernie Pasternack, P.E.	American Electric Power
	Bob Pierce	Duke Energy
	Chifong L. Thomas	Pacific Gas and Electric Company
	James Useldinger	Kansas City Power & Light Co.
	Dana Walters	National Grid
<b>NERC Staff</b>	Edward J. Dobrowolski	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>TPL Family</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1692 — Consider integrating TPL-001 through TPL-004 into one standard.</li> <li>• 1694, 1704, &amp; 1706 — 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.</li> <li>• 1716 — System performance should be assessed based on contingencies that mimic what happens in real-time.</li> <li>• 1719 — Consider appropriate revisions to the reliability standards to deal with cyber security events.</li> </ul>
	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.
<b>TPL-001-0 — System Performance Under Normal (No Contingency) Conditions (Category A)</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1694, 1704, &amp; 1706 — Determine critical system conditions and study years by conducting sensitivity analysis with due consideration of the factors outlined by the Commission.</li> <li>• 1751 — Require a peer review of planning assessments with neighboring entities</li> <li>• 1759 — Modify requirement R1.3 to substitute the reference to regional reliability organization with regional entity.</li> <li>• 1797 — 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</li> <li>• 1786 — Require assessments of outages of critical long lead time equipment, consistent with an entity's spare equipment strategy</li> <li>• 1719 — Consider appropriate revisions to the reliability standards to deal with cyber security events.</li> <li>• 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.</li> <li>• 1716 — System performance should be assessed based on contingencies that mimic what happens in real-time.</li> <li>• 1694, 1704, &amp; 1706 — 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.</li> <li>• 1693 — 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.</li> <li>• Consider integrating TPL-001 through TPL-004 into one standard.</li> </ul>
Fill in the Blank Team	No action needed

Source	Language
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.
Phase III/IV Team	<ul style="list-style-type: none"> <li>• Add a requirement to identify where UVLS should be installed</li> <li>• Add a requirement to verify that there are sufficient reactive resources</li> </ul>
Team Comments	<ul style="list-style-type: none"> <li>• Provide clarity where the Planning Authority is mentioned</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Table 1 — C.5 goes beyond double circuit outage criteria</li> <li>• Table 1, items 6, 7, 8 &amp; 9 need footnote stating that they do not apply to generator breaker failure</li> <li>• What is a major load center?</li> <li>• Need to include multiple time frames</li> <li>• Does planned facilities include just those under construction?</li> <li>• Having all projected firm transfers modeled may not be practical to achieve in a single snapshot of a powerflow model. The requirement should allow engineering judgment to determine the appropriate level of system utilization to assess reliability considering all projected firm uses.</li> <li>• Define critical system conditions</li> <li>• Need to address deliverability to load</li> <li>• Clarify use of applicable ratings in Table 1, note 'a'</li> <li>• Clarify timing for submittal of corrective plan</li> <li>• Several semantic issues</li> <li>• Table 1, note 'b' — clarify when to curtail firm deliveries</li> </ul>
VRFs Team	R1 — time horizon should be long-term planning
<b>TPL-002-0 — System Performance Following Loss of a Single Bulk Electric System Element (Category B)</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1694, 1704, &amp; 1706 — Determine critical system conditions in the same manner as proposed in TPL-001.</li> <li>• 1787 — 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.</li> <li>• 1786 — Requires assessment of planned outages of long lead time critical equipment consistent with the entity's spare equipment strategy.</li> <li>• 1789 — Document the load models used in system studies and the rationale for their use.</li> <li>• 1773 — Clarify the phrase "permit operating steps necessary to maintain system control" in the footnote (a) and the use of emergency ratings.</li> <li>• 1773 — 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.</li> <li>• 1773 — Footnote (b) should not allow for firm load shedding or curtailment of firm transfers as part of the system adjustments.</li> <li>• 1788 — Consider NRC's comments regarding clarifying the N-1 state as being always</li> </ul>

Source	Language
	applicable to the current conditions as part of the standards development process. <ul style="list-style-type: none"> <li>● 1794 — 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.</li> </ul>
Phase III/IV Team	<ul style="list-style-type: none"> <li>● Add a requirement to verify that there are sufficient reactive resources</li> <li>● Add a requirement to identify where UVLS should be installed</li> </ul>
Team Comments	<ul style="list-style-type: none"> <li>● Provide clarity where the Planning Authority is mentioned</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>● Don't include planning outage</li> <li>● Don't include generation runback or redispatch</li> <li>● Address deliverability of generation to load</li> <li>● Clarify timing for corrective plan</li> <li>● Define critical system conditions</li> <li>● Single terminals are not included</li> <li>● Must study all contingencies and multiple demand levels &amp; time frames</li> <li>● Clarify applicable ratings in Table 1, note 'a'</li> </ul>
Other	Incorporate approved formal interpretation
VRFs Team	Time horizon should be long-term planning and R2.2 — redundant with R1.3.8
<b>TPL-003-0 — System Performance Following loss of Two or More Bulk Electric System Elements (Category C)</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>● 1769 — Address LPPA's concerns on changes to footnotes of Table 1 through the standard development process.</li> <li>● 1788 — Address NRC concerns as described in TPL-002 through the standards development process.</li> <li>● 1824 — Consider the comments on major load pockets as part of the standards development process.</li> <li>● 1821 — Tailor the purpose statement to reflect the specific goal of the standard.</li> <li>● 1820 — Applicable entities must define and document the proxies necessary to simulate cascading outages.</li> <li>● 1765 — Determine critical system conditions in the same manner as proposed in TPL-001.</li> <li>● 1806 — Clarify the term "controlled load interruption".</li> </ul>
Fill in the Blank Team	No action required
Phase III/IV Team	<ul style="list-style-type: none"> <li>● Add a requirement to identify where UVLS should be installed</li> <li>● Add a requirement to verify that there are sufficient reactive resources</li> <li>● Add a requirement to identify where UVLS should be installed</li> </ul>
Team Comments	Provide clarity where the Planning Authority is mentioned
Version 0 Team	<ul style="list-style-type: none"> <li>● Development of mitigation plans requires subsequent studies, and may actually be done by a different entity than the entity performing the assessment (the TO instead of the RTO who may have done the assessment)</li> <li>● Clearly identify outages</li> </ul>

**2006-02 Assess Transmission and Future Needs**

Source	Language
	<ul style="list-style-type: none"> <li>• Use NERC Compliance Reporting Process</li> <li>• Don't base penalties on low probability, low consequence events</li> <li>• TO should provide plan of action</li> <li>• Same as TPL-001 &amp; 002</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• R2.2 — lack of consistency with TPL-001 &amp; TPL-007</li> <li>• R2.1.3 — lack of consistency with TPL-001 &amp; TPL-006</li> <li>• R2.1.2 — lack of consistency with TPL-001 &amp; TPL-005</li> <li>• R2.1.1 — lack of consistency with TPL-001 &amp; TPL-004</li> <li>• R2.1 — lack of consistency with TPL-001</li> <li>• R2 — lack of consistency with TPL-001 &amp; TPL-002</li> <li>• Time horizon should be long-term planning</li> </ul>
<b>TPL-004-0 — System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk Electric System Elements (Category D)</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1835 — Tailor the purpose statement to reflect the specific goal of the standard.</li> <li>• 1765 — Determine critical system conditions in the same manner as proposed in TPL-001.</li> <li>• 1836 — Identify options for reducing the probability or impacts of extreme events that cause cascading.</li> <li>• 1836 — Expand the list of category D events to include recent actual events.</li> </ul>
Fill in the Blank Team	No action required
Phase III/IV Team	<ul style="list-style-type: none"> <li>• Add a requirement to identify where UVLS should be installed</li> <li>• Add a requirement to verify that there are sufficient reactive resources</li> </ul>
Team Comments	Provide clarity where the Planning Authority is mentioned
Version 0 Team	<ul style="list-style-type: none"> <li>• R1.3.9 — remove from extreme events</li> <li>• TO should determine which events to study</li> <li>• Perform analysis on credible contingency</li> <li>• Same as TPL-001</li> </ul>
<b>TPL-005-0 — Regional and Interregional Self-Assessment Reliability Reports</b>	
FERC Order 693	1841 — Encourages NERC to utilize input from the Commission's technical conferences on regional planning as directed in Order No. 890 to improve this standard.
Fill in the Blank Team	New SAR needed
Version 0 Team	<ul style="list-style-type: none"> <li>• An RRO can't make a mandatory request for another RRO to perform a study</li> <li>• Define fuel adequacy</li> </ul>
<b>TPL-006-0 — Assessment Data from Regional Reliability Organizations</b>	
Fill in the Blank Team	No action required

## **Project 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](#)



**Standard Drafting Team Roster:**

<b>Chairman</b>	Samuel Brattini	KEMA Consulting
<b>Vice Chairman</b>	Michael Schiavone	Niagara Mohawk Power Corp.
	Tom Bowe	PJM Interconnection, L.L.C.
	Blaine R. Dinwiddie	Omaha Public Power District
	Charles W. Jenkins	Oncor Electric Delivery
	Glenn Kaht	ReliabilityFirst Corporation
	Barry R. Lawson	National Rural Electric Cooperative Association
	Sara McCoy	SRP
	Melinda K. Montgomery	Entergy Services, Inc.
	Keith Porterfield	Georgia Systems Operations Corporation
	John Procyk	Hydro One, Inc.
	James Vermillion	Associated Electric Cooperative, Inc.
<b>NERC Staff</b>	Edward J. Dobrowolski	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>EOP-008-0 — Plans for Loss of Control Center Functionality</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 672 — Provide for backup capabilities that, at a minimum, must include a requirement that all reliability coordinators have full backup control centers;</li> <li>• Include a requirement that provides for backup capabilities that, at a minimum, must:</li> <li>• 672 — Provide for backup capabilities that, at a minimum, must provide 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.</li> <li>• 651 — Provide for backup capabilities that, at a minimum, must provide for a minimum functionality to replicate the critical reliability functions of the primary control center.</li> <li>• Provide for backup capabilities that, at a minimum, must be independent of the primary control center</li> <li>• 672 — Provide for backup capabilities that, at a minimum, must require 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</li> <li>• 651 — Provide for backup capabilities that, at a minimum, must be capable of operating for a prolonged period of time, generally defined by the time it takes to restore the primary control center.</li> </ul>
Fill in the Blank Team	No comments
NERC Audit Observation Team	Compliance levels don't align with the measures or requirements
Version 0 Team	<ul style="list-style-type: none"> <li>• Max. time to restore capabilities</li> <li>• How is backup control achieved?</li> <li>• How does staff know control center is lost? (Note — A system health monitor concept or equivalent functionality is what is desired here.)</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> </ul>

## **Project 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:**

None

### **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 ambiguity 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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Mike Hardy	Southern Company Services, Inc.
	Earl A. Barber	National Grid
	Timothy A. Beach	American Transmission Company, LLC
	Paul Bleuss	California/Mexico Reliability Coordinator (CMRC)
	James S. Case	Entergy Services, Inc.
	Albert DiCaprio	PJM Interconnection, L.L.C.
	Anthony Jankowski	We Energies
	Allan D. Miller	Independent Electricity System Operator
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Robert C. Rhodes, Jr.	Southwest Power Pool
<b>NERC Staff</b>	Stephen Crutchfield	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>COM-001-1 — Telecommunications</b>	
FERC Order 693	<p>"Include generator operators and distribution providers in the list of applicable entities and create appropriate requirements for them. Paragraph 487. The Commission reaffirms its position that generator operators and distribution providers should be included as applicable entities in COM-001-1 to ensure there is no reliability gap during normal and emergency operations. For example, during a blackstart when normal communications may be disrupted, it is essential that the transmission operator, balancing authority and reliability coordinator maintain communications with their distribution providers and generator operators. However, the current version of Reliability Standard COM-001-1 does not require this because it does not include generator operators and distribution providers as applicable entities. We clarify that the NOPR did not propose to require redundancy on generator operators' or distribution providers' telecommunication facilities or that generator operators or distribution providers be trained on anything not related to their functions during normal and emergency conditions. We expect the telecommunication requirements for all applicable entities will vary according to their roles and that these requirements will be developed under the Reliability Standards development process."</p>
	<p>"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. Paragraph 490. In response to SDG&amp;E, the Commission's intent is not to subject generator operators and distribution providers to the same requirements placed on transmission operators. As part of the modification of this Reliability Standard or development of a new Reliability Standard to include the appropriate telecommunications facility requirements for generator operators and distribution providers, the ERO should take into account what would be required of generator operators and distribution providers in terms of telecommunications for the Reliable Operation of the Bulk-Power System, instead of applying the same requirements as are placed on other reliability entities such as reliability coordinators, balancing authorities and transmission operators."</p>
	<p>Address TAPS, Entergy, Six Cities, and FirstEnergy concerns through the standard development process. TAPS Paragraph 483. TAPS states that Requirement R1.4 has an ambiguous requirement that, if applied to distribution providers and generator operators, would impose redundancy requirements well beyond what is reasonably necessary for Bulk-Power System reliability. Further it asserts that the NOPR provides no basis for expanding the Reliability Standard to small entities, such as a 2-MW distribution provider or generator, much less than one that has no connection to the bulk transmission system. Finally, TAPS contends that, in making this proposal, the Commission is "over-stepping its bounds" by not leaving it to the ERO's expert judgment whether COM-001-1 has sufficient coverage to protect Bulk-Power System reliability and states that, in any event, applicability should be limited through NERC's registry criteria and definition of bulk electric system.</p>
	<p>"Address TAPS, Entergy, Six Cities, and FirstEnergy concerns through the standard development process. Entergy Paragraph 499. Entergy states that it is unclear what cyber assets are covered by COM-001-0. Entergy believes that the Reliability Standard should focus on telecommunications that support the operation of critical assets. Entergy also believes that COM-001-0 should be expanded to include advances in communications technology. It states that NERC should consider addressing the following in a way that will</p>

Source	Language
	<p>facilitate an understanding of the Reliability Standards' requirements: (1) voice communications; (2) command and control data communications; (3) security coordination data communications; (4) digital messaging communications; (5) human linguistic convention and (6) other types of communications, including video conferencing and communications with remote security cameras. Entergy believes that this could be accomplished through an enhancement to the definition of communications in the NERC glossary and recasting COM-001-0 to improve the specificity of requirements for each form of communication. Finally, Entergy believes that Requirement R4 of COM-001-0, which requires reliability coordinators, transmission operators and balancing authorities to use English in all types of communications, should apply only to verbal and written communications."</p> <p>Address TAPS, Entergy, Six Cities, and FirstEnergy concerns through the standard development process. Six Cities Paragraph 501. Six Cities is concerned that the scope of improper conduct under the "NERCNet security policy" in Attachment 1 is virtually limitless. Six Cities recognizes that it would be difficult to provide a comprehensive and detailed list of all conduct that might be considered a misuse of NERCNet data, but that difficulty does not justify exposing NERCNet users to the risk of monetary penalties based on amorphous and unbounded descriptions of potentially violative conduct. Six Cities states that one solution would be to limit the imposition of monetary penalties for misuse of NERCNet data to instances where such misuse is intentional or grossly negligent. According to Six Cities, it would be appropriate to exact a monetary penalty where a NERCNet user deliberately uses NERCNet data for unauthorized or unreasonable purposes. Six Cities asks that it be modified to provide for a warning for the improper disclosure of NERCNet data where the disclosure was not intentional or grossly negligent.</p> <p>Address TAPS, Entergy, Six Cities, and FirstEnergy concerns through the standard development process. First Energy Paragraph 500. FirstEnergy asserts that the Requirement R2 is unclear because it does not specify whether the phrase "telecommunication facilities" covers both voice and data facilities in the context of alarms. It states that, although the word "telecommunications facilities" is generally understood to mean both voice and data facilities, the current practice is to display alarms only for data facilities. Requirement R2 could be misinterpreted to require alarms on voice facilities as well, which would be impractical.</p>
NERC Standards DT Coordinators Meeting 20080520	COM-001-1 Telecommunications is being reviewed and revised under Project 2006-06 Reliability Coordination; however, it has been agreed that all requirements of COM-001-1 except R4 will be addressed by the SDT for Project 2006-06 and that requirement R4 will be addressed by the SDT for Project 2007-02 Operating Personnel Communications Protocols. If either part of this agreement is not maintained, COM-001-1 will need revisited.
Version 0 Team	<ul style="list-style-type: none"> <li>• Apply R1 to all but smallest entities</li> <li>• Many players missing</li> <li>• Redundant with Policy 5A, R1</li> </ul>
VRFs Team	R6 — administrative requirement
<b>COM-002-2 — Communications and Coordination</b>	
NERC Standards DT Coordinators Meeting 20080520	COM-002-2 Communication and Coordination is being reviewed and revised under both Project 2006-06 Reliability Coordination and Project 2007-02 Operating Personnel Communications Protocols; however, it has been agreed that: •Requirement R1 will be addressed by the SDT for Project 2006-06 and •Requirement R2 will be addressed by the SDT for Project 2007-02 Operating Personnel Communications Protocols. If either part of this agreement is not maintained, COM-002-2 will need revisited.

Source	Language
<b>IRO-001-1 — Reliability Coordination — Responsibilities and Authorities</b>	
FERC Order 693	<p>Consider commenter's' suggestions as part of the standards development process. 895. California Cogeneration comments that the Reliability Standard fails to address the operational limitations of QFs because they have contractual obligations to provide thermal energy to their industrial hosts. It contends that a QF can be directed to change operations only in the case of a system emergency, pursuant to 18 CFR § 292.307.</p>
	<p>Consider adding measures and levels of non-compliance. Paragraph 897. While APPA, FirstEnergy and California Cogeneration suggest possible changes to IRO-001-1, they do not suggest that the proposed Reliability Standard should not be approved. The ERO should consider the commenter's' suggestions when modifying the Reliability Standard pursuant to its Reliability Standards development process. Further, the Commission directs the ERO to consider adding Measures and Levels of Non-Compliance in the Reliability Standard as requested by APPA.</p>
	<p>Consider commenter's' suggestions as part of the standards development process. Paragraph 892. APPA supports the approval of the Reliability Standard but expresses concern that the Version 1 standard does not include Measures that correspond to Requirements R2 and R9. APPA emphasizes the need for Measures corresponding to Requirement R9, which requires the reliability coordinator to act in the interests of reliability for the overall reliability coordinator area and the Interconnection before the interests of any other entity. APPA supports Requirement R8 with the extended applicability, provided that applicability is determined by reference to the NERC compliance registry. APPA agrees that the regional reliability organization should be eliminated as an applicable entity and suggests it be replaced with Regional Entities.</p>
	<p>Eliminate the references to the regional reliability organization as an applicable entity. Paragraph 896. In the NOPR, the Commission proposed to approve the Reliability Standard as mandatory and enforceable. In addition, as a separate action under section 215(d)(5), the NOPR proposed to direct the ERO to develop modifications to Requirement R1291 to substitute "Regional Entity" for "regional reliability organization" and reflect NERC's Rules of Procedure for registering, certifying and verifying entities, including reliability coordinators. Commenter's do not raise any concerns regarding the proposed action. Accordingly, for the reasons stated in the NOPR, the Commission approves IRO-001-1 as mandatory and enforceable. In addition, for the reasons discussed in the NOPR, the Commission directs the ERO to develop modifications to the Reliability Standard through the Reliability Standards development process that reflect the process set forth in the NERC Rules of Procedures and eliminate the regional reliability organization as an applicable entity.</p>
	<p>Consider commenter's' suggestions as part of the standards development process. 893. FirstEnergy suggests that NERC clarify whether Requirement R8, which requires entities to comply with a reliability coordinator directive "unless such actions would violate safety, equipment or regulatory or statutory requirements," refers to personnel safety, equipment safety or both. In addition, it suggests the establishment of a chain of command so that, for example, if a generator receives conflicting instructions from a balancing authority and a transmission operator, it can determine which instruction governs.</p>
	<p>Consider commenter's' suggestions as part of the standards development process. 894. Requirement R3 provides that a reliability coordinator "shall have clear decision making authority to act and direct actions to be taken" by applicable entities to "preserve the integrity and reliability of the Bulk Electric System and these actions shall be taken without delay but no longer than 30 minutes." Santa Clara contends that some actions would require driving to a remote site and therefore, mandating completion of the required action within 30 minutes would be unreasonable. Thus, it recommends that NERC modify Requirement R3 to provide</p>

Source	Language
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>that "actions shall commence without delay, but in any event shall commence within 30 minutes."</p> <p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
<p>Fill in the Blank Team</p>	<ul style="list-style-type: none"> <li>• Remove ", sub-region, or interregional coordinating group" from R1</li> <li>• 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.</li> </ul>
<p>NERC Audit Observation Team</p>	<p>All applicable registered functions shall comply with RC directives unless such actions would violate safety, equipment or regulatory or statutory requirements. Inform the RC immediately of the inability to perform such directives. For audit purposes, what is acceptable evidence?</p>
<p>Version 0 Team</p>	<ul style="list-style-type: none"> <li>• Inability to perform needs to be communicated</li> <li>• What is meant by "interest of other entity"?</li> <li>• What is meant by "interest of other entity"?</li> </ul>
<p>VRFs Team</p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>
<p><b>IRO-002-1 — Reliability Coordination — Facilities</b></p>	
<p>FERC Order 693</p>	<p>"Require a minimum set of tools that must be made available to the reliability coordinator. Paragraph 905. Further, consistent with the NOPR, the Commission directs the ERO to modify IRO-002-1 to require a minimum set of tools that must be made available to the reliability coordinator. We believe that this requirement will ensure that a reliability coordinator has the tools it needs to perform its functions. Further, as noted by Dominion, such a requirement promotes a more proactive approach to maintaining reliability."</p>



Source	Language
Version 0 Team	<ul style="list-style-type: none"> <li>• Words such as 'easily understood' and 'particular emphasis' need to be tightened</li> <li>• R7 — define 'adequate' tools and 'wide-area'</li> <li>• R5 — define synchronized information system</li> </ul>
<b>IRO-005-1 — Reliability Coordination — Current-Day Operations</b>	
FERC Order 693	<p>Include measures and levels of non-compliance.</p> <p>"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. Paragraph 951. Accordingly, the Commission approves Reliability Standard IRO-005-1 as mandatory and enforceable. Further, because IRO-005-1 has no Measures or Levels of Non-Compliance, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to IRO-005-1 through the Reliability Standards development process that includes Measures and Levels of Non-Compliance. The Commission further directs that the Measures and Levels of Non-Compliance specific to IROL violations must be commensurate with the magnitude, duration, frequency and causes of the violations and whether these occur during normal or contingency conditions. Finally, the Commission directs the ERO to conduct a survey on IROL practices and actual operating experiences by requiring reliability coordinators to report any violations of IROL, their causes, the date and time, the durations and magnitudes in which actual operations exceeds IROLS to the ERO on a monthly basis for one year beginning two months after the effective date of the Final Rule. We may propose further modifications to IRO-005-1 based on the survey results."</p> <p>"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. Paragraph 951. Accordingly, the Commission approves Reliability Standard IRO-005-1 as mandatory and enforceable. Further, because IRO-005-1 has no Measures or Levels of Non-Compliance, pursuant to section 215(d)(5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to IRO-005-1 through the Reliability Standards development process that includes Measures and Levels of Non-Compliance. The Commission further directs that the Measures and Levels of Non-Compliance specific to IROL violations must be commensurate with the magnitude, duration, frequency and causes of the violations and whether these occur during normal or contingency conditions. Finally, the Commission directs the ERO to conduct a survey on IROL practices and actual operating experiences by requiring reliability coordinators to report any violations of IROL, their causes, the date and time, the durations and magnitudes in which actual operations exceeds IROLS to the ERO on a monthly basis for one year beginning two months after the effective date of the Final Rule. We may propose further modifications to IRO-005-1 based on the survey results."</p> <p>"Provide further clarification that reliability coordinators and transmission operators direct control actions, not LSEs as part of the standard development process. Paragraph 950. We do not share TAPS' concern regarding LSEs initiating load shedding as their own control action to respect IROLS or SOLs. The appropriate control actions to respect IROLS and SOLs are the responsibilities of a reliability coordinator and transmission operator. If load shedding is required, it is the responsibility of a reliability coordinator or a transmission operator to direct the appropriate entities including LSEs to carry it out. However, we urge the ERO to provide further clarification in this regard and include TAPS' concern in developing the modification of this Reliability Standard."</p>
Fill in the Blank Team	R14 has regional reference

## 2006-06 Reliability Coordination

---

Source	Language
Version 0 Team	R10, 11 & 12 — RA not empowered to do this
<b>IRO-016-1 — Coordination of Real-Time Activities Between Reliability Coordinators</b>	
VRFs Team	R1.2.1 & R2 — ambiguous

**Project 2006-08 Transmission Loading Relief**

**Standards Involved:**

IRO-006-4 — 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. Related to this project, NERC's IDC Working Group (IDCWG) is in the process of identifying changes to the Interchange Distribution Calculator such that it will accept market data, thus eliminating the need for the existing regional differences and to make other necessary modifications as identified by stakeholders. NAESB and the IDCWG are working collaboratively with the NERC Reliability Coordinator Working Group in order to ensure both commercial needs and reliability needs are met.

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.

**Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 1.b

Justification for NAESB consideration:  
FERC Order 890

SRS Recommendation:

This project is already covered by current NAESB WEQ projects. NERC should take into consideration WEQ Annual Plan Item 1.b in the development of the NERC Standard. Coordination between NERC and NAESB is in progress.

**Standard Development Status:**

[Project 2006-08 Transmission Loading Relief Web page](#)

**Project Schedule:**

[Project 2006-08 Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	P.S. (Ben) Li	Ben Li Associates, Inc.
	Daryn Barker	E.ON-US Energy Services Inc.
	Bill Blevins	Electric Reliability Council of Texas, Inc.
<b>Vice Chair</b>	James Busbin	Southern Company Services, Inc.
	James Eckelkamp	Progress Energy
	Robert Paul Humberson	Western Area Power Administration - Rocky Mountain Region
	Frank J. Koza	PJM Interconnection, L.L.C.
	David F. Lemmons	Xcel Energy, Inc.
	Thomas J Mallinger, P.E.	Midwest ISO, Inc.
	Dave Marton	FirstEnergy Solutions
	Narinder K. Saini	Entergy Services, Inc.
	Don Shipley	Southwest Power Pool
<b>NERC Staff</b>	Andrew J. Rodriguez	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
NAESB Standards Review Subcommittee	NAESB Standards Review Subcommittee as input to the Reliability Standards Development Plan: 2010-2012: NAESB requests that NERC continue its coordination with NAESB on this project.
<b>IRO-006-3 — Reliability Coordination — Transmission Loading Relief</b>	
FERC Order 693	Regional Difference to IRO-006: PJM/MISO/SPP Enhanced Congestion Management: Allow the NERC Operating Committee to address the technical merits of netting flow impacts in the interchange distribution calculator.
	Regional Difference to IRO-006: PJM/MISO/SPP Enhanced Congestion Management: 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/redispach process.
	Regional Difference to IRO-006: PJM/MISO/SPP Enhanced Congestion Management: Commission will allow the twelve-month PJM/MISO/SPP field test to conclude before taking further action on the variance.
	Include a clear warning that TLR procedures are not appropriate and not effective to mitigate an actual IROL violation.
	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.
	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.
FERC Order 890	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.
	660 We are cognizant that daily and hourly operations to change the tags for conditional firm customers likely 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.
	1074. We adopt a secondary network curtailment priority to apply for the hours or specific system conditions when conditional firm service is conditional. During non-conditional 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.
	1075. The secondary network curtailment priority is appropriate because the customer is

Source	Language
	<p>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 commenter's 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.</p> <p>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 redispatch 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.</p> <p>1077. We disagree with commenter's' 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 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.</p> <p>1077. We disagree with commenter's' 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.</p>
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT should review the definition of the following term and coordinate with NAESB so that the definition is consistent between NERC and NAESB: Reallocation
Version 0 Team	<ul style="list-style-type: none"> <li>• Usage of TLR log questioned</li> <li>• Some inconsistencies with current usage</li> </ul>

## 2006-08 Transmission Loading Relief

---

Source	Language
VRFs Team	<ul style="list-style-type: none"><li>• R2.1, .2 &amp; .3 — not a requirement, just a suggested instruction</li><li>• R6 — redundant</li></ul>
<b>TLR Family</b>	
Other	Gerry, Hey, I was looking something up in the standards and I couldn't find a definition for "TLR." I ended up downloading the whole set of standards and doing a search. I finally found it. Should TLR be included in the glossary? Kevin J. Conway NERC Reliability Readiness Evaluator North American Electric Reliability Corporation 116-390 Village Blvd. Princeton, NJ 08540-5721 Cellular Phone: 509-750-5441 <a href="mailto:kevin.conway@nerc.net">kevin.conway@nerc.net</a>

## **Project 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 within 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](#)



**Standard Drafting Team Roster:**

<b>Chairman</b>	Philip J. Tatro, P.E.	National Grid USA
	Paul Attaway	Georgia Transmission Corporation
	Brian D. Bartos	Bandera Electric Cooperative
	Scott Berry	Indiana Municipal Power Agency
	Brian Evans-Mongeon	Utility Services LLC
	Frank Gaffney	Florida Municipal Power Agency
	Jonathan Glidewell	Southern Company Transmission Company
	Gerald Keenan	Northwest Power Pool Corporation
	Robert W. Millard	ReliabilityFirst Corporation
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Mak Nagle	Southwest Power Pool
	Robert J. O'Keefe	American Electric Power
	Si Truc Phan	Hydro-Québec TransEnergie
	Tony Rodrigues, P.E.	PacifiCorp
<b>NERC Staff</b>	Robert W Cummings	North American Electric Reliability Corporation
<b>NERC Staff</b>	Stephanie Monzon	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PRC-006-0 — Development and Documentation of Regional ULS Program Requirements</b>	
FERC Order 693	Transfer responsibility from the regional reliability organization to the regional entity.
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Modify R1 to require each Region to develop a regional standard, and</li> <li>• 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.</li> <li>• 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.</li> <li>• Related PRC-007, PRC-008, and 009.</li> <li>• PRC-006 will be a continent-wide standard supported by Regional Reliability Standards.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Not a standalone standard</li> <li>• Who do you submit compliance material to?</li> <li>• Need to define evidence</li> </ul>
<b>PRC-007-0 — Assuring Consistency with Regional UFLS Programs</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• The regional procedures need to be converted to a standard to implement this.</li> <li>• Change "program" to "standard" in R1.</li> <li>• Coordinated with PRC-006.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Need to refine levels of non-compliance</li> <li>• Need to include RA</li> </ul>

<b>PRC-009-0 — UFLS Performance Following an Underfrequency Event</b>	
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• See notes for PRC-007.</li> <li>• Change "program" to "standard'.</li> </ul>
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Exemptions for those with shunt reactors who don't shed load</li> <li>• 90 days vs. 30 days</li> <li>• Define evidence</li> </ul>

**Project 2007-02 Operating Personnel Communications Protocols**

**Standards Involved:**

COM-002-2 — Communications and Coordination

**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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Lloyd S. Snyder	Georgia Systems Operations Corporation
	Alan N. Allgower	Electric Reliability Council of Texas, Inc.
	Harvie D. Beavers	Colmac Clarion/Piney Creek LP
	Mark L. Bradley	ITC Transmission
	Mike Brost	JEA
	William D Ellard	California ISO
	Ronald Goins	Midwest ISO, Inc.
	Leanne Harrison	PJM Interconnection, L.L.C.
	Tom Irvine	Hydro One Networks, Inc.
	James McGovern	ISO New England, Inc.
	Wayne Mitchell	Entergy Corporation
	John Stephens	City Utilities of Springfield
	Fred Waites	Southern Company
<b>NERC Staff</b>	Larry J. Kezele	North American Electric Reliability Corporation
<b>NERC Staff</b>	Harry Tom	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>COM-001-1 — Telecommunications</b>	
NERC Standards DT Coordinators Meeting 20080520	COM-001-1 Telecommunications is being reviewed and revised under Project 2006-06 Reliability Coordination; however, it has been agreed that all requirements of COM-001-1 except R4 will be addressed by the SDT for Project 2006-06 and that requirement R4 will be addressed by the SDT for Project 2007-02 Operating Personnel Communications Protocols. If either part of this agreement is not maintained, COM-001-1 will need revisited.
<b>COM-002-2 — Communications and Coordination</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Address APPA's concern through the standard development process.</li> <li>• Address Santa Clara, FirstEnergy, and Six Cities concerns in the reliability standards development process.</li> <li>• 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.</li> <li>• Establish tightened communication protocols, especially for communications during alerts and emergencies. Establish uniformity to the extent practical on a continent-wide basis.</li> <li>• 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.</li> <li>• Include APPA's suggestions to complete the measures and levels of non-compliance.</li> <li>• Include distribution providers in the list of applicable entities.</li> </ul>
NERC Standards DT Coordinators Meeting 20080520	<ul style="list-style-type: none"> <li>• "COM-002-2 Communication and Coordination is being reviewed and revised under both Project 2006-06 Reliability Coordination and Project 2007-02 Operating Personnel Communications Protocols; however, it has been agreed that: •Requirement R1 will be addressed by Project 2006-06"</li> <li>• Requirements R1, R3, R4, and R5 (for coordination in planning time frame) of PRC-001-1 System Protection Coordination are better addressed in COM-002 Communications and Coordination. (Note: These requirements are being removed from PRC-001 under Project 2007-06 System Protection. If this recommendation is not implemented, PRC-001 will need revisited.)</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• R1 — include reliability authority</li> <li>• R2 — include sabotage and security</li> <li>• R4 — clarify repeat back requirement with regard to emergency</li> <li>• Voice with generators not required</li> </ul>
Version 1 Team	<ul style="list-style-type: none"> <li>• R1 — include reliability authority</li> <li>• R2 — include sabotage and security</li> <li>• R4 — clarify repeat back requirement with regard to emergency</li> <li>• Voice with generators not required</li> </ul>

## **Project 2007-03 Real-time Operations**

### **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 Operations Web page](#)

### **Project Schedule:**

[Project 2007-03 Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	James S. Case	Entergy Services, Inc.
	Paul Bleuss	California/Mexico Reliability Coordinator
	Albert DiCaprio	PJM Interconnection, L.L.C.
	Ryan Johnson	NRG Energy Power Marketing, Inc.
	Phillip Lavallee	National Grid USA
	Jason L. Marshall, P.E.	Midwest ISO, Inc.
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Paul Olson	Sacramento Municipal Utility District
	Gregory Van Pelt	California ISO
	Jim Useldinger	KCP&L
<b>NERC Staff</b>	Edward J. Dobrowolski	North American Electric Reliability Corporation



**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PER-001-0 — Operating Personnel Responsibility and Authority</b>	
Version 0 Team	Data retention should be 1 year
<b>TOP-001-1 — Reliability Responsibilities and Authorities</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Consider adding other measures and levels of non-compliance.</li> <li>• 1589 — Includes measures and levels of non-compliance for requirement R8</li> <li>• 1588 — Consider Santa Clara's comments on requirements R7.2 and R7.3 on transmission operator notification requirements as part of the standards development process.</li> <li>• 1585 — Clarify the definition of "emergency" and define the criteria for entering into the various states. Also define the authority for declaring these states.</li> </ul>
NERC Audit Observation Team	Does this imply that a GOP can call another GOP and request an output change without going through the RC, BA or TOP?
Version 0 Team	<ul style="list-style-type: none"> <li>• Define emergency</li> <li>• Need to expand included entities</li> <li>• What is 'clear decision making authority'?</li> <li>• Need to define single, central communications point during emergencies</li> <li>• Some emergencies will require follow up notification as opposed to immediate</li> </ul>
<b>TOP-002-1 — Normal Operations Planning</b>	
Fill in the Blank Team	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 .
Version 0 Team	<ul style="list-style-type: none"> <li>• Limit of 2 tests per year</li> <li>• Coordination of planning required</li> <li>• Define N-1</li> <li>• Define 'without intentional delay'</li> <li>• Reliability should 'trump' confidentiality</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• R2 — administrative in nature, not a real requirement</li> <li>• R9 — related to INT-003</li> <li>• R14 &amp; 14.1 — ambiguous</li> </ul>
<b>TOP-002-2 — Normal Operations Planning</b>	

Source	Language
FERC Order 693	<ul style="list-style-type: none"> <li>• 1607 — Consider the comments of ISO-NE and the NRC with respect to requirement R12 and measure M7 as part of the standard development process.</li> <li>• 1608 — Requires simulation contingencies to match what will actually happen in the field.</li> <li>• 1608 — Requires next-day analysis of minimum voltages at nuclear power plants auxiliary power buses.</li> <li>• 1608 — 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.</li> <li>• 1608 — Delete references to confidentiality in requirements R3 and R4.</li> <li>• 1608 — Address critical energy infrastructure confidentiality as part of the routine standard development process.</li> <li>• 1603 — Inform the nuclear plant operator in real-time if the auxiliary power bus voltages cannot be maintained.</li> </ul>
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
NERC Standards DT Coordinators Meeting 20080520	<p>Requirements R2, R5, and R6 (for coordination in real-time) of PRC-001-1 System Protection Coordination are better addressed in the TOP family of standards: Consider putting R5 of PRC-001-1 in: TOP-002 R1, R3, R4, or R5 or TOP-003 — R1, R3, R4 (Note: These requirements are being removed from PRC-001 under Project 2007-06 System Protection. If this recommendation is not implemented, PRC-001 will need revisited.)</p>
<b>TOP-003-0 — Planned Outage Coordination</b>	

Source	Language
FERC Order 693	<ul style="list-style-type: none"> <li>• 1622 — Consider TVA's suggestion for including breaker outages within the meaning of facilities that are subject to advance notice for planned outages.</li> <li>• 1624 — 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</li> <li>• 1626 — Incorporate an appropriate lead time for planned outages using suggestions from the various commenter's.</li> <li>• 1626 — Communicate scheduled outages to all affected entities well in advance to ensure reliability and accuracy of ATC calculations.</li> </ul>
Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012	With respect to requirement R1.2, why is the TOP responsible for providing generator outage information? Isn't that the BA's or GOP's responsibility and isn't this redundant with IRO-010-1?
NERC Standards DT Coordinators Meeting 20080520	Requirements R2, R5, and R6 (for coordination in real-time) of PRC-001-1 System Protection Coordination are better addressed in the TOP family of standards: •Consider putting R5 of PRC-001-1 in: TOP-002 R1, R3, R4, or R5 or TOP-003 — R1, R3, R4 •Consider putting R6 of PRC-001-1 in: TOP-003 R5 or TOP-006 (Note: These requirements are being removed from PRC-001 under Project 2007-06 System Protection. If this recommendation is not implemented, PRC-001 will need revisited.)
Version 0 Team	<ul style="list-style-type: none"> <li>• Submit outage data ASAP but no later than noon day ahead</li> <li>• RA can't request outage cancellation</li> <li>• Outage information needed sooner than 1 day prior</li> </ul>
VRFs Team	R4 — poorly written
<b>TOP-004-1 — Transmission Operations</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1630 - 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.</li> <li>• 1628 - NERC should report the results of the survey to the Commission within 18 months of the effective date of this rule.</li> <li>• 1641 - Reliability coordinators should report any IROL violations to NERC on a monthly basis for one year beginning August 2, 2007.</li> <li>• 1628 - Perform a survey of the prevailing operating practices and actual operating experiences surrounding IROL limits.</li> <li>• 1640 - Defines high risk conditions under which the system must be operated to respect multiple outages in requirement R3.</li> <li>• 1634 - Consider Santa Clara's comments regarding changes to requirement R2 in the standards development process.</li> </ul>
Fill in the Blank Team	No action required
NERC Audit Observation Team	Transmission operator enters an unknown state. What does this mean?

Source	Language
Version 0 Team	<ul style="list-style-type: none"> <li>• Define (or remove) practical</li> <li>• Define SOL &amp; IROL</li> <li>• Specify disconnection as acceptable in R5</li> <li>• Clarify roles</li> <li>• Vagueness in application of IROL limits</li> <li>• Operations should conform to planning standards</li> </ul>
<b>TOP-005-1 — Operational Reliability Information</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1644 &amp; 1646 — Consider FirstEnergy's modifications to Attachment 1 and ISO-NE's recommended revision to requirement R4 in the standards development process.</li> <li>• 1649 — Delete references to confidentiality agreements but ensure critical energy infrastructure confidentiality is addressed in the standards development process.</li> <li>• 1651 — Include information about the operational status of special protection systems and power system stabilizers in Attachment 1.</li> </ul>
NERC Standards DT Coordinators Meeting 20080520	Requirements R2, R5, and R6 (for coordination in real-time) of PRC-001-1 System Protection Coordination are better addressed in the TOP family of standards: •Consider putting R2 of PRC-001-1 in TOP-005 (Note: These requirements are being removed from PRC-001 under Project 2007-06 System Protection. If this recommendation is not implemented, PRC-001 will need revisited.)
Version 0 Team	<ul style="list-style-type: none"> <li>• Generator data should include voltage control &amp; stabilizers</li> <li>• Data update is too slow</li> <li>• Need to include GO &amp; LSE</li> <li>• GO needs to supply data to BA &amp; TO</li> </ul>
<b>TOP-006-1 — Monitoring System Conditions</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1653 — 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.</li> <li>• 1653 — Clarify the meaning of “appropriate technical information” concerning protective relays.</li> <li>• 1658 — Consider APPA's comments regarding missing measures in the standards development process.</li> </ul>
Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012	<ul style="list-style-type: none"> <li>• With respect to requirements R1 and R1.2, why are BAs responsible for information regarding transmission resources available for use? Isn't that the role of the TOP?</li> <li>• With respect to requirement R2, why is the BA responsible for monitoring transmission line status, voltage, load tap changer settings, and reactive power in general? Monitoring and managing reactive resources, voltage and tap settings is clearly made the responsibility of the TOP in VAR-001-1a.</li> <li>• With respect to requirement R3 why does the BA need to understand protective relaying? Isn't that the role of the TOP and GOP?</li> </ul>
NERC Standards DT Coordinators Meeting	Requirements R2, R5, and R6 (for coordination in real-time) of PRC-001-1 System Protection Coordination are better addressed in the TOP family of standards: •Consider

Source	Language
20080520	putting R6 of PRC-001-1 in: TOP-003 R5 or TOP-006 (Note: These requirements are being removed from PRC-001 under Project 2007-06 System Protection. If this recommendation is not implemented, PRC-001 will need revisited.)
Version 0 Team	<ul style="list-style-type: none"> <li>• Monitor frequency at multiple points</li> <li>• GO needs to provide normal &amp; emergency data</li> <li>• Load forecasting data required</li> <li>• Need to match roles with FM</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• R3 — define appropriate</li> <li>• R1, 1.1, 1.2 — ‘available in emergency situation’ may be needed</li> <li>• R4 — What information is required and what is a load pattern?</li> </ul>
<b>TOP-007-0 — Reporting System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) Violations</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 1671 — Consider the NRC’s comments on voltage requirements as part of the standards development process.</li> <li>• 1668 — Eliminate overlapping matters in TOP-007 and TOP-008.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Not enforceable with current criteria</li> <li>• Need to tighten the non-compliance terms</li> <li>• Need to define evidence of evaluation</li> <li>• More of a compliance issue than an true standard</li> <li>• RA should be included</li> </ul>
<b>TOP-008-1 — Response to Transmission Limit Violations</b>	
FERC Order 693	1678 — Consider APPA’s comments regarding missing measures in the standards development process.

## **Project 2007-04 Certifying System Operators**

### **Standards Involved:**

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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	David J. Carlson	Commonwealth Edison Co.
	Brad E. Calhoun	CenterPoint Energy
	William D Ellard	California ISO
	David L. Folk	FirstEnergy Corp.
	Jeff Gooding	Florida Power & Light Co.
	Mike Gough	Western Area Power Administration
	Raymond C. Gross	PJM Interconnection, L.L.C.
	Mark A. Heimbach	Pennsylvania Power & Light Company
	Lauri Jones	Pacific Gas and Electric Company
	Rob MacDonald	Hydro One, Inc.
	Tom McKenrick	Midwest ISO, Inc.
	Patricia E. Metro	National Rural Electric Cooperative Association
	Ed Seddon	Orlando Utilities Commission
	Fred Waites	Southern Company
<b>NERC Staff</b>	Darrel Richardson	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PER-003-0 — Operating Personnel Credentials</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Consider grandfathering certification requirements for transmission operator personnel as part of the standards development process.</li> <li>• Identify the minimum competencies operating personnel must demonstrate to be certified.</li> <li>• Specify the minimum competencies that must be demonstrated to become and remain a certified operator.</li> </ul>
NERC Audit Observation Team	Who needs to be certified?
Version 0 Team	<ul style="list-style-type: none"> <li>• Problem with wording change from 'both' to 'either'</li> <li>• Need to define critical tasks</li> <li>• Staffing plan is out of scope</li> <li>• Non-compliance levels missing</li> <li>• Need to specify exact position titles and match to credentials</li> <li>• Need to define 'current'</li> </ul>
<b>PER-004-1 — Reliability Coordination — Staffing</b>	
FERC Order 693	Include requirements pertaining to personnel credentials for reliability coordinators similar to PER-003.



**Project 2007-05 Balancing Authority Controls**

**Standards Involved:**

BAL-002-0 — Disturbance Control Performance  
BAL-004-0 — Time Error Correction  
BAL-005-0 — 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
- Review all of the requirements in the standards listed above.

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.

**Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

## **2007-05 Balancing Authority Controls**

---

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):

Annual Plan Item 1.d

Annual Plan Item 1.e

Justification for NAESB consideration:

FERC Order 693

Project Description

SRS Recommendation:

During initial discussions (REF: Rae McQuade's letter to Gerry Adamski dated February 11, 2008), there was no identified need for business practices related to this project. NERC should point out any areas where they see a need for a business practice. This is being coordinated with the WEQ on current project Annual Plan Items 1.d and 1.e, and there is ongoing coordination between the BAC Standards Drafting Team and the NAESB WEQ Time and Inadvertent Management Task Force.

### **Standards Development Status:**

[Project 2007-05 Balancing Authority Controls Web page](#)

### **Project Schedule:**

[Project 2007-05 Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Larry Akens	Tennessee Valley Authority
	Thomas Artau	Progress Energy Florida
	Harvie D. Beavers	Colmac Clarion/Piney Creek LP
	Gerald D Beckerle	Ameren Corp.
	David L. Folk	FirstEnergy Corp.
	William Franklin	Xcel Energy, Inc.
	Steve Gillespie	California ISO
	Howard F. Illian	Energy Mark, Inc.
	Ken McIntyre	Electric Reliability Council of Texas, Inc.
	Sydney Niemeyer	NRG Texas LP
	Guy Quintin	Hydro-Québec TransEnergie
	Kris Ruud	Midwest ISO, Inc.
	Mark Thomas	Entergy Transmission
	Raymond L. Vice	Southern Company Services, Inc.
<b>NERC Staff</b>	Andrew J. Rodriguez	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
NAESB Standards Review Subcommittee	NAESB Standards Review Subcommittee as input to the Reliability Standards Development Plan: 2010-2012: NAESB requests that NERC continue its coordination with NAESB on this project as it relates to item 1.d and 1.e in the NAESB WEQ 2009 Annual Plan.
Other	Incorporate approved formal interpretation
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
<b>BAL-002-0 — Disturbance Control Performance</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Include a frequency response requirement.</li> <li>• Measures should be available in real-time to balancing authorities.</li> <li>• Substitute regional entity for regional reliability organization</li> <li>• Include a continent-wide contingency reserve policy, which should include uniform elements (definitions and requirements)</li> <li>• Modify to make requirements R4.2 and R6.2 refer to NERC rather than the NERC Operating Committee.</li> <li>• 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.</li> <li>• Include a requirement that explicitly provides that DSM may be used as a resource for contingency reserves.</li> <li>• DSM should be treated on a comparable basis and must meet similar technical requirements as other resources providing this service</li> <li>• 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.</li> <li>• 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.</li> <li>• Requires any single reportable disturbance that has a recovery time of 15 minutes or longer be reported as a violation.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Modify R2 to remove reference to "sub-Regional Reliability Organization or Reserve Sharing Group", and</li> <li>• Determine what elements of contingency reserve should be included in the North American standard and what elements should be included in the regional standard.</li> <li>• 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.</li> <li>• Regional reliability standards will be developed in support of North American standard BAL-002.</li> <li>• Each RRO will need to create a regional standard specifying its Contingency Reserve policy.</li> </ul>
NERC Audit Observation Team	<ul style="list-style-type: none"> <li>• Should the reserve sharing group be audited or the members? This should be tied to</li> </ul>

**2007-05 Balancing Authority Controls**

Source	Language
	registration for consistency. <ul style="list-style-type: none"> <li>• What is a sub-region</li> </ul>
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT should review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Frequency Bias Setting Time Error Time Error Correction
Version 0 Team	<ul style="list-style-type: none"> <li>• Need regional standards in support of N. American</li> <li>• Modify R2</li> <li>• Determine N. America vs. regional elements</li> </ul>
<b>BAL-004-0 — Time Error Correction</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Include levels of non-compliance and additional measures for requirement R3.</li> <li>• 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.</li> </ul>
NERC/NAESB Coordination	NERC/NAESB Coordination The SDT should review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Frequency Bias Setting Time Error Time Error Correction
<b>BAL-005-0 — Automatic Generation Control</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Change title to be neutral as to the source of regulating reserves and allows the inclusion of technically qualified DSM.</li> <li>• Address comments of Xcel and FirstEnergy when the standard is revisited in the work plan.</li> <li>• 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.</li> <li>• Include a measure that provides for a verification process over the required automatic generation control, or regulating reserves a balancing authority maintains</li> </ul>
Fill in the Blank Team	No comments
NERC Audit Observation Team	What the difference between this and BAL-005-1?
Version 0 Team	<ul style="list-style-type: none"> <li>• Re-order &amp; re-word requirements</li> <li>• Define data requirements</li> <li>• Non-compliance missing</li> <li>• Purpose statement</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• R14 — Check for redundancy of second statement. This seems to be a real-time requirement - not planning. Is this for archival data requirements?</li> <li>• R12.3 — redundant</li> <li>• R12 — sub-requirements should be separate requirements</li> </ul>

Source	Language
<b>BAL-005-0 — Automatic Generation Control</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a>), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a>) compliance filings to FERC on this subject.</li> </ul>
<p>NERC/NAESB Coordination</p>	<p>NERC/NAESB Coordination • The SDT should review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Frequency Bias Setting Time Error Time Error Correction</p>
<b>BAL-006-1 — Inadvertent Interchange</b>	
<p>FERC Order 693</p>	<ul style="list-style-type: none"> <li>• Regional Differences to BAL-006-1: Inadvertent Interchange Accounting and Financial Inadvertent Settlement: Explore FirstEnergy's request to define the function of a waiver in the reliability standard development process.</li> <li>• Regional Differences to BAL-006-1: Inadvertent Interchange Accounting and Financial Inadvertent Settlement: Reference the current reliability standards and are in the standard form, which includes requirements, measures, and levels of non-compliance.</li> <li>• Add measures concerning the accumulation of large inadvertent interchange balances and levels of non-compliance.</li> <li>• Examine the WECC time error correction procedure as a possible guide.</li> </ul>
<p>NERC/NAESB Coordination</p>	<p>NERC/NAESB Coordination • The SDT should review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Frequency Bias Setting Time Error Time Error Correction</p>
<p>Version 0 Team</p>	<ul style="list-style-type: none"> <li>• Wording in R4</li> <li>• Split requirements</li> <li>• Requirements mixed in Compliance</li> <li>• Non-compliance missing</li> <li>• Purpose/Requirement contradiction</li> </ul>

## **Project 2007-06 System Protection Coordination**

### **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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Arthur J. Buanno	FirstEnergy Corp.
	David Cirka	National Grid
	Aaron Cooperberg	Hydro One Networks, Inc.
	Samuel Francis	Oncor Electric Delivery
	Jeffrey Iler	American Electric Power
	Bill Middaugh	Tri-State G & T Association Inc.
	Richard P. Quest	Xcel Energy, Inc.
	William Waudby	Consumers Energy
	Kevin Wempe	Kansas City Power & Light Co.
	Philip Winston	Georgia Power Company
<b>NERC Staff</b>	Al Calafiore	North American Electric Reliability Corporation



**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PRC-001-1 — System Protection Coordination</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• 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. -- (2) a requirement that transmission and generator operators be informed immediately upon the detection of failures in relays or protection system elements on the Bulk-Power System that would threaten reliable operation, so that these entities could carry out appropriate corrective control actions consistent with those used in mitigating IROL violations.</li> <li>• 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. “[t]he transmission operator shall take corrective action as soon as possible” refers to transmission operators taking operator control actions. It does not refer to troubleshooting, repairing or replacing failed relays or equipment, etc., since these time-consuming corrective actions would prolong the risk of cascading failures to the Bulk-Power System.</li> <li>• Clarify the term “corrective action”. 1440. We believe that “[t]he transmission operator shall take corrective action as soon as possible” refers to transmission operators taking operator control actions. It does not refer to troubleshooting, repairing or replacing failed relays or equipment, etc., since these time-consuming corrective actions would prolong the risk of cascading failures to the Bulk-Power System. 1441.... We direct the ERO to clarify the term “corrective action” consistent with this discussion when it modifies PRC-001-1 in the Reliability Standards development process.</li> <li>• Consider FirstEnergy’s and the California PUC’s comments about the maximum time for corrective actions in the standards development process. 1428. California PUC contends that imposing a time restriction for returning a system to a stable state may cause more harm than good since additional information and options may be available as time elapses. It repeats its suggestion from its earlier comments on the Staff Preliminary Assessment and proposes the following alternative language: “Transmission or generation operators shall carry out corrective control actions, i.e., returning the system to a stable state that respects system requirements as soon as possible, and no longer than 30 minutes, except where a longer response time is feasible, or where a longer response is demonstrated to produce a better ultimate solution without unacceptable interim risk.” 1431. FirstEnergy contends that Requirement R2.1 essentially requires generator operators to report all protective relay or equipment failures, since generator operators may not be able to tell which failures will reduce system reliability. FirstEnergy suggests that R2.1 should be revised to require generator operators to report all equipment failures or outages. FirstEnergy further suggests that PRC-001-1 be revised to provide that if a company performs reasonable testing procedures, undiscoverable equipment failures will not be violations of R2.1.</li> <li>• Measures and levels of non-compliance incorrectly reference non-existent requirements.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Consistent terminology as to neighbor vs. affected</li> <li>• Effects on reliability may not be known</li> <li>• Not all criteria moved over from policies</li> </ul>

## **Project 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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Richard E. Dearman	Tennessee Valley Authority
	Ron A. Adams	Duke Energy Carolina
	Tom Anderson	Lincoln Electric System
	Paul S. Beaulieu	Finley Engineering
	Stephen R. Cieslewicz	CN Utility Consulting LLC
	Randall F. Gann	Alabama Power Company
	Stephen Genua	Pepco Holdings, Inc.
	Jeff Hackman	Ameren Corp.
	Edward Mennella	Orange & Rockland Utilities
	Randall H. Miller	PacifiCorp
	David Morrell	New York State Department of Public Service
	John Pinney	Progress Energy
	John E. Schechter	American Electric Power
	John Tamsberg	Florida Power & Light Co.
	Stephen Tankersley	Pacific Gas and Electric Company
	Ron Turley	Western Area Power Administration
	Gary White	Oncor Electric Delivery
	Philip H. Whitmer	Georgia Power Company
	Ken Wright	Tucson Electric Power Co.
<b>NERC Staff</b>	Harry Tom	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>FAC-003-1 — Vegetation Management Program</b>	
FERC Order 693	<ul style="list-style-type: none"> <li data-bbox="383 506 1482 632">• ...We recognize that many commenter's would like a more precise definition for the applicability of this Reliability Standard, and we direct the ERO to develop an acceptable definition that covers facilities that impact reliability but balances extending the applicability of this standard against unreasonably increasing the burden on transmission owners...</li> <li data-bbox="383 632 1482 684">• Evaluate suggestions by LPPC, APPA, and Avista in the standards development process.</li> <li data-bbox="383 684 1482 758">• Develop compliance audit procedures, using industry experts, which would identify appropriate inspection cycles based on local factors.</li> <li data-bbox="383 758 1482 842">• Define the minimum clearance needed to avoid sustained vegetation-related outages that apply to line crossing federal and non-federal lands.</li> <li data-bbox="383 842 1482 894">• Address issues that develop in the interim on a case-by-case basis</li> <li data-bbox="383 894 1482 947">• Incorporate suggestions to include facilities at lower voltages that are associated with IROLs.</li> <li data-bbox="383 947 1482 1514">• We will not direct NERC to submit a modification to the general limitation on applicability as proposed in the NOPR. However, we will require the ERO to address the proposed modification through its Reliability Standards development process. As explained in the NOPR, the Commission is concerned that the bright-line applicability threshold of 200 kV will exclude a significant number of transmission lines that could impact Bulk-Power System reliability. Although the regional reliability organizations are given discretion to designate lower voltage lines under the proposed Reliability Standard, none have designated any operationally significant lines even though there are lower voltage lines involving IROL as suggested by Progress and SERC. We continue to be concerned that this approach will not prospectively result in the inclusion of all transmission lines that could impact Bulk-Power System reliability. In proposing to require the ERO to modify the Reliability Standard to apply to Bulk-Power System transmission lines that have an impact on reliability as determined by the ERO, we did not intend to make this Reliability Standard applicable to fewer facilities than it currently is with the 200 kV bright line applicability, but to extend the applicability to lower-voltage facilities that have an impact on reliability. We support the suggestions by Progress Energy, SERC and MISO to limit applicability to lower voltage lines associated with IROL and these suggestions should be part of the input to the Reliability Standards development process. Similarly, the ERO should evaluate the suggestions proposed by LPPC, APPA and Avista.....</li> <li data-bbox="383 1514 1482 1587">• Consider a phase-in timeframe if lower voltage facilities are included as applicable to this standard.</li> <li data-bbox="383 1587 1482 1755">• .... FirstEnergy and Xcel suggest that if the applicability of this Reliability Standard is expanded, the Commission should allow flexibility in complying with this Reliability Standard for lower-voltage facilities, or allow lower-voltage facilities one year before the Reliability Standard is implemented. The ERO should consider these comments when determining when it would request that the modification of this Reliability Standard to go into effect.....</li> <li data-bbox="383 1755 1482 1831">• Accordingly, the Commission directs the ERO to develop compliance audit procedures, using relevant industry experts, which would identify appropriate inspection cycles based on local</li> </ul>

Source	Language
	<p>factors. These inspection cycles are to be used in compliance auditing of FAC-003-1 by the ERO or Regional Entity to ensure such inspection cycles and vegetation management requirements are properly met by the responsible entities.</p> <ul style="list-style-type: none"> <li>• Accordingly, the Commission directs the ERO to develop a Reliability Standard that defines the minimum clearance needed to avoid sustained vegetation-related outages that would apply to transmission lines crossing both federal land and non-federal land. While this consensus is developed, the Commission directs the ERO to address any potential issues regarding mitigation measures needed to assure these minimum clearances on Forest Service lands are appropriate on a case-by-case basis. The Commission also directs the ERO to collect outage data for transmission outages of lines that cross both federal and non-federal lands, analyze it, and use the results of this analysis and information to develop a Reliability Standard that would apply to transmission lines crossing both federal and non-federal land.</li> <li>• FirstEnergy suggests that rights-of-way be defined to encompass the required clearance areas instead of the corresponding legal rights, and that the standards should not require clearing the entire right-of-way when the required clearance for an existing line does not take up the entire right-of-way. The Commission believes this suggestion is reasonable and should be addressed by the ERO. Accordingly, the Commission directs the ERO to address this suggestion in the Reliability Standards development process.</li> <li>• Address FirstEnergy’s suggestion to clarify the definition of “rights-of-way” as part of the standards development process.</li> <li>• 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.</li> <li>• Ensure inspection cycles and vegetation management requirements are properly met by the responsible entities.</li> <li>• Address the issue of “bright-line” applicability of 200 kV and above through the standards development process.</li> </ul>
<p>NERC Audit Observation Team</p>	<ul style="list-style-type: none"> <li>• It was pointed out that an entity did not need to be registered as a TO for FAC-003-1 to apply to them, only that they have transmission lines operated at 200 kV and above. This could include radial lines as well as generation leads at the 200kV and above level. This could mean functions other than TO would require FAC-003-1 to be in the audit scope. How are you looking at the applicability of FAC-003-1 as it applies to DPs, LSEs, and GOs etc. This could be applicable to many entities registered in multiple regions</li> <li>• TO's shall demonstrate compliance through self certification. Compliance monitoring shall conduct an on-site audit every five years or more frequently as deemed appropriate. Does this over-ride the six year audit cycle for TO's?</li> <li>• With regards to the vegetation management standard, what type of event would trigger a compliance investigation?</li> </ul>
<p>Version 0 Team</p>	<ul style="list-style-type: none"> <li>• RA vs. RRO</li> <li>• Too weak on compliance</li> <li>• Format inconsistencies</li> </ul>

## **Project 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 Capability

MOD-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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Robert W. Millard	ReliabilityFirst Corporation
<b>Vice Chairman</b>	Lee Y. Taylor	Southern Company Services, Inc.
	Baj Agrawal	Arizona Public Service Co.
	Thomas J. Bradish	RRI Energy
	Donald G. Davies	Western Electricity Coordinating Council
	Les Hajagos	Kestrel Power Engineering Ltd
	John Hanson	CenterPoint Energy
	Gary Humphries	Duke Energy Carolina
	Venkat S. Kolluri	Entergy Corporation
	Dmitry Kosterev	Bonneville Power Administration
	David Kral	Xcel Energy, Inc.
	Gary Kruempel	MidAmerican Energy Co.
	Daniel J Leonard	GE Energy
	Craig Quist	PacifiCorp
	Balbir S. Sandhu	Manitoba Hydro
	William D Shultz	Southern Company Generation
	Vladimir Stanisic	Ontario Power Generation Inc.
	Ken Stenroos	Florida Power & Light Co.
	Rick Terrill	Luminant Energy
	Chifong L. Thomas	Pacific Gas and Electric Company
	Edward J. Wingard	American Electric Power
<b>NERC Staff</b>	Harry Tom	North American Electric Reliability Corporation
<b>NERC Staff</b>	Thomas Vandervort	North American Electric Reliability Corporation



**Issues to be Considered by the Standard Drafting Team:**

Source	Language
<b>PRC-019 — Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection</b>	
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.
<b>PRC-024 — Generator Performance During Frequency and Voltage Excursions</b>	
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.
<b>MOD-024-1 — Verification of Generator Gross and Net Real Power Capability</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Require users, owners, and operators of the system to provide this information.</li> <li>• Provide a work plan and compliance filing regarding the collection of information specified for standards that are deferred.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Review MOD-024 and MOD-025 concurrently to transition to uniform North American standards.</li> <li>• Remove the fill-in-the-blank aspects (correct reference to "...Regional Reliability Organization's procedures...").</li> <li>• 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.</li> </ul>
Phase III/IV Team	<ul style="list-style-type: none"> <li>• 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</li> <li>• It is not clear in R3 to whom the Generator Owner will report the information.</li> <li>• Non compliance levels are too strict. A small utility with 15-20 units will be L4 non-compliant if they miss one unit</li> </ul>
Team Comments	Provide clarity where the Planning Authority is mentioned
<b>MOD-025-1 — Verification of Generator Gross and Net Reactive Power Capability</b>	

Source	Language
FERC Order 693	<ul style="list-style-type: none"> <li>• Provide a work plan and compliance filing regarding the collection of information specified for standards that are deferred.</li> <li>• Require verification of reactive power capability at multiple points over a unit's operating range.</li> <li>• 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.</li> </ul>
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
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Remove the fill-in-the-blank aspects (correct reference to "... Regional Reliability Organization's procedures...").</li> <li>• Refer to MOD-024.</li> <li>• Review MOD-024 and MOD-025 concurrently to transition to uniform North American standards.</li> </ul>
Phase III/IV Team	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• It is not clear in R3 to whom the Generator Owner will report the information.</li> <li>• Non compliance levels are too strict. A small utility with 15-20 units will be L4 non-compliant if they miss one unit.</li> <li>• Severity of non-compliance should be based on the percentage of the generator owner's total generation capability comprised of units 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Team Comments	Provide clarity where the Planning Authority is mentioned
<b>MOD-026 Verification of Models and Data for Generator Excitation System Functions</b>	
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.
<b>MOD-027 Verification of Generator Unit Frequency Response</b>	

**2007-09 Generator Verification**

---

Source	Language
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.

## **Project 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:**

The standard drafting team identified a need to conduct a regional data analysis in order to establish technical requirements for DME locations and thresholds.

### **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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Navin B. Bhatt, PhD., PE	American Electric Power
	Felix Amarth, PhD	Georgia Transmission Corporation
	Alan D. Baker	Florida Power & Light Co.
	James R. Detweiler	FirstEnergy Corp.
	Richard Ferner	Western Area Power Administration
	Barry G. Goodpaster	Exelon Business Services Company
	Willy Haffecke	City Utilities of Springfield
	Daniel J. Hansen	RRI Energy
	Charles J. Jensen	JEA
	Tracy M. Lynd	Consumers Energy
	Susan L. McGill	PJM Interconnection, L.L.C.
	Robert W. Millard	ReliabilityFirst Corporation
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Jeffrey M. Pond	National Grid
	Larry E. Smith	Alabama Power Company
	Jack Soehren	ITC Holdings
<b>NERC Staff</b>	Stephanie Monzon	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PRC-002-1 — Define Regional Disturbance Monitoring and Reporting Requirements</b>	
FERC Order 693	Consider if greater consistency can be achieved in the standard as suggested by Otter Tail, APPA, and Alcoa.
Phase III/IV Team	There is no criteria that the RROs must use in specifying the process for identifying locations where DMEs are required
Version 0 Team	<ul style="list-style-type: none"> <li>• Digital inputs and load need to be added</li> <li>• IDWG identified deficiencies</li> <li>• More specificity in equipment requirements needed</li> </ul>
VRFs Team	R1 — This standard and all related sub requirements are after the fact data analysis
<b>PRC-018-1 — Disturbance Monitoring Equipment Installation and Data Reporting</b>	
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• PRC-002 will be a continent-wide standard supported by Regional Reliability Standards.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• PRC-002 is directly related to PRC-018. PRC-018 requires the functional entities to comply with the requirements developed by each RRO.</li> </ul>
VRFs Team	R3.4, 3.5, 3.6, 3.7 — Ambiguous

**Project 2007-12 Frequency Response**

**Standards Involved:**

BAL-003-0 — Frequency Response and Bias

**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](#)

### Standard Drafting Team Roster

<b>Chairman</b>	William Herbsleb	PJM Interconnection, L.L.C.
	Don E Badley	Northwest Power Pool Corporation
	Terry Bilke	Midwest ISO, Inc.
	Les Hajagos	Kestrel Power Engineering Ltd
	Harvey Heinz Happ	New York State Department of Public Service
	Howard F. Illian	Energy Mark, Inc.
	David F. Lemmons	Xcel Energy, Inc.
	Clyde Loutan	California ISO
	Carlos Martinez	Electric Power Group
	James Murphy	Bonneville Power Administration
	Sydney Niemeyer	NRG Texas LP
	Michael Potishnak	ISO New England, Inc.
	Raymond L. Vice	Southern Company Services, Inc.
<b>NERC Staff</b>	Darrel Richardson	North American Electric Reliability Corporation
<b>NERC Staff</b>	Thomas Vandervort	North American Electric Reliability Corporation



**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>BAL-003-0 — Frequency Response and Bias</b>	
FERC Order 693	<ul style="list-style-type: none"><li>● 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.</li><li>● 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.</li></ul>

**Project 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](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Charles W. Rogers	Consumers Energy
	John Anderson	Xcel Energy, Inc.
	Merle Ashton	Tri-State G & T Association Inc.
	Bob Bentert	Florida Power & Light Co.
	John L. Ciufu	Hydro One, Inc.
	Richard Ferner	Western Area Power Administration
	Carol Gerou	Midwest Reliability Organization
	Roger D. Green	Southern Company Generation
	Russell Hardison, P.E.	Tennessee Valley Authority
	Dave Harper	NRG Texas Maintenance Services
	John Kruse	Commonwealth Edison Co.
	Mark Peterson	Great River Energy
	William D Shultz	Southern Company Generation
	Leonard Swanson, Jr.	National Grid USA
	Eric Udren	Quanta Technology
	Philip Winston	Georgia Power Company
	John Zipp	ITC Holdings
<b>NERC Staff</b>	Al Calafiore	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PRC-005-1 — Transmission and Generation Protection System Maintenance and Testing</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Consider FirstEnergy's and ISO-NE's suggestions to combine PRC-005, PRC-008, PRC-011, and PRC-017 into a single standard.</li> <li>• 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. 1475. In addition, for the reasons discussed in the NOPR, the Commission directs the ERO to develop a modification to PRC-005-1 through the Reliability Standards development process that includes a requirement that maintenance and testing of a protection system must be carried out within a maximum allowable interval that is appropriate to the type of the protection system and its impact on the reliability of the Bulk-Power System.</li> </ul>
NERC Audit Observation Team	<ul style="list-style-type: none"> <li>• As applicable, each TO, DP and GOP shall have a protection system maintenance and testing program for protection systems that affect the reliability of the BES. Does this include major equipment like circuit breakers and transformers?</li> <li>• Determine what on schedule means. Is an entity who maintained/tested 95% of their relays at the same level of non-compliance as an entity who maintained/tested 10% of their relays?</li> <li>• How do you verify compliance for cts/pts? How do you audit these within a scheduled maintenance program? As part of the procedure, most have accepted visual inspection. Some entities state that testing of the relays verify functionality of the ct/pts</li> <li>• How do you verify DC control power? All regions require functional testing of the breaker. This should include functional relay &amp; station battery checks, including breaker tripping, not just a visual inspection.</li> </ul>
Phase III/IV Team	<ul style="list-style-type: none"> <li>• All generation protection systems whose misoperations impact the bulk electric system</li> <li>• All protection systems on the bulk electric system.</li> <li>• Modify applicability to clarify that the requirements are applicable to the following:</li> <li>• Need to add language to ensure the Regional Requirements focus on the most impactful scenarios</li> <li>• PRC 003 to 005 only address generator (and transmission) protective systems, without defining this term.</li> <li>• There is no performance requirement or measure of effectiveness of a maintenance program required by the standard</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Define evidence</li> <li>• Include breakers/switches in list</li> <li>• Not a standalone standard</li> </ul>
<b>PRC-008-0 — Underfrequency Load Shedding Equipment Maintenance Programs</b>	
FERC Order 693	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.

**2007-17 Protection System Maintenance & Testing**

---

Source	Language
Fill in the Blank Team	Okay if PRC-006 is fixed
Version 0 Team	<ul style="list-style-type: none"> <li>• Consistent wording from standard to standard required</li> <li>• Definition of evidence required</li> </ul>
<b>PRC-011-0 — UVLS System Maintenance and Testing</b>	
FERC Order 693	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.
Version 0 Team	<ul style="list-style-type: none"> <li>• Define evidence</li> <li>• Exemptions for those with shunt reactors</li> </ul>
<b>PRC-017-0 — Special Protection System Maintenance and Testing</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Includes a requirement that documentation identified in Requirement R2 shall be routinely provided to the ERO or Regional Entity. 1546....and (2) a requirement that documentation identified in Requirement R2 shall be routinely provided to the ERO or Regional Entity</li> <li>• 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.</li> <li>• Require that documentation identified in requirement R2 be routinely provided to NERC or the regional entity. that includes: (1) ..... and (2) a requirement that documentation identified in Requirement R2 shall be routinely provided to the ERO or Regional Entity</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Define evidence</li> <li>• Need to retain two dates</li> </ul>

**Project 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.

**Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)): Annual Plan Item 3.a.viii — Justification for NAESB consideration: WEQ SRS analysis

SRS Recommendation: The NERC/NAESB JESS has reviewed EOP-002-2 and identified that there is potential coordination opportunities..

**Standards Development Status:**

[Project 2007-18 Reliability-based Control Web page](#)

**Project Schedule:**

[Project 2007-18 Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Douglas E. Hils	Duke Energy
	Larry Akens	Tennessee Valley Authority
	William Herbsleb	PJM Interconnection, L.L.C.
	Howard F. Illian	Energy Mark, Inc.
	Clyde Loutan	California ISO
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Sydney Niemeyer	NRG Texas LP
	LeRoy Patterson	Patterson Consulting
	Michael Potishnak	ISO New England, Inc.
	Mark Prosperi-Porta	British Columbia Transmission Corporation
	Thomas W. Siegrist	EnerVision, Inc.
	Glenn Stephens	Santee Cooper
	Stephen Swan	Midwest ISO, Inc.
	Raymond L. Vice	Southern Company Services, Inc.
<b>NERC Staff</b>	Stephen Crutchfield	North American Electric Reliability Corporation

### Issues to be Considered by the Standard Drafting Team:

Source	Language
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
<b>BAL-001-0 — Real Power Balancing Control Performance</b>	
FERC Order 693	<p>Regional Differences to BAL-001-0: ERCOT Control Performance Standard 2: Include requirements concerning frequency response contained in Section 5 of the ERCOT protocols. Paragraph 313. The Commission approves the ERCOT regional difference as mandatory and enforceable. Order No. 672 explains that "uniformity of Reliability Standards should be the goal and the practice, the rule rather than the exception." However, the Commission has stated that, as a general matter, regional differences are permissible if they are either more stringent than the continent-wide Reliability Standard, or if they are necessitated by a physical difference in the Bulk-Power System. Regional differences must still be just, reasonable, not unduly discriminatory or preferential and in the public interest. 314. The Commission finds that ERCOT's approach under section 5 of the ERCOT protocols appears to be a more stringent practice than Requirement R2 in BAL-001-0 and therefore approves the regional difference. 315. As proposed in the NOPR, the Commission directs the ERO to file a modification of the ERCOT regional difference to include the requirements concerning frequency response contained in section 5 of the ERCOT protocols. As with other new regional differences, the Commission expects that the ERCOT regional difference will include Requirements, Measures and Levels of Non-Compliance sections.</p>
<b>BAL-003-0 — Frequency Response and Bias</b>	
NERC Audit Observation Team	Both requirements need to be met?
<b>EOP-002-2 — Capacity and Energy Emergencies</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>



Source	Language
<b>IRO-005-2 — Reliability Coordination — Current Day Operations</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>

## **Project 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:**

In August 2008, the Transmission Issues Subcommittee (TIS) formed the Reactive Support/Control Sub team to develop a report to address the fundamental issues associated with voltage and reactive control. The results of the report are being used to support improvements to the existing VAR standards and may result in development of an additional VAR standard. The Reactive Support and Control White Paper was produced by the TIS and identifies technical requirements needed to determine the reactive resources required under different system states. The white paper identifies the need for requirements that address:

- criteria and associated rationale needed to determine the split of dynamic reactive supply (such as reactive power provided by the generators and other dynamic devices) and static reactive power supply (such as static capacitors and other static devices)
- criteria for distribution of the interconnection's reactive resource needs among transmission, distribution, and generation facilities

The drafting team will incorporate the white paper into the standards as well as address other issues identified in the tables below.

### **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.

### **Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

## **2008-01 Voltage and Reactive Control**

---

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 1

Justification for NAESB consideration:  
Industry recommendations

SRS Recommendation:

This project may need NAESB attention in the future. The WEQ SRS will place this on its watch list.

### **Standards Development Status:**

[Project 2008-01 Voltage and Reactive project Web page](#)

### **Project Schedule:**

[Project 2008-01 Project Schedule](#)

### **Standard Drafting Team Roster:**

TBD

### Issues to be Considered by the Standard Drafting Team:

Source	Language
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
<b>VAR-001-1 — Voltage and Reactive Control</b>	
FERC Order 693	"Address reactive power requirements for LSEs on a comparable basis with purchasing-selling entities. Paragraph 1856. The Commission agrees with SoCal Edison that not all LSEs are purchasing selling entities, because not all LSEs purchase or sell power from outside of their balancing authority area. This understanding is consistent with the NERC functional model and NERC glossary. Both LSEs and purchasing-selling entities should have some requirements to provide reactive power to appropriately compensate for the demand they are meeting for their customers. Neither a purchasing-selling entity nor a LSE should depend on the transmission operator to supply reactive power for their loads during normal or emergency conditions."
	"Expand the applicability to include LSEs and reliability coordinators and define the reliability coordinators monitoring responsibilities. Paragraph 1854. In a complex power grid such as the one that exists in North America, reliable operations can only be ensured by coordinated efforts from all operating entities in long-term planning, operational planning and real-time operations. To that end, the Staff Preliminary Assessment recommended and the NOPR proposed that the applicability of VAR-001-1 extend to reliability coordinators and LSEs. 1855. Since a reliability coordinator is the highest level of authority overseeing the reliability of the Bulk-Power System, the Commission believes that it is important to include the reliability coordinator as an applicable entity to assure that adequate voltage and reactive resources are being maintained. As MISO points out, other Reliability Standards address responsibilities of reliability coordinators, but we agree with EEI that it is important to include reliability coordinators in VAR-001-1 as well. Reliability coordinators have responsibilities in the IRO and TOP Reliability Standards, but not the specific responsibilities for voltage levels and reactive resources addressed by VAR-001-1, which have a great impact on system reliability. For example, voltage levels and reactive resources are important factors to ensure that IROs are valid and operating voltages are within limits, and that reliability coordinators should have responsibilities in VAR-001-1 to monitor that sufficient reactive resources are available for reliable system operations. Accordingly, the ERO should modify VAR-001-1 to include reliability coordinators as applicable entities and include a new requirement(s) that identifies the reliability coordinator's monitoring responsibilities."
	"Include APPA's comments regarding varying power factor requirements due to system conditions and equipment in the standards development process. Paragraph 1860. APPA contends that it may be difficult to reach an agreement on acceptable ranges of net power factors at the interfaces where LSEs receive service from the Bulk-Power System because the acceptable range of power factors at any particular point on the electrical system varies based on many location-specific factors. APPA further states that system power factors will be affected by the transmission infrastructure used to supply the load. As an example, APPA states that an overhead circuit may operate at a higher power factor than an underground cable due to a substantial amount of reactive line charging, and that a transmission circuit carrying low levels of real power will tend to provide more reactive power, which will affect the need to switch off capacitor banks at the delivery point to manage delivery power factors."
	"Includes detailed and definitive requirements on "established limits" and "sufficient reactive resources", and identifies acceptable margins above the voltage instability points. Paragraph 1868. In the NOPR, the Commission expressed concern that the technical requirements containing terms such as "established limits" or "sufficient reactive resources" are not definitive enough to address voltage instability and ensure reliable operations.475 To address this concern, the NOPR proposed directing the ERO to modify VAR-001-1 to include more detailed

Source	Language
	<p>and definitive requirements on “established limits” and “sufficient reactive resources” and identify acceptable margins (i.e. voltage and/or reactive power margins) above voltage instability points to prevent voltage instability and to ensure reliable operations. We will keep this direction, and direct the ERO to include this modification in this Reliability Standard. 1869. We recognize that our proposed modification does not identify what definitive requirements the Reliability Standard should use for “established limits” and “sufficient reactive resources.” Rather, the ERO should develop appropriate requirements that address the Commission’s concerns through the ERO Reliability Standards development process. The Commission believes that the concerns of Dynegy, EEI and MISO are best addressed by the ERO in the Reliability Standards development process. 1870. In response to EEI’s concerns about a prescriptive analytical methodology, we clarify that the Commission is not asking that the Reliability Standard dictate what methodology must be used to determine reactive power needs. Rather, the Commission believes that the Reliability Standard would benefit from having more defined requirements that clearly define what voltage limits are used and how much reactive resources are needed to ensure voltage instability will not occur under normal and emergency conditions. For example, in the NOPR, the Commission suggested that NERC consider WECC’s Reliability Criteria, which contain specific and definitive technical requirements on voltage and margin application. While we are not directing that the WECC reliability criteria be adopted, we believe they represent a good example of clearly-defined requirements for voltage and reactive margins. 1871. In sum, the Commission believes that minimum requirements for voltage levels and reactive resources should be clearly defined by placing more detailed requirements on the terms “established limits” and “sufficient reactive resources” in the Reliability Standard as discussed in the NOPR and the Staff Preliminary Assessment. As mentioned above, EEI’s concerns should be considered in the ERO’s Reliability Standards development process.”</p>
	<p>Address the concerns of Dynegy, EEI, and MISO through the standards development process. Paragraph 1864. Dynegy supports the Commission’s proposal to include more definitive requirements on “established limits” and “sufficient reactive resources.” It recommends that VAR-001-1 be further modified to require the transmission operator to have more detailed and definitive requirements when setting the voltage schedule and associated tolerance band that is to be maintained by the generator operator. Dynegy states that the transmission operator should not be allowed to arbitrarily set these values, but rather should be required to have a technical basis for setting the required voltage schedule and tolerance band that takes into account system needs and any limitations of the specific generator. Dynegy believes that such a requirement would eliminate the potential for undue discrimination, as well as the possibility of imposing overly conservative and burdensome voltage schedules and tolerance bands on generator operators that could be detrimental to grid reliability, or conversely, the imposition of too low a voltage schedule and too wide a tolerance band that could also be detrimental to grid reliability. 1865. While MISO supports the concept of including more detailed requirements, it believes that there needs to be a definitive reason for establishing voltage schedules and tolerances, and that any situations monitored in this Reliability Standard need to be limited to core reliability requirements. 1866. EEI seeks clarification about whether the Commission is suggesting that reactive requirements should aim for significantly greater precision, especially in terms of planning for various emergency conditions. If so, EEI cautions the Commission against “putting too many eggs’ in the reactive power ‘basket.’”<sup>474</sup> To the extent compliance takes place pursuant to all other modeling and planning assessments under the other Reliability Standards, EEI strongly believes that the Commission should have some high level of confidence that the system’s reactive power needs can be met satisfactorily across a broad range of contingencies that planners might reasonably anticipate. Moreover, EEI believes that requirements to successfully predict reactive power requirements in conditions of near-system collapse would require significantly more creative guesswork than solid analysis and contingency planning. For example, EEI notes that the combinations and permutations of how a voltage collapse could occur on a system as large as the eastern Interconnection are numerous. 1867. EEI suggests that, alternatively, the Commission should consider that reactive power evaluations</p>

Source	Language
	<p>should be conducted within a process that is documented in detail and includes a range of contingencies that might be reasonably anticipated, because this would avoid the 'one size fits all' problem, where a prescriptive analytical methodology does not fit with a particular system configuration. EEI believes that this flexible approach would provide a more effective planning tool for the industry, while satisfying the Commission's concerns over potentially inadequate reactive reserves. MRO notes that the need for, and method of providing for, reactive resources varies greatly, and if this Reliability Standard is expanded it must be done carefully. MRO believes that all entities should not be required to follow the same methodology to accomplish the goal of a reliable system.</p>
	<p>Address the power factor range at the interface between LSEs and the transmission grid. Paragraph 1861. In the NOPR, the Commission asked for comments on acceptable ranges of net power factor at the interface at which the LSEs receive service from the Bulk-Power System during normal and extreme load conditions. The Commission asked for these comments in response to concerns that during high loads, if the power factor at the interface between many LSEs and the Bulk-Power System is so low as to result in low voltages at key busses on the Bulk-Power System, then there is risk for voltage collapse. The Commission believes that Reliability Standard VAR-001-1 is an appropriate place for the ERO to take steps to address these concerns by setting out requirements for transmission owners and LSEs to maintain an appropriate power factor range at their interface. We direct the ERO to develop appropriate modifications to this Reliability Standard to address the power factor range at the interface between LSEs and the Bulk-Power System. 1862. We direct the ERO to include APPA's concern in the Reliability Standards development process. We note that transmission operators currently have access to data through their energy management systems to determine a range of power factors at which load operates during various conditions, and we suggest that the ERO use this type of data as a starting point for developing this modification. 1863. The Commission expects that the appropriate power factor range developed for the interface between the bulk electric system and the LSE from VAR-001-1 would be used as an input to the transmission and operations planning Reliability Standards. The range of power factors developed in this Reliability Standard provides the input to the range of power factors identified in the modifications to the TPL Reliability Standards. In the NOPR, the Commission suggested that sensitivity studies for the TPL Reliability Standards should consider the range of load power factors.</p>
	<p>Include controllable load among the reactive resources to satisfy reactive requirements, considering the comments of Southern California Edison and SMA in the development of the standard. Paragraph 1879. The Commission noted in the NOPR that in many cases, load response and demand-side investment can reduce the need for reactive power capability in the system.476 Based on this assertion, the Commission proposed to direct the ERO to include controllable load among the reactive resources to satisfy reactive requirements for incorporation into Reliability Standard VAR-001-1. While we affirm this requirement, we expect the ERO to consider the comments of SoCal Edison with regard to reliability and SMA in its process for developing the technical capability requirements for using controllable load as a reactive resource in the applicable Reliability Standards. 1877. SMA supports adoption of the proposal to include controllable load as a reactive resource. SMA notes that its members' facilities often include significant capacitor banks, and further, reducing load can reduce local reactive requirements. 1878. SoCal Edison suggests caution regarding the Commission's proposal to include controllable load as a reactive resource. It agrees that, when load is reduced, voltage will increase and for that reason controllable load can lessen the need for reactive power. However, SoCal Edison believes that controllable load is typically an energy product and there are other impacts not considered by the Commission's proposal to include controllable load as a reactive resource. For example, activating controllable load for system voltage control lessens system demand, requiring generation to be backed down. It is not clear to SoCal Edison whether any consideration has been given to the potential reliability or commercial impacts of the</p>

Source	Language
	<p>Commission's proposal.</p> <p>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. Paragraph 1875. In response to the concerns of APPA, SDG&amp;E and EEI on the availability of tools, the Commission recognizes that transient voltage stability analysis is often conducted as an offline study, and that steady-state voltage stability analysis can be done online. The Commission clarifies that it does not wish to require anyone to use tools that are not validated for real-time operations. Taking these comments into consideration, the Commission clarifies its proposed modification from the NOPR. For the Final Rule, we direct the ERO, through its Reliability Standards development process, to modify Reliability Standard VAR-001-1 to include Requirements to perform voltage stability analysis periodically, using online techniques where commercially-available, and offline simulation tools where online tools are not available, to assist real-time operations. The ERO should consider the available technologies and software as it develops this modification to VAR-001-1 and identify a process to assure that the Reliability Standard is not limiting the application of validated software or other tools.</p>
<p>Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012</p>	<p>Requirement R2 requires the TOP to acquire sufficient reactive resources. The statement probably ought to clearly delineate that this requirement is applicable to the operating horizon only and that the TP is responsible for adequate reactive resources in the planning horizon.</p>
<p>NERC Audit Observation Team</p>	<p>If the TOP does not supply the GOP with a voltage or reactive power schedule is that a noncompliance for the TOP?</p>
<p>Phase III/IV Team</p>	<p>Consolidate R8 and R9</p> <p>No criteria for what is an acceptable reactive margin.</p> <p>No requirement for verifying that the reactive resources are truly available.</p> <p>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.</p> <p>R10.1 does 'disperse and locate' mean the same as 'dispatch'? If so, changing the wording to 'dispatch' would make the meaning clearer.</p> <p>R11 — Redundant with TOP-007</p> <p>R3 covers normal and contingency conditions, while R10 mentions only first contingency conditions. Is there a reason for this difference?</p> <p>R3 Suggest changing the phrase..."to protect the voltage".... To "maintain the voltage"</p> <p>R3, R6, R10 go beyond the control of the responsible entity noted.</p> <p>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?</p> <p>R5 This requirement is an Open Access Transmission Tariff requirement and does not belong in a reliability standard.</p>



Source	Language
	<p>R6 and R10.1 presume that sufficient reactive resources are available.</p> <p>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.)</p> <p>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.</p> <p>R9.1 This requirement is not feasible. Cannot dictate where generation resources are to be disbursed or located.</p> <p>Should R3 be assigned to the TP?</p> <p>Should the word "acquire" in R3 be replaced with the word "operate"?</p> <p>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.</p> <p>VAR-001 requirements (R1, R2, R7, R8, R9, R10, and R12) are redundant to the TOP standards</p> <p>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?</p> <p>Will R6 also apply to wind generation absorbing reactive power at the point of interconnection?</p>
Version 0 Team	<ul style="list-style-type: none"> <li>• Add BA (R1 &amp; 3)and RA (R5, 7, 8, 10 &amp; 11)</li> <li>• Add GO as entity</li> <li>• Clarify if this includes distribution</li> <li>• Clarify responsibility for voltage support</li> <li>• Define high probability</li> <li>• Define voltage levels</li> <li>• Delete SOL violations</li> <li>• Expand to include relays</li> <li>• Mention power factor requirements for distribution</li> <li>• Move R9 to 5.2</li> <li>• Not a standard but a business practice</li> </ul>
<b>VAR-002-1 — Generator Operation for Maintaining Network Voltage Schedules</b>	
FERC Order 693	<p>Consider Dynegy’s suggestion to improve the standard. Paragraph 1883. Dynegy believes that VAR-002-1 should be modified to require more detailed and definitive requirements when defining the time frame associated with an “incident” of non compliance (i.e., each 4-second scan, 10-minute integrated value, hourly integrated value). Dynegy states that, as written, this Reliability Standard does not define the time frame associated with an “incident” of non-compliance, but apparently leaves this decision to the transmission operator. Dynegy believes that either more detail should be added to the Reliability Standard to cure this omission, or the</p>



## 2008-01 Voltage and Reactive Control

---

Source	Language
	Reliability Standard should require the transmission operator to have a technical basis for setting the time frame that takes into account system needs and any limitations of the generator. Dynegy believes that this approach will eliminate the potential for undue discrimination and the imposition of overly conservative or excessively wide time frame requirements, both of which could be detrimental to grid reliability.
NERC Audit Observation Team	If a generator does not have an automatic voltage regulator do they need to install one?
Phase III/IV Team	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

## **Project 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. The “Technical Reference Paper Fault-Induced Delayed Voltage Recovery” was accepted by the NERC Planning Committee in June of 2009. This reference paper identifies a Fault Induced Delayed Voltage Recovery (FIDVR) as the phenomenon whereby system voltage remains at significantly reduced levels for several seconds after a transmission, sub transmission, or distribution fault has been cleared. Significant load loss due to motor protective device action can result, as can significant loss of generation, with a potential secondary effect of high system voltage due to load loss. A severe event can result in fast voltage collapse. This phenomenon should be addressed in the development of UVLS criteria.

### **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:**

TBD

### **Standard Drafting Team Roster:**

TBD

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>PRC-010-0 — Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program</b>	
FERC Order 693	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. Paragraph 1509. We appreciate MEAG's feedback to our response in the NOPR. For the reasons discussed in the NOPR, as well as our explanation above, the Commission approves Reliability Standard PRC-010-0 as mandatory and enforceable. In addition, the Commission directs the ERO to develop a modification to PRC-010-0 through the Reliability Standards development process that requires 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 programs.
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
Fill in the Blank Team	Placeholder

## 2008-02 Undervoltage Load Shedding

Source	Language
Phase III/IV Team	<ul style="list-style-type: none"> <li>• 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.</li> <li>• There is no requirement that identifies the desired performance of a UVLS program (what voltage set points and timing are acceptable?).</li> <li>• 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?</li> </ul>
Team Comments	Provide clarity where the Planning Authority is mentioned
Version 0 Team	<ul style="list-style-type: none"> <li>• Define evidence</li> <li>• Exemptions for some who use shunt reactors</li> <li>• Level 4 vs. level 1 changes</li> </ul>
<b>PRC-022-1 — Under-Voltage Load Shedding Program Performance</b>	
FERC’s December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC’s December 20, 2007 Order, the Commission reversed NERC’s Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC’s March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC’s April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC’s July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
FERC Order 693	Consider FirstEnergy’s suggestions to revise requirement R1.3 as part of the standards development process. Paragraph 1564. FirstEnergy comments that Requirement R1.3 requires “a simulation of the event, if deemed appropriate by the RRO” and believes that the applicable entities such as transmission operators may not be able to simulate large system events. FirstEnergy suggests that Requirement R1.3 be revised to state that “a simulation of the event, if deemed appropriate, and assisted by the [regional reliability organization].”

## 2008-02 Undervoltage Load Shedding

---

Source	Language
Phase III/IV Team	<ul style="list-style-type: none"><li>• 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.</li><li>• 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?</li><li>• The TO should also be required to demonstrate that its UVLS program is coordinated with adjacent TOs.</li></ul>

## **Project 2008-06 Cyber Security — Order 706**

### **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:**

Implement changes to the Cyber Security Standards (above) as indicated in FERC Order 706.

This set of revisions in this project includes:

- Modifying the standards so they conform to the latest approved versions of the ERO Rules of Procedure as outlined in the Standard Review Guidelines identified in Attachment 1.
- Addressing the directives issued by FERC, in Order 706 relative to the approved Cyber Security Standards CIP-002-1 through CIP-009-1. Refer to <http://www.ferc.gov/whats-new/comm-meet/2008/011708/E-2.pdf> for the complete text of the final order. Specific requirements from the Order are identified in Attachment 2.
  - Emphasis on Order 706 directive for NERC to address revisions to the CIP standards considering applicable feature of the NIST Security Risk Management Framework among other resources.
- Incorporating clarifications from the Interpretation of CIP-006-1 Requirement 1.1.

Additional issues identified by stakeholders during the posting of this SAR are listed in Attachment 3.

Revisions should consider other Cyber-related standards, guidelines and activities:

- Consider adopting the NIST Security Risk Management Framework (includes GAO, OMB and FIPS)
- Consider other cyber security related documents such as NIST, ISO 27000 Family, CIPC WG Risk Assessment Guideline, MITRE corporation technical report, DHS, National Laboratories papers, DOE 417, IEC, ISA, etc.
- Stay apprised of coordination work between FERC, NEI and NRC in regard to the nuclear facility exemption issue with respect to regulatory gaps. As necessary modify the standards to reflect current determinations.

**Standards Development Status:**

[Project 2008-06 Cyber Security Web page](#)

**Project Schedule:**

TBD

**Standard Drafting Team Roster:**

<b>Chairman</b>	Jeri Domingo Brewer	U.S. Bureau of Reclamation
<b>Vice Chairman</b>	Kevin B. Perry	Southwest Power Pool Regional Entity
	Robert Antonishen	Ontario Power Generation Inc.
	Jim Brenton	Electric Reliability Council of Texas, Inc.
	Jackie Collett	Manitoba Hydro
	Jay S. Cribb	Southern Company Services, Inc.
	Joe Doetzl	Kansas City Power & Light Co.
	Sharon Edwards	Duke Energy
	Scott W. Fixmer	Exelon Corporation
	Gerald S. Freese	American Electric Power
	Philip Huff	Arkansas Electric Cooperative Corporation
	Frank Kim	Hydro One Networks, Inc.
	Richard Kinas	Orlando Utilities Commission
	John Lim, CISSP	Consolidated Edison Co. of New York
	David L. Norton	Entergy Corporation
	Christopher Peters	ICF International
	David S Revill	Georgia Transmission Corporation
	Scott Rosenberger	Luminant Energy
	Kevin Sherlin	Sacramento Municipal Utility District
	Jon Stanford	Bonneville Power Administration
	Keith Stouffer	National Institute of Standards & Technology
	John D. Varnell	Tenaska Power Services Co.
	William Winters	Arizona Public Service Co.
<b>Consultant to NERC</b>	Hal Beardall	Florida State University
<b>Consultant to NERC</b>	Joseph Bucciero	Bucciero Consulting, LLC
<b>Consultant to NERC</b>	Robert M. Jones	Florida State University
<b>Consultant to NERC</b>	Stuart Langton, PhD	Florida State University



<b>NERC Staff</b>	Tom Hofstetter	North American Electric Reliability Corporation
<b>NERC Staff</b>	Roger Lampila	North American Electric Reliability Corporation
<b>NERC Staff</b>	Scott Mix	North American Electric Reliability Corporation
<b>NERC Staff</b>	David Taylor	North American Electric Reliability Corporation
<b>NERC Staff</b>	Todd Thompson	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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
<b>CIP-001-1 — Sabotage Reporting</b>	
FERC Order 693	<p>Consider the need for wider application of the standard. Consider whether separate, less burdensome requirements for smaller entities may be appropriate. Paragraph 458. The Commission acknowledges the concerns of the commenter’s about the applicability of CIP-001-1 to small entities and has addressed the concerns of small entities generally earlier in this Final Rule. Our approval of the ERO Compliance Registry criteria to determine which users, owners and operators are responsible for compliance addresses the concerns of APPA and others. 459. However, the Commission believes that there are specific reasons for applying this Reliability Standard to such entities, as discussed in the NOPR. APPA indicates that some small LSEs do not own or operate “hard assets” that are normally thought of as “at risk” to sabotage. The Commission is concerned that, an adversary might determine that a small LSE is the appropriate target when the adversary aims at a particular population or facility. Or an adversary may target a small user, owner or operator because it may have similar equipment or protections as a larger facility, that is, the adversary may use an attack against a smaller facility as a training “exercise.” The knowledge of sabotage events that occur at any facility (including small facilities) may be helpful to those facilities that are traditionally considered to be the primary targets of adversaries as well as to all members of the electric sector, the law enforcement community and other critical infrastructures. 460. For these reasons, the Commission remains concerned that a wider application of CIP-001-1 may be appropriate for Bulk-Power System reliability. Balancing these concerns with our earlier discussion of the applicability of Reliability Standards to smaller entities, we will not direct the ERO to make any specific modification to CIP-001-1 to address applicability. However, we direct the ERO, as part of its Work Plan, to consider in the Reliability Standards development process, possible revisions to CIP-001-1 that address our concerns regarding the need for wider application of the Reliability Standard. Further, when addressing such applicability issues, the ERO should consider whether separate, less burdensome requirements for smaller entities may be appropriate to address these concerns.</p> <p>“Define “sabotage” and provide guidance on triggering events that would cause an entity to report an event. Paragraph 461. Several commenter’s agree with the Commission’s concern that the term “sabotage” should be defined. For the reasons stated in the NOPR, we direct that the ERO further define the term and provide guidance on triggering events that would cause an entity to report an event. However, we disagree with those commenter’s that suggest the term “sabotage” is so vague as to justify a delay in approval or the application of monetary penalties. As explained in the NOPR, we believe that the term sabotage is commonly understood and that common understanding should suffice in most instances. Further, in the interim while the matter is being addressed by the Reliability Standards development process, we direct the ERO to provide advice to entities that have concerns about the reporting of particular circumstances as they arise. 462. Further, in defining sabotage, the ERO should consider FirstEnergy’s suggestions to differentiate between cyber and physical sabotage and develop a threshold of materiality. However, regarding the latter suggestion, the Commission directs that guidance for a threshold of materiality must be designed carefully to mitigate the risk that an unsuccessful sabotage event is not correctly reported because it did not cause sufficient harm. 463. Requirement R1 of CIP-001-1 provides that an applicable entity must have procedures “for the recognition of and for making their operational personnel aware of sabotage events on its facilities and multi-site sabotage affecting larger portions of the Interconnection.” The NOPR expressed concern that the provision does not establish baseline requirements regarding what</p>

Source	Language
	<p>issues should be addressed by the developed procedures. APPA goes even further and, characterizing it as an entity specific fill-in the-blank standard, contends that it lacks sufficient detail upon which the ERO can base compliance and enforcement efforts. 464. While the Commission believes that this Reliability Standard can and should be enhanced by specifying baseline requirements regarding what issues should be addressed in the procedures for recognizing sabotage events and making personnel aware of such events, it disagrees with APPA that Requirement R1 lacks sufficient detail on which to base ERO compliance and enforcement efforts. As indicated in Measure M1, an applicable entity must have and maintain the procedure as defined by Requirement R1. Thus, if an applicable entity cannot provide the required procedure to the ERO or a Regional Entity auditor upon request, it would likely be subject to an enforcement action. While we expect that an applicable entity that has made a good faith effort to develop a meaningful procedure to comply with Requirement R1 (and Measure M1) would not be subject to an enforcement action, an ERO or Regional Entity audit team may provide steps to improve the individual entity's procedure, which would serve as a baseline for that entity for any subsequent audit. Such an approach would be acceptable and allow for meaningful compliance in the interim until CIP-001-1 is modified pursuant to our directive."</p>
	<p>In the interim, provide advice to entities about the reporting of particular circumstances as they arise. Paragraph 461. Several commenter's agree with the Commission's concern that the term "sabotage" should be defined. For the reasons stated in the NOPR, we direct that the ERO further define the term and provide guidance on triggering events that would cause an entity to report an event.<sup>209</sup> However, we disagree with those commenter's that suggest the term "sabotage" is so vague as to justify a delay in approval or the application of monetary penalties. As explained in the NOPR, we believe that the term sabotage is commonly understood and that common understanding should suffice in most instances.<sup>210</sup> Further, in the interim while the matter is being addressed by the Reliability Standards development process, we direct the ERO to provide advice to entities that have concerns about the reporting of particular circumstances as they arise.</p>
	<p>Consider FirstEnergy's suggestions to differentiate between cyber and physical security sabotage and develop a threshold of materiality. Paragraph 451. A number of commenter's agree with the Commission's concern that the term "sabotage" needs to be better defined and guidance provided on the triggering events that would cause an entity to report an event. FirstEnergy states that this definition should differentiate between cyber and physical sabotage and should exclude unintentional operator error. It advocates a threshold of materiality to exclude acts that do not threaten to reduce the ability to provide service or compromise safety and security. SoCal Edison states that clarification regarding the meaning of sabotage and the triggering event for reporting would be helpful and prevent over-reporting.</p>
	<p>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. Paragraph 466. The Commission affirms the NOPR directive and directs the ERO to incorporate a periodic review or updating of the sabotage reporting procedures and for the periodic testing of the sabotage reporting procedures. At this time, the Commission does not specify a review period as suggested by FirstEnergy and MRO and, rather, believes that the appropriate period should be determined through the ERO's Reliability Standards development process. However, the Commission directs that the ERO begin this process by considering a staggered schedule of annual testing of the procedures with modifications made when warranted formal review of the procedures every two or three years.</p>
	<p>"Include a requirement to report a sabotage event to the proper government authorities. Develop the language to specifically implement this directive. Paragraph 467. CIP-001-1, Requirement R4, requires that each applicable entity establish communications contacts, as applicable, with</p>

Source	Language
	<p>the local FBI or Royal Canadian Mounted Police officials and develop reporting procedures as appropriate to its circumstances. The Commission in the NOPR expressed concern that the Reliability Standard does not require an applicable entity to actually contact the appropriate governmental or regulatory body in the event of sabotage. Therefore, the Commission proposed that NERC modify the Reliability Standard to require an applicable entity to “contact appropriate federal authorities, such as the Department of Homeland Security, in the event of sabotage within a specified period of time.”212 468. As mentioned above, NERC and others object to the wording of the proposed directive as overly prescriptive and note that the reference to “appropriate federal authorities” fails to recognize the international application of the Reliability Standard. The example of the Department of Homeland Security as an “appropriate federal authority” was not intended to be an exclusive designation. Nonetheless, the Commission agrees that a reference to “federal authorities” could create confusion. Accordingly, we modify the direction in the NOPR and now direct the ERO to address our underlying concern regarding mandatory reporting of a sabotage event. The ERO’s Reliability Standards development process should develop the language to implement this directive.”</p> <p>Explore ways to reduce redundant reporting, including central coordination of sabotage reports and a uniform reporting format. Paragraph 469. As noted above, FirstEnergy, EEI and others express concern regarding the potential for redundant reporting under CIP-001-1 and other government reporting standards, and the need for greater coordination. The Commission understands the concern about multiple reporting channels that may arise and the burden that this may present to applicable entities. We direct the ERO to explore ways to address these concerns — including central coordination of sabotage reports and a uniform reporting format — in developing modifications to the Reliability Standard with the appropriate governmental agencies that have levied the reporting requirements.</p>
<p>NERC Audit Observation Team</p>	<ul style="list-style-type: none"> <li>• Registered Entities have sabotage reporting processes and procedures in place but not all personnel has been trained.</li> <li>• "What is meant by: “establish contact with the FBI”? Is a phone number adequate? Many entities which call the FBI are referred back to the local authority. The AOT noted that on the FBI website it states to contact the local authorities. Is this a question for Homeland Security to deal with for us?"</li> <li>• Establish communications contacts, as applicable with local FBI and RAMP officials. Some entities are very remote and the sheriff is the only local authority does the FBI still need to be contacted?</li> <li>• Question: How do you “and make the operator aware”</li> <li>• How does this standard pertain to Load Serving Entities, LSE’s?</li> </ul>
<p>FERC’s December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC’s December 20, 2007 Order, the Commission reversed NERC’s Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC’s March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC’s April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-">http://www.nerc.com/files/AcceptLSECompFiling-</a></li> </ul>

Source	Language
	<p><a href="#">040408.pdf</a> ), and</p> <ul style="list-style-type: none"> <li>• NERC’s July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Object to multi-site requirement</li> <li>• Definition of sabotage required</li> </ul>
VRFs Team	Adequate procedures will insure it is unlikely to lead to bulk electric system instability, separation, or cascading failures.
<b>CIP-002-1 — Critical Cyber Asset Identification</b>	
<p>FERC’s December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC’s December 20, 2007 Order, the Commission reversed NERC’s Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC’s March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC’s April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC’s July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
<b>CIP-003-1 — Cyber Security — Security Management Controls</b>	
NERC Audit Observation Team	Security Management Controls specifies the minimum Critical Cyber Asset information to be protected in requirement R4.1. Among the information asset types identified by R4.1. are network topology diagrams. The context of this requirement is clear and applies to computer network topology diagrams relating to Critical Cyber Asset information only.
VRFs Team	R4.2 — only an administrative requirement
<p>FERC’s December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC’s December 20, 2007 Order, the Commission reversed NERC’s Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> </ul>

Source	Language
	<ul style="list-style-type: none"> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
<b>CIP-004-1 — Cyber Security — Personnel &amp; Training</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
VRFs Team	R3 - This needs to be looked at for 30 days - should be done prior to access being granted.
<b>CIP-005-1 — Cyber Security — Electronic Security Perimeter(s)</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>



Source	Language
VRFs Team	<ul style="list-style-type: none"> <li>• R1.3 — administrative definition</li> <li>• R1.5 — standard to comply with a standard = double jeopardy</li> </ul>
<b>CIP-006-1 — Cyber Security — Physical Security of Critical Cyber Assets</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a>), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a>) compliance filings to FERC on this subject.</li> </ul>
VRFs Team	<ul style="list-style-type: none"> <li>• R1.5 &amp; .9 — Should be consistent with CIP-005</li> <li>• R1.8 - A requirement to meet other standard requirements - double jeopardy</li> <li>• R2.1, .2, .3 &amp; .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 subrequirements.</li> <li>• R3.1 — May statement</li> </ul>
<b>CIP-007-1 — Cyber Security — Systems Security Management</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a>), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a>) compliance filings to FERC on this subject.</li> </ul>

Source	Language
VRFs Team	<ul style="list-style-type: none"> <li>• R2 &amp; 2.3 — An open port can lead to loss of system integrity.</li> <li>• R3 — An improper patch can lead to loss of system integrity.</li> </ul>
<b>CIP-008-1 — Incident Reporting and Response Planning</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a>), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a>) compliance filings to FERC on this subject.</li> </ul>
<b>CIP-009-1 — Recovery Plans for Critical Cyber Assets</b>	
<p>FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000</p>	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a>)</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a>),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a>), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a>) compliance filings to FERC on this subject.</li> </ul>



## Project 2008-12 Coordinate Interchange Standards

### Standards Involved:

INT-001-3 — 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:

The modifications in the set of Coordinate Interchange Standards should address the following:

- Determine if the activities in the Coordinate Interchange standards correctly identify the responsible entity.
- Consider requiring the Sink Balancing Authority responsibility for Interchange Authority functions, using an interchange transaction tool process as defined in the latest approved version of the e-Tag Specifications.
- The existing requirements are tool-neutral — consider adding specific references to the e-Tagging process in the requirements
- Consider adding a requirement to have backup capability for use when the interchange transaction tool fails.
- Consider combining requirements into a fewer number of standards so that the resultant set of requirements follows a chronological sequence that is easier to follow.
- Address the directives issued by FERC in Order 693, and the stakeholder comments from the V0 drafting team and the Violation Risk Factor drafting team. (See Attachment 1)
- Determine if there is industry-wide support for the Interchange Subcommittee's Principles and definition supporting dynamic transfers and pseudo-ties and if there is support, modify the requirements and add definitions accordingly. Make other changes to the standards to bring them into conformance with the latest version of the Reliability Standards Development Procedure, Sanctions Guidelines and Uniform Compliance Monitoring and Enforcement Program.
- The work in this project should be done in two phases, with the first phase focused solely on clarifying the applicability of each requirement in the existing set of standards. All other revisions should take place in a second phase.

**Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 3.a.viii

Justification for NAESB consideration:  
Industry recommendations

SRS Recommendation:  
The NERC/NAESB JESS was assigned to review and correct WEQ-004 Coordinate Interchange Business Practice Standard as needed based on activities in NERC Project 2008-12, Coordinate Interchange Standards Revisions and supporting EOP-002-2 R4 and R6.

**Standards Development Status:**

[Project 2008-12 Coordinate Interchange Standards Web page](#)

**Project Schedule:**

[Project 2008-12 Project Schedule](#)

**Standard Drafting Team Roster:**

Chairman	Joseph Gardner	Midwest ISO, Inc.
	Clint Aymond	Entergy Services, Inc.
	Kelly W Bertholet	Manitoba Hydro
	Eric Grau	Tennessee Valley Authority
	James Michael Hansen	Seattle City Light
	Peter Harris	ISO New England, Inc.
	Robert H. Harshbarger	Puget Sound Energy, Inc.
	Donald P. Lacen	Public Service Company of New Mexico
	Marcus V Lotto	Southern California Edison Co.
	Gregory D Maxfield	PacifiCorp
	David McRee	Duke Energy Carolina
	Joel L Mickey	Electric Reliability Council of Texas, Inc.
	Brian Neal	Bonneville Power Administration
	Michael Oatts	Southern Company Services, Inc.
	Christopher Pacella	PJM Interconnection, L.L.C.
NERC Staff	Andrew J. Rodriguez	North American Electric Reliability Corporation

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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.
NAESB Standards Review Subcommittee	NAESB Standards Review Subcommittee as input to the Reliability Standards Development Plan: 2010-2012: NAESB requests that NERC engage in coordination with them as needed on this project as it relates to item 3.a.viii in the NAESB WEQ 2009 Annual Plan.
<b>INT-001-2 — Interchange Information</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
FERC Order 693	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Consider Santa Clara's comments about the applicability of the LSE in the standard as part of the standards development process.</li> </ul>
Regional Difference to INT-001/4: WECC Tagging Dynamic Schedules and Inadvertent Payback	Submit a filing within 90 days of the Order that provides the needed information or withdraws the regional variance.
VRF comments	<ul style="list-style-type: none"> <li>• R1, 1.1, 2, 2.1, 2.2 – commercial and administrative</li> </ul>
V0 Industry Comments	<ul style="list-style-type: none"> <li>• R1 - Too stringent</li> <li>• R1 – Who tags dynamic schedules?</li> <li>• Load PSE responsibility is new restriction</li> <li>• Clarify tagging of reserves</li> <li>• R2.2 – 60 minute time frame questioned</li> <li>• Question on generation scheduling</li> </ul>

**2008-12 Coordinate Interchange Standards**

Source	Language
	<ul style="list-style-type: none"> <li>• Onerous to BA's</li> <li>• More commercial problem than reliability</li> <li>• Lack of compliance</li> </ul>
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-003-2 — Interchange Transaction Implementation</b>	
VRF Comments	R1, 1.1, 1.1.2, 1.2 – commercial and administrative
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-004-1 — Dynamic Interchange Transaction Modifications</b>	
FERC Order 693	Consider adding levels of non-compliance to the standard.
Regional Difference to INT-001/4:	WECC Tagging Dynamic Schedules and Inadvertent Payback: Submit a filing within 90 days of the Order that provides the needed information or withdraws the regional variance.
V0 Industry Comments	<ul style="list-style-type: none"> <li>• Replace TSP with TOP</li> <li>• Need to address tag curtailment</li> <li>• Suggested non-compliance levels</li> <li>• Non-compliance based on %</li> <li>• Use WECC criteria</li> </ul>
VRF comments	R2, 2.2, 2.3 – commercial and administrative
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-005-2 — Interchange Authority Distributes Arranged Interchange</b>	
FERC Order 693	Consider adding levels of non-compliance to the standard.
VRF comment	R5 – administrative
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-006-2 — Response to Interchange Authority</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Include reliability coordinators and transmission operators as applicable entities.</li> <li>• 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.</li> <li>• Consider the suggestions made by EEI and TVA and address questions raised by</li> </ul>

**2008-12 Coordinate Interchange Standards**

Source	Language
	Entergy and Northern Indiana as part of the standard development process.
NERC Audit and Observation Team	Does confirmed action mean direct action needs to be taken or, does confirmed action mean that a process has been put in place that will take action and, the entity agrees with such since they have employed the program.
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-007-1 — Interchange Confirmation</b>	
VRF comment	R1, 1.1, 1.3, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.4 – administrative
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-008-2 — Interchange Authority Distributes Status</b>	
FERC Order 693	Consider APPA’s suggestion to clarify what reliability entity the standard applies as part of the standard development process.
VRF comments NERC/NAESB Coordination	R1.1.1 & 1.1.2 – commercial and administrative NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-009-1 — Implementation of Interchange</b>	
FERC Order 693	Consider APPA’s suggestion to clarify what reliability entity the standard applies as part of the standard development process.
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA
<b>INT-010-1 — Interchange Coordination Exemptions</b>	
FERC Order 693	Consider Northern Indiana’s and ISO-NE’s suggestions in the standards development process.
VRF comments	R1 & 3 – administrative
NERC/NAESB Coordination	NERC/NAESB Coordination • The SDT review the definitions of the following terms and coordinate with NAESB so that the definition of each term is consistent between NERC and NAESB: Interchange Schedule Interchange Transaction Interchange Transaction Tag (Tag) Request for Interchange Source BA Sink BA

**Project 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 2009-01 Disturbance and Sabotage Reporting Web page](#)

**Project Schedule:**

[Project 2009-01 Project Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Ed Seddon	Orlando Utilities Commission
<b>Vice Chairman</b>	Judith A. James	Texas Regional Entity
<b>SAR Requester</b>	Patrick Brown	PJM Interconnection, L.L.C.
	Joseph G. DePoorter	Madison Gas and Electric Co.
	Brandy A Dunn	Western Area Power Administration
	Brian Evans-Mongeon	Utility Services LLC
	Brian M Harrell	SERC Reliability Corporation
	James E. Hartmann, Jr.	Electric Reliability Council of Texas, Inc.
	Tom Jones	Midwest ISO, Inc.
	David McRee	Duke Energy Carolina
	Mark Mullen	Xcel Energy, Inc.
	Drew Phillips	Independent Electricity System Operator
	Lewe Sessions	NextEra Energy Resources, LLC
	Raymond Tran	Ascendant Energy Services, LLC
<b>NERC Staff</b>	Stephen Crutchfield	North American Electric Reliability Corporation
<b>NERC Staff</b>	Scott Mix	North American Electric Reliability Corporation



**Issues to be Considered by the Standard Drafting Team:**

Source	Language
<b>EOP-004-1 — Disturbance Reporting</b>	
Events Analysis Team	Reliability Issue: Coordination and follow up on lessons learned from event analyses Consider adding to EOP-004 – Disturbance Reporting Proposed requirement: Regional Entities (REs) shall work together with Reliability Coordinators, Transmission Owners, and Generation Owners to develop an Event Analysis Process to prevent similar events from happening and follow up with the recommendations. This process shall be defined within the appropriate NERC Standard
FERC Order 693	Ensure NERC’s Rules of Procedure are revised to assure the Commission receives these reports in the same frame as the DOE. Paragraph 618: Requirement R3 addresses the reporting of disturbances to the regional reliability organizations and NERC. The Commission directs the ERO to change its Rules of Procedure to assure that the Commission also receives these reports within the same time frames as DOE.
	Consider all comments offered in a future modification of the reliability standard. Comments begin at paragraph 606 of the order. 606. EEI and FirstEnergy support the Commission’s proposed modifications to the Reliability Standard. EEI states that data reporting requirements and other process requirements should be contained in enforceable Reliability Standards. FirstEnergy states that the proposed modification corresponds to good utility practice and that explicitly stating the requirement to provide data to NERC brings clarity to the expectations of NERC and the Commission. 607. APPA is concerned about the scope of Requirement R2 because, in its opinion, Requirement R2 appears to impose an open-ended obligation on entities such as generation operators and LSEs that may have neither the data nor the tools to promptly analyze disturbances that could have originated elsewhere. APPA proposes that Requirement R2 be modified to require affected entities to promptly begin analyses to ensure timely reporting to NERC and DOE. 608. Xcel expresses concern regarding what constitutes a reportable event for each applicable entity and recommends that the Reliability Standard be revised to define what a reportable event is for each entity that has reporting obligations. Further, Xcel states that the requirement in Requirement R3.4 for a final report within 60 days may not be feasible given the current WECC process, which among other things, requires the creation of a group to prepare the report and a 30-day posting of a draft report before it becomes final. Xcel also states that if the ultimate purpose of the report is to provide information to avoid a recurrence of a system disturbance, then the Reliability Standard should be revised to require the distribution of the report to similarly situated entities. 609. FirstEnergy states that, since nuclear units have their own NRC reporting procedures covering the Requirements under EOP-004-1, the Reliability Standard should specify that compliance with such operating procedures is sufficient to satisfy the requirements of EOP-004-1. FirstEnergy also states that the title of this Reliability Standard should be changed to “Disturbance Event Reporting” to indicate that the events covered under this Reliability Standard include a broad range of events that go beyond the events for which reports may be required under Reliability Standard BAL-002-0. 610. APPA states that NERC’s November 15, 2006 revision partially fulfills the proposed modification to include Measures and Levels of Non-Compliance. APPA notes that EOP-004-1 did not provide Measures for R2, R3.2, R3.4, R4 and R5.
	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. Paragraph 607. APPA is concerned about the scope of Requirement R2 because, in its opinion, Requirement R2 appears to impose an open-ended obligation on entities such as generation operators and LSEs that may have neither the data nor the tools to promptly analyze disturbances that could have originated elsewhere. APPA proposes that Requirement R2 be modified to require affected entities to promptly begin analyses to ensure timely

## 2009-01 Disturbance and Sabotage Reporting

Source	Language
	<p>reporting to NERC and DOE.</p> <p>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. Paragraph 617. While the Commission has identified concerns with regard to EOP-004-1, we believe that the proposal serves an important purpose in establishing requirements for reporting and analysis of system disturbances. Accordingly, the Commission approves Reliability Standard EOP-004-1 as mandatory and enforceable. In addition, pursuant to section 215(d) (5) of the FPA and § 39.5(f) of our regulations, the Commission directs the ERO to develop a modification to EOP-004-1 through the Reliability Standards development process that includes any Requirements necessary 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.</p>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Consider changes to R1 and R3.4 to standardize the disturbance reporting requirements (requirements for disturbance reporting need to be added to this standard)</li> <li>• 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.</li> </ul>
NERC Audit Observation Team	Can there be a violation without an event?
Version 0 Team	<ul style="list-style-type: none"> <li>• How does this apply to generator operator?</li> <li>• R3 – too many reports, narrow requirement to RC</li> </ul>
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
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.

## Project 2009-02 Real-time Tools

### Standards Involved:

New

### Research Needed:

No additional research needed. The NERC Real-Time Tools Best Practices Task Force (RTBPTF) performed an extensive, three-year process of fact finding and analysis supported by the results of their Real-Time Tools Survey, the most comprehensive survey ever conducted of current electric industry practices.

The RTBPTF summarized their findings in a report titled [\*Real-Time Tools Survey Analysis and Recommendations\*](#) dated March 13, 2008. The report includes the RTBPTF's recommendations for minimum acceptable capabilities and best practices for real-time tools necessary to ensure reliable electric system operation and reliability coordination.

### Brief Description:

The scope of the SAR is to establish requirements for the functionality, performance, and management of tools used in support of Real-time System Operations. The intent is to describe 'what' needs to be done but not 'how' to do it.

This project will be responsive to the U.S.-Canada Power System Outage Task Force blackout recommendation 10: Establish Guidelines for Real-Time Operating Tools.

### Standards Development Status:

[Project 2009-02 Real-time Tools Web page](#)

### Project Schedule:

TBD

**SAR Drafting Team Roster:**

<b>Chairman</b>	Sam Brattini	KEMA
<b>Vice Chairman</b>	Chuck Abell	Ameren
<b>SAR Requester</b>	Jack Kerr	Dominion
	Greg Campbell	WECC
	Jay Dondetti	MISO
	Vinit Gupta	Entergy
	Mike Richardson	AEP
	Bob Savage	APS
	Bob Staton	Xcel
	Scott Vidler	Hydro One
	Jerry Whooley	PJM
<b>NERC Staff</b>	Edd Dobrowolski	North American Electric Reliability Corporation

## **Project 2009-03 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.

### **Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB's observations for this project.

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 3.a.viii

Justification for NAESB consideration:  
WEQ SRS analysis  
Industry recommendations

SRS recommendation:  
Refer to Project 2007-18 Reliability Based Control

### **Standards Development Status:**

Project has not started.

### **Project Schedule:**

TBD

### **Standard Drafting Team Roster:**

TBD

### Issues to be Considered by the Standard Drafting Team:

Source	Language
<b>EOP-001-0 — Emergency Operations Planning</b>	
Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012	<ul style="list-style-type: none"> <li>• The NERC Glossary of terms defines a BA as: "The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time." In other words, responsible for supply and demand balance in the operating horizon. With this definition in mind, why is the BA responsible for EOP-001-1 R2.2 "Develop, maintain, and implement a set of plans to mitigate operating emergencies on the transmission system"?</li> <li>• The NERC Glossary of terms defines a TOP as: "(t)he entity responsible for the reliability of its 'local' transmission system, and that operates or directs the operations of the transmission facilities." With this definition in mind, why is the TOP made responsible for EOP-001-1 R2.1: "(d)develop, maintain, and implement a set of plans to mitigate operating emergencies for insufficient generating capacity"?</li> <li>• Requirement R4 (and by reference Attachment 1-EOP-001-0) is applicable to both the Transmission Operator and Balancing Authority but includes items that are not applicable to the TOP and are only applicable to the BA, e.g., why is a TOP responsible for fuel supply? Why is a TOP responsible for R6.2 concerning emergency energy? Why is a TOP responsible for fuel supply in R6.4, and why is the TOP responsible for arranging energy delivery?</li> </ul>
Real-time Best Practices Standards Study Group	Establish document plans and procedures for conservative operations
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.
<b>EOP-002-2 — Capacity and Energy Emergencies</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
Other	Modify standard to conform to the latest version of NERC's Reliability Standards

**2009-03 Emergency Operations**

Source	Language
	Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO Rules of Procedure.
<b>EOP-003-1 — Load Shedding Plans</b>	
Frank Gaffney (Florida Municipal Power Agency) as input to the Reliability Standards Development Plan: 2010-2012	<ul style="list-style-type: none"> <li>• With regard to requirement R2, why is the BA responsible for Under Frequency Load Shedding (UFLS) when PRC-006-0 and PRC-007-0 make it the responsibility of the Regional Entities, the TOPs, the Distribution Providers and the LSEs? Why is the BA responsible for Under Voltage Load Shedding (UVLS) when the responsibility should probably be just the TOP's? Isn't this requirement redundant with PRC-006-0 and PRC-007-0?</li> <li>• Requirement R2 of EOP-003-1 states: "Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions." The standards drafting team for Project 2007-01 Underfrequency Load Shedding should consider modifying this requirement as part of their project.</li> </ul>
Real-time Best Practices Standards Study Group	Provide the location, Real-time status, and MWs of Load available to be shed.
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.
<b>INT-001-1 — Interchange Information</b>	
FERC Order 693	Regional Difference to INT-001/4: WECC Tagging Dynamic Schedules and Inadvertent Payback: Submit a filing within 90 days of the Order that provides the needed information or withdraws the regional variance.
Version 0 Team	Lack of compliance
	More commercial problem than reliability
	Onerous to BA's
	Question on generation scheduling
	R2.2 – 60 minute time frame questioned
	Clarify tagging of reserves
	Load PSE responsibility is new restriction
	R1 – Who tags dynamic schedules?
VRFs Team	R1, 1.1, 2, 2.1, 2.2 – commercial and administrative
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.
<b>INT-001-2 — Interchange Information</b>	
FERC's December 20, 2007 Order in Docket Nos.	In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC)

Source	Language
RC07-004-000, RC07-6-000, and RC07-7-000	<p>footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC’s March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC’s April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC’s July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
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.
FERC Order 693	<p>Consider Santa Clara’s comments about the applicability of the LSE in the standard as part of the standards development process.</p> <p>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.</p>
<b>INT-003-1 — Interchange Transaction Implementation</b>	
VRFs Team	R1, 1.1, 1.1.2, 1.2 – commercial and administrative
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.
<b>INT-004-1 — Dynamic Interchange Transaction Modifications</b>	
FERC Order 693	Consider adding levels of non-compliance to the standard.
Version 0 Team	Suggested non-compliance levels
	Non-compliance based on %
	Need to address tag curtailment
	Replace TSP with TOP
	Use WECC criteria
VRFs Team	R2, 2.2, 2.3 – commercial and administrative
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.



Source	Language
<b>INT-005-2 — Interchange Authority Distributes Arranged Interchange</b>	
FERC Order 693	Consider adding levels of non-compliance to the standard.
VRFs Team	R5 – administrative
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.
<b>INT-006-1 — Response to Interchange Authority</b>	
FERC Order 693	Consider the suggestions made by EEI and TVA and address questions raised by Entergy and Northern Indiana as part of the standard development process.
	Include reliability coordinators and transmission operators as applicable entities.
	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.
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.
<b>INT-006-2 — Response to Interchange Authority</b>	
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.
NERC Audit Observation Team	Does confirmed action mean direct action needs to be taken or, does confirmed action mean that a process has been put in place that will take action and, the entity agrees with such since they have employed the program.
<b>INT-007-1 — Interchange Confirmation</b>	
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.
VRFs Team	R1, 1.1, 1.3, 1.3.1, 1.3.2, 1.3.3, 1.3.4, 1.4 – administrative
<b>INT-008-2 — Interchange Authority Distributes Status</b>	
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.
FERC Order 693	Consider APPA’s suggestion to clarify what reliability entity the standard applies as part of the standard development process.
VRFs Team	R1.1.1 & 1.1.2 – commercial and administrative
<b>INT-009-1 — Implementation of Interchange</b>	

## 2009-03 Emergency Operations

---

Source	Language
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.
FERC Order 693	Consider APPA's suggestion to clarify what reliability entity the standard applies as part of the standard development process.
<b>INT-010-1 — Interchange Coordination Exemptions</b>	
FERC Order 693	Consider Northern Indiana's and ISO-NE's suggestions in the standards development process.
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.
VRFs Team	R1 & 3 – administrative

**Project 2009-04 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:**

TBD

**Standard Drafting Team Roster:**

TBD

## **Project 2009-05 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.

NERC Staff is developing a paper discussing the options regarding resource adequacy issues. This issue may be better served through the NERC Rules of Procedure rather than a specific Reliability Standard. Two Regional Entities have developed draft standards relating to resource adequacy and these are being included in the consideration of options.

### **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 2009-05 Resource Adequacy Assessments](#)

### **Project Schedule:**

[Project 2009-05 Project Schedule](#)

**Standard Drafting Team Roster:**

<b>Chairman</b>	Mary H. Johannis	Bonneville Power Administration
<b>Vice Chairman</b>	Phil Fedora	Northeast Power Coordinating Council, Inc.
	Yong Cai	Sacramento Municipal Utility District
	Curt J. Dahl, P.E.	KeySpan Corp.
	Gregory S. Drake	New York Independent System Operator
	Andrew Fusco	North Carolina Eastern Municipal Power Agency
	William J. Head	Midwest Reliability Organization
	Daniel Huffman	FirstEnergy Corp.
	Tom Kaslow	Calpine Corporation
	Richard Kosch	Lincoln Electric System
	Garey C. Rozier	Southern Company Services, Inc.
	Donald M. Schlegel	American Electric Power
	Steve Scroggs	Florida Power & Light Co.
	Sam Waters	Progress Energy
<b>NERC Staff</b>	Stephen Crutchfield	North American Electric Reliability Corporation

**Project 2009-06 Facility Ratings**

**Standards Involved:**

FAC-008-1 — Facility Ratings

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 Guidelines attached to this SAR and also to two of the three applicable FERC directives in Order 693.

The proposed changes to FAC-008 and FAC-009 have already been through stakeholder review and reached consensus in 2008 on all requirements except the requirement (R7) developed to meet the FERC directive in Order 693 that required identification of the most limiting component of a facility and the theoretical increase in rating if the limitation were removed. Stakeholders indicated that this requirement (R7) did not have a reliability-related benefit, and voted against the inclusion of a requirement to meet this directive. Thus, this SAR proposes the same standard that was developed and balloted in late 2008, but without the requirement (R7).

**Standards Development Status:**

[Project 2009-06 Facility Ratings Web page](#)

**Project Schedule:**

TBD

**Standard Drafting Team Roster:**

<b>Chairman</b>	Paul B. Johnson, P.E.	American Electric Power
	Robert A. Birch	Florida Power & Light Co.
	Terry L. Crawley	Southern Company Services, Inc.
	Robert Kluge	American Transmission Company, LLC
	Robert W. Millard	ReliabilityFirst Corporation
	H. Steven Myers	Electric Reliability Council of Texas, Inc.
	Philip Riley	Public Service Commission of South Carolina
	Tapani Seppa	The Valley Group, Inc.
	Vladimir Stanisic	Ontario Power Generation Inc.
	Ronald F. Szymczak	Exelon Corporation
	Chifong L. Thomas	Pacific Gas and Electric Company
<b>NERC Staff</b>	Stephen Crutchfield	North American Electric Reliability Corporation

**Project 2009-07 Reliability of Protection Systems**

**Standards Involved:**

New

**Research Needed:**

None

**Brief Description:**

The proposed standard requires facility owners to have protection system equipment installed such that, if there were a failure to a specified component of that protection system, the failure would not prevent meeting the BES performance identified in the TPL standards.

**Standards Development Status:**

[Project 2009-07 Reliability of Protection Systems Web page](#)

**Project Schedule:**

TBD



**Standard Drafting Team Roster:**

<b>Chairman</b>	Ed Taylor	Pacific Gas and Electric Co.
	Robert Johnson	Allegheny Power
	Clarence Bradley	Georgia Transmission Co.
	Jonathon Glidewell	Southern Company Transmission Co.
	James Hubertus	Public Service Electric and Gas Co.
	Steve Leistner	PacifiCorp
	Stanley J. Lewis	Consolidated Edison Co. of New York
	Susan L. McGill	PJM
	John Mulhausen	Florida Power & Light Co.
	Jill Muller	American Transmission Co., L.L.C.
	Bill Newell	Progress Energy
	Don Oatman, Jr.	Electric Reliability Council of Texas, Inc.
	Richard P. Quest	Xcel Energy
	Dean Sorensen	National Grid
	Xiaodong Sun	Ontario Power Generation, Inc.
	Roger Whitaker	Bonneville Power Administration
<b>NERC Staff</b>	Darrel Richardson	North American Electric Reliability Corporation

**Project 2009-18 Withdraw Three Midwest ISO Waivers**

**Standards Involved:**

BAL-006-2 — Inadvertent Interchange  
INT-003-3 — Interchange Transaction Implementation

**Research Needed:**

None

**Brief Description:**

During their April 15-16, 2009 meeting the Standards Committee approved a SAR for removing waivers in the current NERC Standards associated with accommodating the operation of the Midwest ISO market in a multi-Balancing Authority environment. These waivers are no longer needed by the Midwest ISO now that the Midwest ISO is a Balancing authority:

- References to the Midwest ISO should be removed from the “Scheduling Agent Waiver” associated with INT-003-2 — Interchange Transaction Implementation.
- The “Enhanced Scheduling Agent Waiver” associated with INT-003-2 should be retired.
- References to the Midwest ISO should be removed from the “RTO Inadvertent Interchange Accounting Waiver” associated with BAL-006-1 — Inadvertent Interchange.

The purpose/industry need is to provide clarity in the applicability of the standard.

**Standards Development Status:**

[Project 2009-18 Withdraw Three Midwest ISO Waivers Web page](#)

**Project Schedule:**

TBD

**Standard Drafting Team Roster:**

Terry Bilke	Midwest ISO
Stephen Crutchfield	NERC Staff Coordinator

**Project 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:**

TBD

**Standard Drafting Team Roster:**

TBD

## **Project 2010-02 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.

### **Coordination with NAESB:**

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB’s observations for this project.

Related NAESB WEQ Projects (See [NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 1

Justification for NAESB consideration:  
Industry recommendations

SRS Recommendation:  
The WEQ SRS will add this project to its watch list.

### **Standards Development Status:**

Project has not started.

### **Project Schedule:**

TBD

### **Standard Drafting Team Roster:**

TBD

**Issues to be Considered by the Standard Drafting Team:**

Source	Language
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.
Phillip R. Kleckley (SERC EC Planning Standards Subcommittee (PSS)) as input to the Reliability Standards Development Plan:2010-2012	Consider adding a definition of “end user” to the NERC Glossary. (Note: This recommendation was received as part of the comments on Question 3 of the comments form for the “Draft Revision 6 of the SERC Facility Connection Requirements (FCR) Guideline”.)
<b>FAC-002-0 — Coordination of Plans for New Facilities</b>	
FERC’s December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC’s December 20, 2007 Order, the Commission reversed NERC’s Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a “reliability gap” if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC’s December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC’s March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC’s April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC’s July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>

## **Project 2010-03 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:**

TBD

### **Standard Drafting Team Roster:**

TBD

**Issues to be Considered by the Standard Drafting Team:**

<b>MOD-010-0 — Steady-State Data for Modeling and Simulation of the Interconnected Transmission System</b>	
ATFNSTDT	<p>The ATFNSTDT identified several issues with regard to modeling data during their deliberations on revising the TPL standards. At one time, they talked about incorporating the gaps they found in TPL but after some deliberation and multiple comments, it was decided to pass them over to the eventual MOD SDT for inclusion in their SAR and the ultimate revisions to MOD-010. These items need to be entered in the issues database so that they are accurately passed on to that SDT: Each Distribution Provider shall provide its respective Planning Coordinator with modeling information for real and reactive Load forecast data for each year of the Transmission planning horizon at Transmission nodes based on expected or historical System performance including the expected mix of industrial, commercial, and residential Loads, within ninety days of a request for such information. Each Transmission Planner shall provide its respective Planning Coordinator with modeling information for Firm Transmission Service data, Interchange Schedules, and resources required to supply Load for each of its Balancing Authorities for each year of the Transmission planning horizon, within ninety days of a request for such information. Each Transmission Owner shall provide its respective Planning Coordinator with modeling information for known planned outages and long-term outages for Transmission equipment for each year of the Transmission planning horizon with consideration given to spare equipment strategy, within ninety days of a request for such information. Each Generator Owner shall provide its respective Planning Coordinator with modeling information for known planned outages and long-term outages for generation equipment for each year of the Transmission planning horizon, within ninety days of a request for such information. Each Resource Planner shall provide its respective Planning Coordinator with the modeling information for new planned Facilities for each year of the Transmission planning horizon including but not limited to generators, Reactive Power devices, and new technologies, within ninety days of a request for such information. Each Transmission Planner shall provide its respective Planning Coordinator with modeling information for new planned Facilities for each year of the Transmission planning horizon including but not limited to Transmission Lines, circuit breakers, Reactive Power devices, Protection System equipment and control devices, and new technologies, within ninety days of a request for such information. These items are seen as gaps in the supply of modeling data that need to be filled. The revised TPL standards will require that a TP/PC use this data and place the onus on acquiring it on the TP/PC. FERC staff is concerned that this approach is lacking in that it doesn't have a corresponding requirement for the applicable entities to supply said data and want to make certain that this 'gap' is eventually closed in MOD.</p>
<b>MOD-011-0 — Maintenance and Distribution of Steady-State Data Requirements and Reporting Procedures</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Expand the applicability to include the planning authority.</li> <li>• 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.</li> </ul>

Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Revise NERC MOD-011 to clarify that the data reporting requirements must be uniform across each interconnection.</li> <li>• This should be a North American Standard containing requirements which are interconnection-wide.</li> <li>• MOD-010 and 011 are related. This is the MMWG work for the eastern interconnection.</li> <li>• Review MOD-010, MOD-011, MOD-012, and MOD-013 concurrently for modeling requirements and reporting.</li> <li>• 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.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Consistency across standards for non-compliance</li> <li>• Confidentiality of data</li> <li>• Add equipment types and variables</li> <li>• Not a standalone standard</li> <li>• Time element not cited in non-compliance</li> <li>• Several semantics issues</li> <li>• Locations of substations should be deleted</li> </ul>
<b>MOD-012-0 — Dynamics Data for Modeling and Simulation of the Interconnected Transmission System</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Provide a list of faults and disturbances used in performing dynamics system studies for operation and planning.</li> <li>• Address critical energy infrastructure confidentiality issues as part of the standard development process.</li> <li>• Expand the applicability to include transmission operators, planning authorities, and transmission planners.</li> <li>• Require users, owners, and operators to submit data to the regional entities as needed for modeling studies and assessments.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• This standard is directly related to MOD-013.</li> <li>• 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.</li> <li>• Review MOD-010, MOD-011, MOD-012, and MOD-013 concurrently for modeling requirements and reporting.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Not a standalone standard</li> <li>• Time element missing in non-compliance</li> <li>• Consistency of non-compliance</li> <li>• Confidentiality of data</li> </ul>



<b>MOD-013-1 — Maintenance and Distribution of Dynamics Data Requirements and Reporting Procedures</b>	
ATFNSTDT	MOD-013 needs to ask for voltage ride through data from generators as per 693.
FERC Order 693	<ul style="list-style-type: none"> <li>• Permit entities to estimate dynamics stat if they are unable to obtain unit specific information.</li> <li>• Require verification of the dynamic models with actual disturbance data.</li> <li>• Expand the applicability to include transmission operators, planning authorities, and transmission planners.</li> <li>• 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.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• Review MOD-010, MOD-011, MOD-012 and MOD-013 concurrently for modeling requirements and reporting.</li> <li>• This should be a North American Standard containing requirements which are interconnection-wide.</li> <li>• Revise MOD-013 to clarify that the data reporting requirements must be uniform across each interconnection.</li> <li>• MOD-012 and MOD-013 are related. This is the MMWG work for the Eastern Interconnection.</li> </ul>
Other	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Several semantics issues</li> <li>• Consistency in non-compliance</li> <li>• Confidentiality of data</li> <li>• Timing element not mentioned in non-compliance</li> <li>• Not a standalone standard</li> <li>• 5 business days not sufficient</li> </ul>
<b>MOD-014-0 — Development of Steady-State System Models</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• If model output is not within the accuracy required, the model shall be modified to achieve the necessary accuracy.</li> <li>• Require models to be validated against actual system response.</li> <li>• Require users, owners, and operators to provide the validated models to regional reliability organizations.</li> <li>• Develop a work plan that will facilitate ongoing validation of steady-state models and submit a compliance filing to the Commission.</li> </ul>
Fill in the Blank Team	No action
Other	<ul style="list-style-type: none"> <li>• 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.</li> </ul>

Version 0 Team	<ul style="list-style-type: none"> <li>Define near-term vs. long-term</li> <li>Timing element missing in non-compliance</li> <li>Solved cases should not have violations</li> <li>Consistency of non-compliance</li> </ul>
<b>MOD-015-0 — Development of Dynamics System Models</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>Require actual system events be simulated and dynamics system model output be validated against actual system response.</li> <li>Require users, owners, and operators to provide the validated models to regional entity.</li> <li>Develop a work plan that will facilitate ongoing validation of dynamics models and submit a compliance filing to the Commission.</li> </ul>
Fill in the Blank Team	No action
Other	<ul style="list-style-type: none"> <li>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.</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>Consistency of non-compliance</li> <li>Timing element of non-compliance</li> <li>Confidentiality of data</li> </ul>
<b>PRC-013-0 — Special Protection System Database</b>	
FERC Order 693	Consider APPA's suggestions for interconnection-wide consistency in the standards development process.
Other	<ul style="list-style-type: none"> <li>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.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>Related to PRC-015.</li> <li>Review PRC-013 and PRC-015 together to properly reference regional standards (see notes of PRC-015 for options).</li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>Define evidence</li> <li>Not a standalone standard</li> </ul>
<b>PRC-015-0 — Special Protection System Data and Documentation</b>	
Fill in the Blank Team	<ul style="list-style-type: none"> <li>Consider impact of removing R1.2 from PRC-012-0 and revision of PRC-013-0, R1.1, 1.2, &amp; 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.)</li> <li>Tied to PRC-013.</li> <li>Review PRC-013 and PRC-015 together to properly reference regional standards (see notes of PRC-015 for options).</li> </ul>
Other	<ul style="list-style-type: none"> <li>Modify standard to conform to the latest version of NERC's Reliability Standards Development Procedure, the NERC Standard Drafting Team Guidelines, and the ERO</li> </ul>

**2010-03 Modeling Data**

---

	Rules of Procedure.
Version 0 Team	<ul style="list-style-type: none"> <li>• Define evidence</li> <li>• Already covered elsewhere</li> </ul>
<b>PRC-020-1 — Under-Voltage Load Shedding Program Database</b>	
Fill in the Blank Team	No action required
Phase III/IV Team	The reliability-related need for the RRO to have the data isn't clear
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.
Team Comments	Provide clarity where the Planning Authority is mentioned
<b>PRC-021-1 — Under-Voltage Load Shedding Program Data</b>	
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.
Fill in the Blank Team	No action required

## Project 2010-04 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.

### Coordination with NAESB:

The NAESB Wholesale Electric Quadrant (WEQ) Standards Review Subcommittee (SRS) conducted an analysis of the NERC Reliability Standards Development Plan in order to identify those projects contained in the plan that may be appropriate for the industry, through NAESB, to develop parallel and complementary business practices. Below are NAESB’s observations for this project.

Related NAESB WEQ Projects ([See NAESB WEQ 2009 Annual plan](#)):  
Annual Plan Item 4.b

Justification for NAESB consideration:  
Industry recommendations

SRS Recommendation:  
The WEQ SRS will add this project to its watch list.

### Standards Development Status:

Project has not started.

### Project Schedule:

TBD

### Standard Drafting Team Roster:

TBD

### Issues to be Considered by the Standard Drafting Team:

Source	Language
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.
<b>MOD-017-0 — Aggregated Actual and Forecast Demands and Net Energy for Load</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
<b>MOD-018-0 — Reports of Actual and Forecast Demand Data</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see:</p> <ul style="list-style-type: none"> <li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li> <li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li> <li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li> <li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li> </ul>
<b>MOD-019-0 — Forecasts of Interruptible Demands and DCLM Data</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000,	<p>In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and</p>

## 2010-04 Demand Data

RC07-6-000, and RC07-7-000	associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see: <ul style="list-style-type: none"><li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li><li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li><li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li><li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li></ul>
<b>MOD-020-0 — Providing Interruptible Demands and DCLM Data</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see: <ul style="list-style-type: none"><li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li><li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li><li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li><li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li></ul>
<b>MOD-021-0 — Accounting Methodology for Effects of Controllable DSM in Forecasts</b>	
FERC's December 20, 2007 Order in Docket Nos. RC07-004-000, RC07-6-000, and RC07-7-000	In FERC's December 20, 2007 Order, the Commission reversed NERC's Compliance Registry decisions with respect to three load serving entities in the ReliabilityFirst (RFC) footprint. The distinguishing feature of these three LSEs is that none own physical assets. Both NERC and RFC assert that there will be a "reliability gap" if retail marketers are not registered as LSEs. To avoid a possible gap, a consistent, uniform approach to ensure that appropriate Reliability Standards and associated requirements are applied to retail marketers must be followed. Each drafting team responsible for reliability standards that are applicable to LSEs is to review and change as necessary, requirements in the reliability standards to address the issues surrounding accountability for loads served by retail marketers/suppliers. For additional information see: <ul style="list-style-type: none"><li>• FERC's December 20, 2007 Order (<a href="http://www.nerc.com/files/LSE_decision_order.pdf">http://www.nerc.com/files/LSE_decision_order.pdf</a> )</li><li>• NERC's March 4, 2008 (<a href="http://www.nerc.com/files/FinalFiledLSE3408.pdf">http://www.nerc.com/files/FinalFiledLSE3408.pdf</a> ),</li><li>• FERC's April 4, 2008 Order (<a href="http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf">http://www.nerc.com/files/AcceptLSECompFiling-040408.pdf</a> ), and</li><li>• NERC's July 31, 2008 (<a href="http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf">http://www.nerc.com/files/FinalFiled-CompFiling-LSE-07312008.pdf</a> ) compliance filings to FERC on this subject.</li></ul>

## **Project 2010-05 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:**

TBD

### **Standard Drafting Team Roster**

TBD

### Issues to be Considered by the Standard Drafting Team:

Source	Language
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.
<b>PRC-003-1 — Regional Requirements for Transmission and Generation Protection System Misoperations</b>	
FERC Order 693	Consider if greater consistency can be achieved in the standard as suggested by APPA.
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• Review PRC-003 and PRC-004 together to identify the specific requirements of the functional entities (include specific requirements for each functional entity).</li> </ul>
Phase III/IV Team	<ul style="list-style-type: none"> <li>• All transmission circuits 200 kV and above</li> <li>• Enhance the applicability section to clarify that the systems addressed by the requirements are limited to: <ul style="list-style-type: none"> <li>• All transmission circuits 100 kV to 200 kV operationally significant circuits, as defined by the RROs</li> <li>• In R1.2 change format to content</li> <li>• The RRO should be required to demonstrate that the requirements developed in accordance with R1 produce the desired result.</li> <li>• Generator protection systems, whose misoperations impact the bulk electric system</li> </ul> </li> </ul>
Version 0 Team	<ul style="list-style-type: none"> <li>• Change wording to reporting instead of monitoring</li> <li>• Need to define evidence</li> </ul>
<b>PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations</b>	
FERC Order 693	<ul style="list-style-type: none"> <li>• Consider ISO-NE's suggestion that LSEs and transmission operators should be listed as applicable entities.</li> <li>• The regional entity should develop procedures for corrective action plans.</li> </ul>
Fill in the Blank Team	<ul style="list-style-type: none"> <li>• 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.</li> <li>• See notes for PRC-003-1.</li> <li>• Review PRC-003 and PRC-004 together to identify the specific requirements of the functional entities.</li> </ul>
NERC Audit Observation Team	<ul style="list-style-type: none"> <li>• "Document the process"</li> <li>• The Generator Owner shall analyze its generator protection system misoperations and</li> </ul>



## 2010-05 Protection Systems

---

Source	Language
	implement corrective action plans to avoid future misoperations.
Phase III/IV Team	This standard should apply to all protection systems on the Bulk Electric System (BES) not just those that 'impact' the BES
Version 0 Team	Levels of non-compliance need to be redefined

**Project 2010-06 Results-based Reliability Standards**

**Standards Involved:**

Entire set of NERC Reliability Standards

**Research Needed:**

In 2008 the NERC Standards Committee Process Subcommittee conducted a review of the then existing NERC reliability standards and identified those that contained requirements that are administrative in nature or are simply explanatory text and which do not appear to contribute directly to meeting reliability objectives. The review results were presented to the Standards Committee at their April 16-17, 2009 meeting, and were adopted as the starting point for prioritizing standard changes and a basis for removing the administrative type of requirements. Detailed review results were included as Attachments 7di, 7dii and 7diii of the April 15-16, 2009 Standards Committee meeting agenda package.

In addition, as documented in Attachment 2 of the ERO Three-Year Assessment dated July 20, 2009 stakeholders recommend that the industry should “focus existing reliability standards and reliability standards development on areas that will lead to the greatest improvement in bulk power system reliability.” Suggestions include: “(1) focus the development of new reliability standards on those that will lead to the greatest improvement in reliability; i.e., address the greatest risks of wide-area cascading outages; (2) reduce the number of existing reliability standards to just those that have a critical impact on reliability of the bulk power system and convert the remaining reliability standards to guidelines; and (3) develop a more systematic process for prioritizing new reliability standards development projects based on risks to the bulk power system.”

In August 2009 an ad-hoc group was organized made up of representatives from the Standards Committee, Regional Entity staff, and NERC standards staff for developing a plan for transitioning the exiting set of NERC reliability standards into a set of revised reliability standards. The goal of the plan is to define a more focused set of reliability requirements that are predominantly performance-based, with a direct relation to bulk power system reliability. The plan is anticipated to be presented to the NERC Board of Trustees (BOT) at their November 4, 2009 meeting for consideration and approval.

**Project Description:**

Implement the plan approved by the NERC Board of Trustees (BOT) for improving the set of NERC reliability standards to be more focused on reliability performance. The plan is anticipated to be presented to the BOT during their November 4, 2009 meeting for consideration and approval.

**Project 2010-07 Transmission Requirements at the Generator Interface**

**Standards Involved:**

New

**Research Needed:**

None.

**Project Description:**

This project was proposed Mr. Gerry Adamski during the 2009 revision of the Reliability Standards Development Plan.

The Ad Hoc Group for Transmission Requirements at the Generator Interface plans to issue a final report document in October, 2009. This report contains a SAR and redline standards for a number of recommended changes to existing reliability standards requirements and the addition of several new requirements. These additions and modifications will add greater specificity and clarity to the expectations of those responsible for owning and operating the interconnection facilities that connect generators to the transmission grid. The changes address a significant concern for generator owners and generator operators regarding the believed improper assignment of transmission owner and operator requirements by virtue of their interconnection facilities.

If further information or discussion is required, please contact:

Gerry Adamski  
NERC Vice-President and Director - Standards  
116-390 Village Boulevard  
Princeton Forrestal Village  
Princeton, New Jersey 08540  
Phone: 609-452-8060  
E-mail: [gerry.adamski@nerc.net](mailto:gerry.adamski@nerc.net)

**Project 2012-01 Equipment Monitoring and Diagnostic Devices**

**Standards Involved:**

New

**Research Needed:**

None

**Brief Description:**

This project was proposed Mr. R. W. Kenyon, J.D., P.E. during the 2008 revision of the Reliability Standards Development Plan.

The drafting team will propose Reliability Standard(s) covering the application of major equipment monitoring and diagnostic devices and procedures. As proposed by Mr. Kenyon, the Reliability Standard(s) will address dissolved gas and moisture sampling processes and the application on on-line monitoring devices to detect incipient faults within BES major components, such as EHV transformers. These processes and devices enable the equipment owner to detect evolving internal faults, allowing corrective action under controlled conditions. In some instances, early warning of evolving faults can permit field repair of the unit, avoiding a system fault and destruction of a major piece of equipment. In other circumstances, the warning obtained permits the equipment owner to monitor the situation and to schedule unit replacement in a deliberate, controlled manner. Again, occurrence of a major system fault and unscheduled loss of a major unit can be avoided. Obviously, such measures can contribute significantly to reliability of the Bulk Electric System.

Ideally, the proposed Reliability Standard(s) would make the application of this technology mandatory for classes of critical equipment, with EHV transformers and shunt reactors an obvious example. Similar diagnostic approaches could be taken on critical EHV and/or major generator Gas Insulated Switchgear. The general approach could follow PRC-005, where the owner must have a system, but particulars are left to the equipment owner. The proposed Reliability Standard(s) could extend to other equipment condition monitoring such as Doble testing.

In many instances, equipment owners already recognize the value of major equipment monitoring and have equipment and/or procedures in place addressing this technology. However, there is far less assurance that monitoring equipment is properly maintained, that scheduled routine sampling is being fully performed, and that full use is being made of data obtained. Again, as with the Protective Relay Standard PRC-005, the proposed Reliability Standard(s) would contribute to insuring that equipment owners have a program addressing this technology and are indeed following their program. In other instances, equipment owners without such equipment might be obligated to establish a monitoring program.

**Project 2012-02 Physical Protection**

**Standards Involved:**

New

**Research Needed:**

None

**Project Description:**

This project was proposed Mr. Wayne E. Guthrie during the 2009 revision of the Reliability Standards Development Plan.

The development of reliability standards for the physical protection of essential equipment, buildings and people located in power generation, transmission, or distribution system locations should be considered in on order to mitigate the associated reliability risks to the bulk power system. The ANSI NFPA 850 standard “Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations” provides a potential starting reference for such standards.

If further information or discussion is required, please contact:

Wayne E. Guthrie  
Construction Specialty Services, Inc. & Critical Systems, LLC.  
8112 Bohannon Station Road  
Louisville, KY. 40291  
Phone: 502-231-2402  
Fax: 502-231-1886  
Mobile: 502-523-2731  
E-mail: [wguthrie@cssi.win.net](mailto:wguthrie@cssi.win.net)  
Web Site: <http://www.cssiweb.com/>

**Standard Authorization Request Form**

Title of Proposed Standard	Protection Misoperations Revisions to PRC-003, PRC-004, PRC-012, and PRC-016
Request Date	June 10, 2009

SAR Requester Information		SAR Type (Check a box for each one that applies.)	
Name	System Protection and Control Subcommittee	<input type="checkbox"/>	New Standard
Primary Contact	John Ciufu, Chairman	<input checked="" type="checkbox"/>	Revision to existing Standard
Telephone	(416) 345-5258	<input checked="" type="checkbox"/>	Withdrawal of existing Standard (PRC-016)
Fax	(416) 345-5406		
E-mail	<a href="mailto:john.ciufu@HydroOne.com">john.ciufu@HydroOne.com</a>	<input type="checkbox"/>	Urgent Action

**Purpose** (Describe what the standard action will achieve in support of bulk power system reliability.)

A key element of bulk power system reliability is the performance of the Protection Systems. To properly gage Protection System performance, is necessary to have a consistent set of metrics on Protection System Misoperations. Current PRC standards and definitions related to Protection System Misoperations are confusing and do not support a good metric for measurement of Protection System performance.

**Industry Need** (Provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)

Current PRC standards and definitions related to Protection System Misoperations are confusing and do not support a good metric for measurement of Protection System performance.

**Brief Description** (Provide a paragraph that describes the scope of this standard action.)

SPCS recommends creation of a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016.

**Detailed Description** (Provide a description of the proposed project with sufficient details for

the standard drafting team to execute the SAR.)

Standard PRC-003 is intended to ensure that all System Protection Misoperations are analyzed and mitigated according to guidelines established by the regions. The FERC, in Order 693, dated March 16, 2007, declared this standard as a "fill in the blank" type of standard that does not merit approval unless it is modified to make it more specific and consistent for all Regions. The SPCS concurs with the FERC order and provides recommendations on how the standard can be rewritten.

Because the procedures for analyzing and mitigating Misoperations were to be established by the regions, there is significant dissimilarity between the Misoperation data reported by each region, resulting in a virtually unusable misoperation metric for North America. SPCS recommends a change to the definition of Misoperation (Reportable Protection Misoperation) to provide uniformity to the misoperation data reported to the regions and NERC.

Protection System elements used for Special Protection Systems (SPS) or Remedial Action Schemes (RAS) are no different from those used for non Special Protection Systems. The revision to Standard PRC-003 should therefore apply to all Protection Systems, including SPS and RAS.

The SPCS also recommends that Standard PRC-016-0 – Special Protection System Misoperations, be requirements, merging its SPS/RAS Misoperation reporting, Corrective Action Plans, and tracking requirements into PRC-004 – Analysis and Mitigation of Transmission and Generation Protection System Misoperations.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and is coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should be modified to refer to that review process.

SPCS recommends creation of a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016.

See attached Technical Review document for additional details.

**Reliability Functions**

The Standard will Apply to the Following Functions <i>(Check box for each one that applies.)</i>		
<input type="checkbox"/>	Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator's wide area view.
<input type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/>	Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/>	Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/>	Resource Planner	Develops a >one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/>	Transmission Planner	Develops a >one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/>	Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
X	Transmission Owner	Owns and maintains transmission facilities.
<input type="checkbox"/>	Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
X	Distribution Provider	Delivers electrical energy to the End-use customer.
X	Generator Owner	Owns and maintains generation facilities.
<input type="checkbox"/>	Generator Operator	Operates generation unit(s) to provide real and reactive power.
<input type="checkbox"/>	Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input type="checkbox"/>	Market Operator	Interface point for reliability functions with commercial functions.
<input type="checkbox"/>	Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the End-use Customer.



**Reliability and Market Interface Principles**

<b>Applicable Reliability Principles (Check box for all that apply.)</b>	
X	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
X	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.
<b>Does the proposed Standard comply with all of the following Market Interface Principles? (Select 'yes' or 'no' from the drop-down box.)</b>	
	1. A reliability standard shall not give any market participant an unfair competitive advantage. Yes
	2. A reliability standard shall neither mandate nor prohibit any specific market structure. Yes
	3. A reliability standard shall not preclude market solutions to achieving compliance with that standard. Yes
	4. 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. Yes

**Related Standards**

<b>Standard No.</b>	<b>Explanation</b>
PRC-003	Revise
PRC-004	Revise
PRC-012	Revise

PRC-016	Retire
---------	--------

*Related SARs*

SAR ID	Explanation

*Regional Variances*

Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
SERC	
RFC	
SPP	
WECC	

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

## NERC SPCS Assessment of Standards:

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations
- PRC-016-1 — Special Protection System Misoperations

A Technical Review of Standards Prepared by the System Protection  
and Controls Subcommittee of the NERC Planning Committee

May 2009

to ensure  
the reliability of the  
bulk power system

## Table of Contents

Executive Summary	163
Assessment of PRC-003-1.....	164
Assessment of PRC-004 and PRC-016-0.....	167
SPS Corrective Action Plan Review .....	167
Proposed PRC-004-1 Revisions.....	167

This report was approved by the Planning Committee on June 10, 2009, for forwarding to the Standards Committee.

## **Introduction**

When the original scope for the System Protection and Control Task Force (SPCTF, now the System Protection and Control Subcommittee – SPCS) was developed, one of the assigned items was to review all of the existing PRC-series of Reliability Standards, to advise the Planning Committee, and to develop Standards Authorization Requests, as appropriate, to address any perceived deficiencies.

This report presents the SPCS’ assessment of three of the PRC standards pertaining to relay misoperations:

- PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems
- PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations
- PRC-016-1 — Special Protection System Misoperations

This report serves as a precursor for a Standards Authorization Request (SAR) for modifications to PRC-003 that will be submitted by the SPCS.

## **Executive Summary**

Standard PRC-003 is intended to ensure that all System Protection Misoperations are analyzed and mitigated according to guidelines established by the regions. The FERC, in Order 693, dated March 16, 2007, declared this standard as a “fill in the blank” type of standard that does not merit approval unless it is modified to make it more specific and consistent for all Regions. The SPCS concurs with the FERC order and provides recommendations on how the standard can be rewritten.

Because the procedures for analyzing and mitigating Misoperations were to be established by the regions, there is significant dissimilarity between the Misoperation data reported by each region, resulting in a virtually unusable misoperation metric for North America. SPCS recommends a change to the definition of Misoperation (Reportable Protection Misoperation) to provide uniformity to the misoperation data reported to the regions and NERC.

Protection System elements used for Special Protection Systems (SPS) or Remedial Action Schemes (RAS) are no different from those used for non Special Protection Systems. The revision to Standard PRC-003 should therefore apply to all Protection Systems, including SPS and RAS.

The SPCS also recommends that Standard PRC-016-0 — Special Protection System Misoperations, be requirements, merging its SPS/RAS Misoperation reporting, Corrective Action Plans, and tracking requirements into PRC-004 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and is coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should be modified to refer to that review process.

A Standards Authorization Request (SAR) will be submitted by the SPCS calling for a standards project to:

- Revise the definition of Misoperation (Reportable Protection Misoperation)
- Modify PRC-003, PRC-004, and PRC-012
- Retire PRC-016.

### **Assessment of PRC-003-1**

PRC-003-1 — Regional Procedure for Analysis of Misoperations of Transmission and Generation Protection Systems requires the regions to establish procedures for analysis of Misoperations. This has resulted in significant and substantive differences in regional procedures and this was noted in FERC’s recommendation for “greater uniformity.”

SPCS proposes updating the PRC-003-1 standard to be applicable to all regions based on following tenets:

1. **Applicability** — The existing standard says that the Protection Systems shall be reviewed but does not specify which systems apply to this standard.  
It is necessary for the new standard to define the protections systems to which the standard applies:
  - Transmission Protection Systems which trip:
    - a. Transmission system elements 200-kV and above
    - b. Operationally significant system elements 100-kV to 200-kV
    - c. Transformers with 100-kV or higher on the low side
    - d. GSU transformers with high side voltages of 100-kV or higher
  - Generation Protection Systems which trip:
    - a. Transmission system elements 200-kV and above
    - b. Operationally significant system elements 100-kV to 200-kV
    - c. Transformers with 100-kV or higher on the low side
    - d. GSU transformers with high side voltages of 100-kV or higher
    - e. Generators connected through GSU transformers with high side voltages of 100-kV or higher
  - Protection Systems that trip aggregate generation of 75 MW or more (such as wind farms, geothermal, or solar) connected to the transmission system at 100-kV or higher.
2. **Definitions** — The NERC Glossary of Terms currently defines Misoperation as:  
**Misoperation (current definition)**
  - Any failure of a Protection System element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection.
  - Any operation for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone).
  - Any unintentional Protection System operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity

The existing definition does not address what are reportable and non-reportable misoperations. Reportable misoperations should be redefined in terms of both



dependability and security, as a function of the impact of the Protection Systems on the electric system performance. SPCS recommends the following definition:

**Reportable Protection Misoperation (proposed definition)**

Dependability (failure to operate):

- Failure of the composite Protection System to initiate the isolation of a faulted power system Element as designed or within its designed operating time.
- Failure of the composite Protection System to operate as intended for a non-fault condition, such as out-of-step, overload, etc., within its designed operating time.
- Failure of an SPS/RAS, UVLS system, or UFLS system to operate for an intended condition or within its designed operating time.

Security (false or undesirable operations):

- Improper operation of a Protection System in absence of a fault on the power system Element it is designed to protect.
- Improper operation of a Protection System during a fault on any other power system Element it is not designed to protect.
- Improper operation of an SPS/RAS, UVLS system, or UFLS system in absence of its designed trigger conditions.
- Over-response of an SPS/RAS, UVLS system, or UFLS system

*Notes to the proposed definition:*

- A. *The composite Protection System in the context of this standard is the total complement of protection for a system Element (line, bus, transformer, generator, etc). Primary and secondary protection of a given Element is considered as the composite Protection System, not two separate Protection Systems.*
- B. *Delayed clearing, where a high-speed system is employed and is essential for transmission system performance, is considered a reportable misoperation of the high-speed system.*
- C. *Lack of targeting of the high-speed system, such as when it is beat out by a high-speed zone, is not considered a reportable misoperation.*
- D. *Multiple misoperations of a Protection System before it can be reasonably investigated and remedied should be considered as a single misoperation.*
- E. *Failure to automatically reclose after a fault is not a reportable misoperation.*
- F. *Human errors made in protection settings either as calculated or as installed, or wiring errors, which result in a misoperation are reportable.*
- G. *Protection System operations related to on-site maintenance, testing, construction and or commissioning activities for that Protection System, when no fault or other abnormal condition has occurred, are not considered reportable Protection System misoperations.*
- H. *Operations which are initiated by control systems (not by the Protection Systems), such as those associated with generator controls or turbine/boiler controls, SVCs,*



*FACTS, HVDC, circuit breaker mechanism, or insulation media, or other facility control systems, are not reportable Protection System misoperations.*

- I. *Protection System operations which occur with the protected element already out of service, that do not trip any in-service elements, are not reportable Protection System misoperations.*

3. **Reporting of Misoperations** — Because the current PRC-003 calls for regional procedures and reporting requirements, there is a wide variation in those requirements from region to region, making comparison of misoperations metrics at the NERC level virtually impossible. Since any assessment of the success or failure of the NERC protection-related standards to maintain or improve reliability depends on those metrics, it is important to provide for uniformity. The variations in definitions can be corrected by the adoption of the Reportable Protection Misoperation definition above. Uniform reporting can be addressed by following proposed reporting requirements:
  - Transmission Owner or Generation Owners that own Protection Systems shall submit a quarterly report of the total number of events, the number of Protection System misoperations, and the number of events still under analysis, in a prescribed format (to be part of the revised PRC-003 standard) no later than two calendar months after each quarter.
  - The regions shall, in turn, submit a quarterly report to NERC – consolidated data for the Region in a prescribed format (also part of the revised PRC-003 standard).
  - The regions shall provide any additional information on misoperations to NERC as requested.
4. **Peer Review of Misoperations** — Peer review of misoperations and tracking of mitigation plans is an important part of improving Protection System performance. Logically, that function should be done by the Regional Entities. However, since standards requirements cannot be placed on the Regional Entities, the following suggestions are made but the mechanics are left open.
  - The regions, through their appropriate committees or subcommittee, shall review the misoperation reports. This review should determine whether further analysis, data, or other documentation is required, and it will confirm that appropriate mitigation is defined and scheduled.
  - The regions should maintain records of the quarterly reports and confirm the implementation of any proposed mitigation plan.
  - The regions should track the mitigation of reported misoperations to avoid further occurrences.

### **Assessment of PRC-004 and PRC-016-0**

NERC standards PRC-004-1 — Analysis and Mitigation of Transmission and Generation Protection Misoperations, and PRC-016 – Special Protection System Misoperations both require that Protection System misoperations are analyzed and reported, and that corrective actions are taken where necessary. However, PRC-016 exclusively applies to special protection systems (SPS) also known as remedial action schemes (RAS). Since analysis and reporting of protection system misoperations is the same regardless of whether or not a SPS/RAS is involved; there is no need for a separate standard. Standard PRC-004-1 should be revised to include SPS/RAS, and PRC-016 should be retired.

### ***SPS Corrective Action Plan Review***

PRC-012-0 — Special Protection System Review Procedure is intended to provide a review procedure to ensure that all SPS/RAS are properly designed, meet performance requirements, and are coordinated with other Protection Systems.

Whenever an SPS/RAS misoperates and requires a Corrective Action Plan, that plan should become subject to review under PRC-012 to ensure that the changes proposed to the SPS are still properly designed, meet performance requirements, and are coordinated with other Protection Systems. Therefore, PRC-012 should be revised to require that review and PRC-004 should refer to that review process.

### ***Proposed PRC-004-1 Revisions***

SPCS recommends the following revisions to PRC-004-1 requirements to encompass those of PRC-016:

- R1. The Transmission Owner and any Distribution Provider that owns a transmission Protection System or SPS shall each analyze its transmission Protection System or SPS Misoperations and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature in accordance with Standard PRC-003 (revised).
- R2. The Generator Owner shall analyze its generator Protection System or SPS Misoperations, and shall develop and implement a Corrective Action Plan to avoid future Misoperations of a similar nature in accordance with Standard PRC-003 (revised).
- R3. The Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission Protection System or an SPS shall provide documentation of the misoperation analyses and the Corrective Action Plans to its Regional Reliability Organization and NERC upon request (within 90 calendar days).
- R4. All Corrective Action Plans for SPS shall be subject to SPS Review Procedures in accordance with Standard PRC-012.

## Appendix A — System Protection and Control Subcommittee

**Henry (Hank) Miller**

*RE – RFC*  
Principal Electrical Engineer  
American Electric Power

**Deven Bhan**

*RE – MRO*  
Electrical Engineer, System Protection  
Western Area Power Administration

**John Mulhausen**

*RE – FRCC*  
Manager, Design and Standards  
Florida Power & Light Co.

**Philip B. Winston**

*RE – SERC*  
Manager, Protection and Control  
Georgia Power Company

**Dean Sikes**

*RE – SPP*  
Manager - Transmission Protection, Apparatus, & Metering  
Cleco Power

**Samuel Francis**

*RE – TRE*  
Senior Director of Engineering  
Oncor Electric Delivery

**Baj Agrawal**

*RE – WECC*  
Principal Engineer  
Arizona Public Service Company

**Josh Wooten**

*U.S. Federal Alternate*  
System Protection and Analysis  
Tennessee Valley Authority

**W. O. (Bill) Kennedy**

*Canada Member-at-Large*  
Principal  
b7kennedy & Associates Inc.

**Robert W. Cummings**

*NERC Staff Coordinator*  
Director of Event Analysis & Information Exchange  
NERC

**Tom Wiedman**

*Subject Matter Expert – NERC Consultant*  
President  
Wiedman Power System Consulting, Ltd.

**Jonathan D Gardell**

*Subject Matter Expert – NERC Consultant*  
Executive Advisor  
Quanta Technology

**Eric A Udren**

*Subject Matter Expert*  
Executive Advisor  
Quanta Technology

**Murty Yalla**

*Subject Matter Expert*  
President  
Beckwith Electric Company Inc.

**David Angell**

*Correspondent*  
T&D Planning Engineering Leader  
Idaho Power Company

**Hasnain Ashrafi**

*Correspondent*  
Engineer  
Sargent & Lundy

**Dac-Phuoc Bui**

*Correspondent*  
Engineer  
Hydro-Québec TransEnergie

**Jeanne Harshbarger**

*Correspondent*  
System Protection Engineer  
Puget Sound Energy, Inc.

**Fred Ipock**

*Correspondent*  
Senior Engineer - Substations & Protection  
City Utilities of Springfield, Missouri

**Evan T. Sage**

*Correspondent*  
Senior Engineer  
Potomac Electric Power Company

**Joe Spencer**

*Correspondent*  
Manager of Planning and Engineering  
SERC Reliability Corporation

**Bob Stuart**

*Correspondent*  
Senior Director - Transmission  
BrightSource Energy, Inc.

**James D. Roberts**

*Correspondent*  
Transmission Planning  
Tennessee Valley Authority

The logo for NERC (North American Electric Reliability Corporation) features the letters "NERC" in a bold, black, sans-serif font. A horizontal blue bar is positioned directly beneath the letters.

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

A large, steel lattice tower for a high-voltage power line is shown against a light sky. The tower is positioned on the right side of the cover, with its structure extending towards the center. The background is a light blue gradient with a faint map of North America.

# Reliability Standards Development Plan: 2010–2012

## Volume III — Regional Reliability Standards Projects

to ensure  
the reliability of the  
bulk power system

October 7, 2009

116-390 Village Blvd., Princeton, NJ 08540  
609.452.8060 | 609.452.9550 fax  
[www.nerc.com](http://www.nerc.com)

## Introduction

NERC's Rules of Procedure Section 300 allows 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.

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 Development 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 10 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 of the eight regional entities to develop a companion regional standard, a total of 32 regional entity standards. Of this number, 13 projects have already been initiated by the Regional Entities. The NERC continent-wide projects that may require each regional entity to develop companion regional standards are:

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

In total, NERC has identified 42 proposed regional entity standards it expects to be developed over the course of the timeframe contemplated by this work plan.



# Table of Contents

<b>Regional Projects Possibly Requiring Coordination with NERC Continent-wide Projects .....</b>	<b>4</b>
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
<b>Florida Reliability Coordinating Council (FRCC) Regional Reliability Standards Development Projects .....</b>	<b>12</b>
PRC-002-FRCC-01 — Definition of FRCC Regional Disturbance Monitoring and Reporting Requirements — FRCC.....	13
PRC-003-FRCC-01 — Misoperation of Protection Systems — FRCC .....	14
PRC-006-FRCC-01 — FRCC Automatic Underfrequency Load Shedding Program.....	15
PRC-024-FRCC-01 — Generator Performance During Frequency and Voltage Excursions — FRCC .....	16
<b>Midwest Reliability Organization (MRO) Regional Reliability Standards Development Projects.....</b>	<b>17</b>
TPL-503-MRO-01 — System Performance Requirement — MRO.....	18
TPL-504-MRO-01 — Sub synchronous Resonance Requirement — MRO .....	19
PRC-502-MRO-01 — Power System Stabilizer Requirement — MRO .....	20
RES-501-MRO-01 — Generation Planning Reserve Requirements — MRO .....	21
PRC-006-MRO-01 — Development and Documentation of Regional UFLS Programs — MRO .....	22
<b>Northeast Power Coordinating Council (NPCC) Regional Reliability Standards Development Projects .....</b>	<b>23</b>
PRC-006-NPCC-01 — Underfrequency Load Shedding Program — NPCC.....	24
PRC-012-NPCC-01 — Special Protection Systems — NPCC.....	25
PRC-002-NPCC-01 — Disturbance Monitoring — NPCC .....	26
<b>ReliabilityFirst Corporation (RFC) Regional Reliability Standards Development Projects.....</b>	<b>27</b>
MOD-024-RFC-01 — Generator Real (MW) Power Capability — RFC.....	28
MOD-025-RFC-01 — Generator Reactive (MVAR) Power Capability — RFC .....	29
BAL-502-RFC-02 — Resource Planning Reserve Requirement Standard — RFC.....	30
PRC-006-RFC-01 — Automatic Underfrequency Load Shedding Requirements — RFC.....	31
PRC-002-RFC-01 — Disturbance Monitoring and Reporting Requirements — RFC.....	32
PRC-012-RFC-01 — Special Protection System Requirements — RFC.....	33
<b>SERC Reliability Corporation (SERC) Regional Reliability Standards Development Projects.....</b>	<b>34</b>
PRC-006-SERC-01 — Underfrequency Load Shedding Program — SERC .....	35
<b>Southwest Power Pool, Inc. (SPP) Regional Reliability Standards Development Projects .....</b>	<b>36</b>
PRC-006-SPP-01 — Automatic Underfrequency Load Shedding Program — SPP.....	37
<b>Texas Regional Entity (Texas RE) Regional Reliability Standards Development Projects.....</b>	<b>38</b>
BAL-001-TRE-01 — Regional Variance for CPS2 — Texas RE.....	39
PRC-006-TRE-01 — Development and Documentation of Regional UFLS Program — Texas RE....	40
<b>Western Electricity Coordinating Council (WECC) Regional Reliability Standards Development Projects .....</b>	<b>41</b>
VAR-001-WECC-1 — Voltage and Reactive Control — WECC .....	42



## 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 development 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 and which 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 \(Texas RE\)](#)

[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 \(Texas RE\)](#)

[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 to 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 \(Texas RE\)](#)  
[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 \(Texas RE\)](#)

[Western Electricity Coordinating Council \(WECC\)](#)



**Florida Reliability Coordinating Council (FRCC)  
Regional Reliability Standards Development Projects**

**PRC-002-FRCC-01 — Definition of FRCC Regional Disturbance Monitoring and Reporting Requirements — FRCC**

**Standards Involved:**

PRC-002-FRCC-01 — Definition of FRCC Regional Disturbance Monitoring and Reporting Requirements — FRCC

**Research Needed:**

None

**Brief Description:**

FRCC plans to convert the existing handbook document, “FRCC Requirements for Disturbance Monitoring Equipment”, revision dated June, 2006 into a new regional reliability standard, that complies with the requirements of NERC Reliability Standard, PRC-002-1 — “Define Regional Disturbance Monitoring and Reporting Requirements”.

**Standards Development Status:**

See [FRCC Definition of FRCC Regional Disturbance Monitoring and Reporting Requirements](#)

**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-006-FRCC-01 — FRCC Automatic Underfrequency Load Shedding Program

### **Standards Involved:**

PRC-006-FRCC-01 — FRCC Automatic Underfrequency Load Shedding Program

### **Research Needed:**

None

### **Brief Description:**

FRCC plans to develop a regional standard to provide last resort system preservation measures by implementing an Underfrequency Load Shedding (UFLS) program.

In accordance with NERC Reliability Standard, PRC-006-0, “Development and Documentation of Regional Reliability Organizations’ Underfrequency Load Shedding Programs”, the FRCC plans to develop, coordinate, and document an UFLS program. These procedures are to be provided to the Load Serving Entities within the Region that are affected by the procedures.

### **Standards Development Status:**

See [FRCC Automatic Underfrequency Load Shedding Program](#)

### **Related Links:**

See [Florida Reliability Coordinating Council \(FRCC\) Standards Under Development](#) page.

**PRC-024-FRCC-01 — Generator 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.

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

### Standards Involved:

PRC-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.



**PRC-006-MRO-01 — Development and Documentation of Regional UFLS Programs — MRO**

**Standards Involved:**

PRC-006-MRO-01 — Development and Documentation of Regional UFLS Programs — MRO

**Research Needed:**

None

**Brief Description:**

The MRO will develop a regional reliability standard (Standard) with requirements for automatic Underfrequency Load Shedding (UFLS) programs. The regional Standards will require that UFLS programs arrest declining frequency and assist recovery of frequency following a frequency excursion. This standard will address the UFLS Regional Reliability Standard Characteristics developed by the NERC UFLS standard draft team.

**Standards Development Status:**

See MRO [Development and Documentation of Regional UFLS Programs](#).

**Related Links:**

See [Midwest Reliability Organization \(MRO\) Standards Under Development](#) page.



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

At this time, NPCC will be developing at least four regional standards projects as required to support reliability objectives and as may be required to support their associated continent-wide NERC reliability standards identified in the first part of this volume. NPCC will develop the initial four regional standards in conjunction with, and as set forth by the schedules associated with the continent-wide standards, or schedules set forth by FERC, or our members.

In conjunction with this effort, a project is underway to translate the NPCC Criteria into “Directories” to demonstrate consistency with the NERC Reliability Standards. These Directories will utilize the applicable NERC Functional Model language, contain reference to related NERC standards, clearly identify applicability and utilize NERC glossary terms and when no term is available, use NPCC defined terms. These Directories are updated and submitted to NERC periodically to satisfy the NERC requirement as outlined in the Rules of Procedure to maintain a catalog of regional criteria. The Directories may be viewed on the “Regional Documents” section of the NPCC website or accessed through a link on the NERC website.

## PRC-006-NPCC-01 — Underfrequency Load Shedding Program — NPCC

### **Standards Involved:**

PRC-006-NPCC-01 — Underfrequency Load Shedding Program — NPCC

### **Research Needed:**

None

### **Brief Description:**

This Standard will provide the detailed requirements and measures to automatically provide system preservation by implementing an automatic underfrequency load shedding program to respond to system underfrequency events. The Standard will also emphasize the need for coordination amongst the NPCC region's members, and those areas outside the NPCC footprint, and provide direction for refinements of underfrequency systems already in place. The standard will address issues that smaller entities may have due to reduced amounts of distribution feeders.

The Standard will ensure that all requirements will be identified to ensure compliance with relevant NERC standards.

The NPCC regional UFLS standard shall apply to Balancing Authority Areas "BA Areas" that are both synchronous and asynchronous to the eastern interconnection. BA Areas that are asynchronous (e.g. Quebec) will develop UFLS parameters with a different technical basis and requirements.

### **Standards Development Status:**

The NPCC Regional Standards Committee has approved the Regional Standards Authorization Request, RSAR, drafting has begun and an open process posting for comments has been completed and in accordance with NPCC's, FERC filed and approved Regional Standards Development Procedure. NPCC is targeting member approvals by December 2009 with submission to NERC and FERC targeted for 2010.

### **Related Links:**

See Northeast Power Coordinating Council's NPCC "[Standards Under Development](#)" page.

## PRC-012-NPCC-01 — Special Protection Systems — NPCC

### **Standards Involved:**

PRC-012-NPCC-01 — Special Protection Systems — NPCC

### **Research Needed:**

None

### **Brief Description:**

The proposed Standard will describe the requirements for the design of Special Protection Systems, and the technical criteria required to support its implementation. The Standard will also identify the need for close coordination among various parties to ensure that the Special Protection Systems are implemented correctly, and triggers and resulting actions are made known and communicated in an on-line database.

### **Standards Development Status:**

The NPCC Regional Standards Committee has approved the Regional Standards Authorization Request, RSAR, drafting will begin shortly in accordance with NPCC's, FERC filed and approved Regional Standards Development Procedure. NPCC is targeting member approval the standard by December 2010 and submission to NERC and FERC is targeted for 2011.

### **Related Links:**

See Northeast Power Coordinating Council's NPCC "[Standards Under Development](#)" page.

## PRC-002-NPCC-01 — Disturbance Monitoring — NPCC

### Standards Involved:

PRC-002-NPCC-01 — Disturbance Monitoring— NPCC

### Research Needed:

None

### Brief Description:

The Standard will establish the technical requirements for disturbance monitoring equipment, including:

- system operating parameters that are to be measured and recorded,
- how to determine/select a preferred location of this equipment,
- installation and equipment minimum technical requirements,
- data communication requirements,
- analysis tools.

Criteria for facility owner requirements for reporting disturbance data will also be defined.

### Standards Development Status:

The NPCC Regional Standards Committee has approved the Regional Standards Authorization Request, RSAR, drafting has begun and an open process posting for comment has been completed in accordance with NPCC's, FERC filed and approved Regional Standards Development Procedure. NPCC is targeting member approval for this standard by December 2009 with submission to NERC and FERC targeted for 2010.

### Related Links:

See Northeast Power Coordinating Council's NPCC "[Standards Under Development](#)" page.



## 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 (MW) 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:**

See RFC [Verification and Data Reporting of Generator Gross and Net Reactive Power Capability project](#)

**Related Links:**

See [ReliabilityFirst Corporation \(RFC\) Standards Under Development page](#).



**BAL-502-RFC-02 — Resource Planning Reserve Requirement Standard — RFC**

**Standards Involved:**

BAL-502-RFC-02 — 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 [Planning Resource Adequacy Analysis, Assessment and Documentation](#).

**Related Links:**

See [ReliabilityFirst Corporation \(RFC\) Standards Under Development](#) page.

**PRC-006-RFC-01 — Automatic Underfrequency Load Shedding Requirements — RFC**

**Standards Involved:**

PRC-006-RFC-01 — Automatic Underfrequency Load Shedding Requirements — RFC

**Research Needed:**

None

**Brief Description:**

RFC is developing a regional standard to establish requirements for automatic underfrequency load shedding (UFLS) to support NERC Reliability Standard PRC-006.

**Standards Development Status:**

See RFC [Automatic Underfrequency Load Shedding Requirements](#).

**Related Links:**

See [ReliabilityFirst Corporation \(RFC\) Standards Under Development](#) page

**PRC-002-RFC-01 — Disturbance Monitoring and Reporting Requirements — RFC**

**Standards Involved:**

PRC-002-RFC-01 — Disturbance Monitoring and Reporting Requirements — RFC

**Research Needed:**

None

**Brief Description:**

RFC is developing a regional standard to establish requirements establish requirements for Disturbance monitoring and reporting to support NERC Reliability Standard PRC-002.

**Standards Development Status:**

See RFC [Disturbance Monitoring and Reporting Requirements](#)

**Related Links:**

See [ReliabilityFirst Corporation \(RFC\)](#) Standards Under Development page

**PRC-012-RFC-01 — Special Protection System Requirements — RFC**

**Standards Involved:**

PRC-012-RFC-01 — Special Protection System Requirements — RFC

**Research Needed:**

None

**Brief Description:**

RFC is developing a regional standard to establish requirements for the review, development and application of Special Protection Systems (SPS) in one RFC standard allowing the retirement of the associated legacy documents. The standard will ultimately be mandated by NERC in support of NERC PRC-012-1 as related to a review process as well as a unique RFC application criterion.

**Standards Development Status:**

See RFC [Special Protection System Requirements 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.

## PRC-006-SERC-01 — Underfrequency Load Shedding Program — SERC

### Standards Involved:

PRC-006-SERC-01 — Underfrequency Load Shedding Program — SERC

### Research Needed:

None

### Brief Description:

This standard will provide the measures to automatically provide system preservation by implementing an automatic underfrequency load shedding (UFLS) program to respond to system underfrequency events. The standard will also emphasize the need for coordination amongst the entities within the SERC footprint, and with those areas outside the SERC footprint. The standard requirements will ensure compliance with the NERC PRC-006-1 continent-wide standard, and other relevant NERC standards.

### Standards Development Status:

The SERC Standards Committee accepted the SAR to develop a SERC UFLS Regional Reliability Standard on February 27, 2008 and assigned to the SERC Engineering Committee (EC). It was approved by the EC Executive Committee on April 25, 2008 and a standard draft team (or Responsible SERC Subgroup—RSS) was appointed on June 19, 2008. The first draft of the standard was posted for comments on September 19, 2008; second draft posted for comments on November 21, 2008; and the third draft was posted for information on February 9, 2009. Currently in Step 6 (*Drafting of a SERC Regional Reliability Standard*) of the 13 steps SERC Regional Standards Development Procedure. Plans are to update the third draft to make it consistent with the NERC continent-wide standard, post it for one more comment period, and take the final draft to ballot in the fourth quarter of 2009.

### Related Links:

See the [SERC Reliability Corporation Standards](#) page



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

**PRC-006-SPP-01 — Automatic Underfrequency Load Shedding Program — SPP**

**Standards Involved:**

PRC-006-SPP-01 — Automatic Underfrequency Load Shedding Program — SPP

**Research Needed:**

None

**Brief Description:**

The SPP Standard Drafting Team is in a process developing first draft of SPP regional standard for Underfrequency Load Shedding Program. The regional Standards will require that UFLS programs arrest declining frequency and assist recovery of frequency following a frequency excursion. This standard will consider the UFLS Regional Reliability Standard Characteristics developed by the NERC UFLS standard draft team.

**Standards Development Status:**

See SPP Standard Development Page

**Related Links:**

See [Southwest Power Pool's \(SPP\) Standards Under Development page](#)





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

**BAL-001-TRE-01 — Regional Variance for CPS2 — Texas RE**

**Standards Involved:**

BAL-001-TRE-01 Regional Variance for CPS2 — Texas RE

**Research Needed:**

None

**Brief Description:**

A Texas RE standard drafting team is drafting a regional variance to R2 of BAL-001-0 that still meets the purpose of the standard: Maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time. ERCOT currently has a NERC waiver for the CPS2 method (11/21/02) described in R2. This regional variance will provide what ERCOT employs instead of CPS2 to achieve the overall purpose of the BAL standard.

This variance will be the modification that was ordered by FERC in Order 693: As with other new regional differences, the commission expects that the ERCOT regional difference will include Requirements, Measures, and Levels of Non-Compliance sections. This regional variance will incorporate Section 5.9 of the ERCOT Protocols (and the applicable Nodal Protocol) to accomplish this objective. This variance as currently drafted will apply to the Balancing Authority that is ERCOT, GOs and GOPs.

**Standards Development Status:**

See Texas Regional Entity (Texas RE) [Reliability Standards Tracking](#) Status

**Related Links:**

[SAR-003 Standard Drafting Team: Modification to ERCOT Waiver to R2 of BAL-001-0 CPS2](#)

**PRC-006-TRE-01 — Development and Documentation of Regional UFLS Program — Texas RE**

**Standards Involved:**

PRC-006-TRE-01 — Development and Documentation of Regional UFLS Program — Texas RE

**Research Needed:**

None

**Brief Description:**

A Texas RE standard drafting team is currently following, reviewing, and commenting upon the characteristics of the NERC UFLS continent-wide standard that is under development (Project 2007-01). Depending on the specific characteristics and requirements of the continent-wide standard, and if necessary, the team will develop a regional reliability standard with requirements for automatic UFLS programs that will require that UFLS programs arrest declining frequency and assist recovery of frequency following a frequency excursion.

**Standards Development Status:**

See Texas Regional Entity (Texas RE) [Reliability Standards Tracking](#) Status

**Related Links:**

[SAR-002 Standard Drafting Team: Development and Documentation of Regional UFLS Programs](#)



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

## VAR-001-WECC-1 — Voltage and Reactive Control — WECC

### Standards Involved:

VAR-001-WECC-1 — Voltage and Reactive Control — WECC

### Research Needed:

None

### Brief Description:

The purpose of this standard is to ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection.

In the Western Interconnection, System Operating Limits for transmission paths in the Bulk Electric System assume that Automatic Voltage Regulators are in service to control voltage to support the transfer capability.

During the VAR-002-WECC-1 standard development process it was identified that not all WECC Transmission Operators provided voltage schedules to their Generation Operators. They are allowed to do this because Transmission Operators the NERC VAR-001-1a requirement R4 allows the option of providing reactive power schedules rather than voltage schedules. The practice of providing reactive power or power factor schedules forces Generation Operators to manually adjust their automatic voltage regulator (AVR) voltage setting by trial and error to find a voltage setting that will provide the exact amount of reactive power directed by the Transmission Operator. Since the voltage on the transmission grid varies throughout the day, the Generation Operator is forced to continuously reset the voltage on the AVR. This is an unnecessary and distracting manual control burden on the Generation Operator.

NERC VAR-002 requires the Generation Operator to comply exactly with the voltage schedule or reactive power schedule directed by the Transmission Operator. If the Transmission Operator provides a voltage schedule, the AVR can automatically maintain compliance with the NERC requirement. If the Transmission Operator refuses to provide a voltage schedule, and instead insists on providing a reactive power schedule, compliance can no longer depend on the automatic operation of the AVR. The VAR-002-WECC-1 standard prohibits the AVR from being switched to a constant reactive power mode of operation. Instead compliance becomes totally dependent on constant attention and readjustment by the Generation Operator. This significantly increases the risk of non-compliance for the Generator Operator.

Even more disturbing is the fact that this situation (the Transmission Operator specifying a constant reactive power output rather than a constant voltage level) defeats the intended purpose of the WECC VAR-002-WECC-1 standard, to prevent a voltage collapse. If the voltage does begin to collapse, the generator AVR, operating in constant voltage mode, will increase the reactive power output from the unit. That increase in reactive output means that the generator will no longer be producing the amount of reactive power specified by the Transmission Operator's reactive power schedule. Once this occurs, the Generation Operator must immediately reduce the reactive power provided by the generator or risk noncompliance with

NERC standard VAR-002, R2. That will result in the generator doing the exact opposite of what is needed to prevent a voltage collapse and exposes the Interconnection to a risk of blackout.

Therefore, the VAR-001-WECC-1 standard drafting team was formed to develop a standard to require Transmission Operators to issue voltage schedules. The drafting team surveyed Transmission Operators and Generator Operators to identify scheduling practices that are causing confusion between Transmission Operators and Generator Operators. The first draft of a proposed VAR-001-WECC-1 Standard is expected to be posted for an initial 45 day comment period during the fourth quarter of 2009. The drafting team anticipates balloting and requesting WECC Board of Director approval during the second half of 2010.

WECC Standard VAR-001-WECC-1 is more stringent than a continent wide standard.

**Standards Development Status:**

See WECC Standards Development page at:

<http://www.wecc.biz/Standards/Development/Pages/default.aspx>

**Related Links:**

See <http://www.wecc.biz/Standards/Development/WECC0046/default.aspx>

## EXHIBIT B

Complete Development Record for  
*Reliability Standards Development Plan: 2010–2012*

(Available on the NERC Website at

<http://www.nerc.com/fileUploads/File/Filings/ExhibitB-CompleteDevelopmentRecord.pdf>)