

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

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

A tall, lattice-structured metal tower for a high-voltage power line, with several cross-arms extending outwards. The tower is set against a bright, hazy sky. The image is partially obscured by a dark blue curved shape in the top right corner.

# NERC Compliance Monitoring and Enforcement Program

## 2007 Annual Report

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

to ensure  
the reliability of the  
bulk power system

June 2008

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# 1. Acknowledgement

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The Compliance Monitoring and Enforcement Program would like to thank the many individuals who invested their time and expertise, and countless hours of work that led up to this new era of mandatory compliance. Building new or transitioning existing informational and procedural infrastructure takes significant time and resources. This can be further complicated when the efforts include collaboration with multiple exchanges.

We would also like to thank all who will continue to contribute as we work to improve electric reliability.

This report is the first annual report in which NERC reliability standards became mandatory and enforceable in the United States also recognizing the Reliability Standards have been mandatory in some Canadian provinces when approved by the NERC Board of Trustees. With the changes brought about by implementation of the Electric Reliability Organization and enforceable standards, NERC and the Regional Entities recognized the need to change the focus of the annual report. This report represents the first step in the process to change the report from previous years focus on the results of the program to also include a focus of the future of the program.

Each year, the annual report is developed once the program for the year has reached its conclusion allowing the evaluation of a full year of program activities. With the program ending on December 31, 2007, each Regional Entity must have sufficient time to fully evaluate their program results and activities. NERC collects this information from the Regional Entities in the last half of February and develops a draft report in March for review by the Regional Entities, the Compliance and Certification Committee, and the Board of Trustees Compliance Committee. NERC will endeavor to produce future annual reports as close as possible to the completion of the annual program.

## 2. Introduction

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This report describes the results and effectiveness of the 2007 Electric Reliability Organization's (ERO) Compliance Monitoring and Enforcement Program (CMEP), as implemented by the eight Regional Entities through the delegation agreements and as overseen by the ERO. On July 20, 2006, the Federal Energy Regulatory Commission (FERC) certified NERC as the ERO.

The NERC CMEP transitioned in 2007 from voluntary compliance with industry developed Reliability Standards to mandatory compliance with FERC-approved Reliability Standards in the United States.

NERC works with eight Regional Entities to improve the reliability of the Bulk Power System. The entities registered by the Regional Entities come from all segments of the electric industry: investor-owned utilities; federal power agencies; rural electric cooperatives; state, municipal and provincial utilities; independent power producers; power marketers; and load-serving entities. These entities account for virtually all the electricity supplied in the United States, Canada, and a portion of Baja California Norte, Mexico.

On April 19, 2007, FERC approved eight delegation agreements through which NERC delegates compliance monitoring and enforcement ensuring that users, owners, and operators of the Bulk Power System in the United States comply with Commission-approved, mandatory Reliability Standards.

To that end, the Regional Entity and NERC Compliance staffs have been working together diligently. These entities include:

- Florida Reliability Coordinating Council (FRCC)
- Midwest Reliability Organization (MRO)
- Northeast Power Coordinating Council (NPCC)
- ReliabilityFirst Corporation (RFC)
- SERC Reliability Corporation (SERC)
- Southwest Power Pool (SPP RE)
- Texas Regional Entity (TRE)
- Western Electricity Coordinating Council (WECC)

The Regional Entity and NERC Compliance staffs worked diligently together to improve uniformity across all Regional Entity compliance activities, increase communications and collaborations for ERO implementation, identify any difficulties encountered building an effective, uniformly implemented, CMEP of the ERO and identify changes necessary for future years. The results of these efforts during 2007 are summarized in the Executive Summary, and detailed in the subsequent sections of this annual report.

## Background

The NERC CMEP transitioned in 2007 from voluntary compliance with industry developed Reliability Standards to mandatory compliance with FERC-approved Reliability Standards in the United States. NERC and the industry have worked intensively in the past few years to transform decades of industry criteria, guides, policies, and principles into mandatory and enforceable NERC Reliability Standards in line with forces of change. A key turning point of the transformation stems back to 1996, when two major blackouts in the Western United States led the U.S. Department of Energy to establish in 1997 the Electric System Reliability Task Force and an independent “blue ribbon” panel (the Electric Reliability Panel) formed by NERC to advise the Department on critical institutional, technical, and policy issues necessary to maintain bulk electric system reliability.

Both groups:

- Determined grid reliability rules must be mandatory and enforceable to ensure reliability in an increasingly competitive marketplace
- Recommended the creation of an independent, self-regulatory, electric reliability organization to develop and enforce reliability standards throughout North America, and
- Stated that federal legislation in the United States was necessary to accomplish this

As a result, NERC implemented the blue-ribbon panel’s recommendation by converting its planning policies, principles and guides into planning standards. The NERC Board of Trustees approved the standards, setting the foundation for the voluntary compliance era with monitoring by NERC and its regions from 1999 through June 2007, when FERC authorized the first set of Reliability Standards submitted to it as mandatory and enforceable. On June 18, 2007, the CMEP encountered a paradigm shift from voluntary compliance to mandatory compliance in the United States. Of note, in 2002, NERC operating policies and planning standards became mandatory and enforceable in the Canadian province of Ontario.<sup>1</sup>

The work of the CMEP can be viewed through its several windows, including processes, implementation, and uniformity, among others. The window of processes is a high-level view focused on the “what” factors, such as identifying what different processes will be performed. The window of implementation is a perspective on the “how” factors, such as identifying how implementation of compliance monitoring and enforcement will be executed. The uniformity window is focused on ease of recognition. The Regional Entities and NERC seek uniformity of compliance monitoring and enforcement processes. As with any startup working environment, detailed processes were sometimes developed at the same time as initial implementation.

## Regulatory Overview

NERC actively pursued Electric Reliability Organization Certification with FERC in 2006 and continues to seek similar status in the Canadian provinces. The eight Regional Reliability Organizations in North America executed delegation agreements with NERC to request delegated authority to monitor and enforce compliance with Reliability Standards. Key regulatory activities that have occurred in the development of the ERO are listed in Appendix B.

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<sup>1</sup> More information on the history of standards development can be viewed in either the “Standards Milestones” or “Standards Background” document posted at <https://standards.nerc.net/>.

2007 was a year of transition to mandatory compliance with FERC-approved Reliability Standards for users, owners, and operators of the Bulk Power System. The transition resulted in many successes, lessons learned, identification of best practices and corrective actions and many of the regulatory activities occurred in 2007 to fully establish the program.

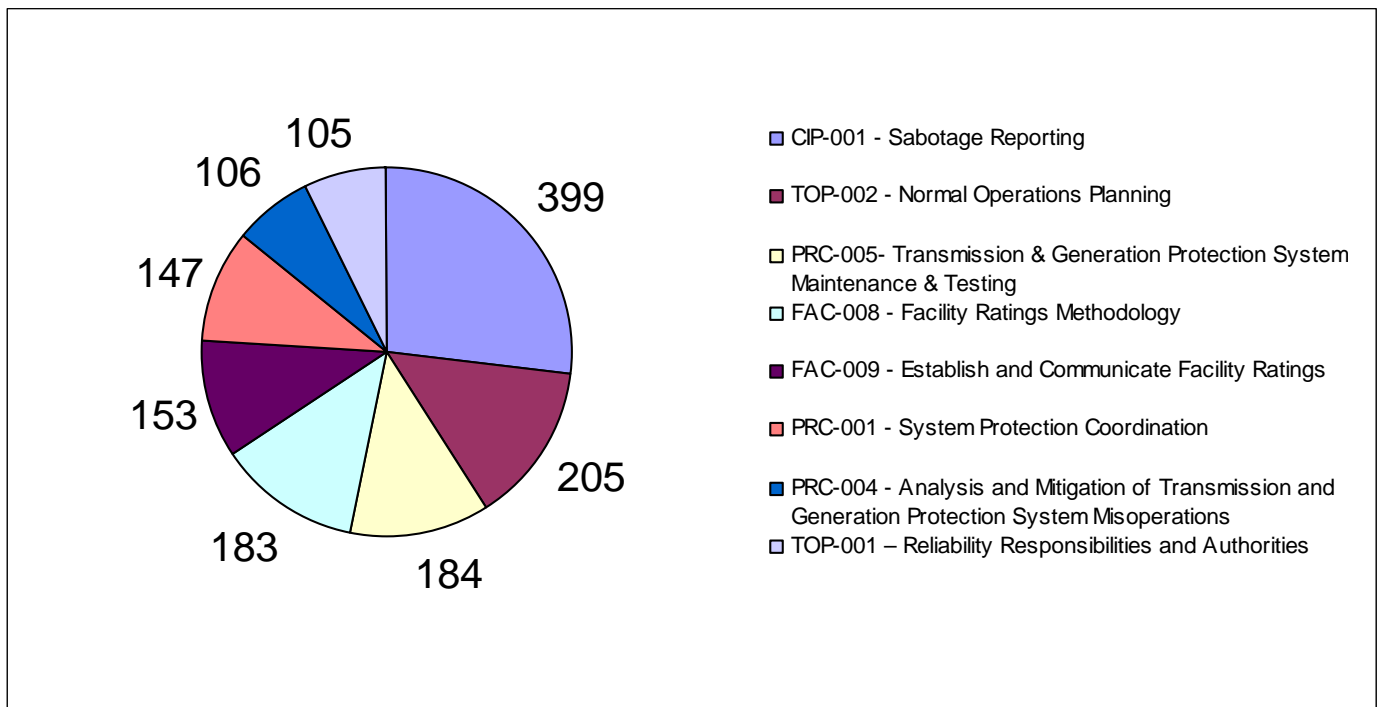
## 3. Executive Summary

The CMEP encountered a paradigm shift to mandatory compliance on June 18, 2007, when FERC approved Reliability Standards became mandatory and enforceable in the United States. Improvements for 2008 and beyond will also be addressed based on the experience gained in 2007. Specifically, pre- and post-June 18, 2007 activities are addressed to demonstrate the transition and implementation of an enforceable CMEP.

The NERC Standards Development process has put forward a programmatic approach to revising the Reliability Standards which has helped in the implementation of the CMEP. [For example, the Reliability Standards Development Plan: 2008–2010 details global improvements to ensure the quality of Reliability Standard revisions rise to the level of a mandatory compliance environment.<sup>2</sup>]

Section 4 identifies the key compliance findings from the annual review. More than 80 compliance audits were performed by Regional Entities. The top three, highest alleged violations during 2007, pre-June 18<sup>th</sup> based mainly on self reports, are listed in Figure 1 below.

**Figure 1: Top Pre-June 18 2007 Alleged Violations**

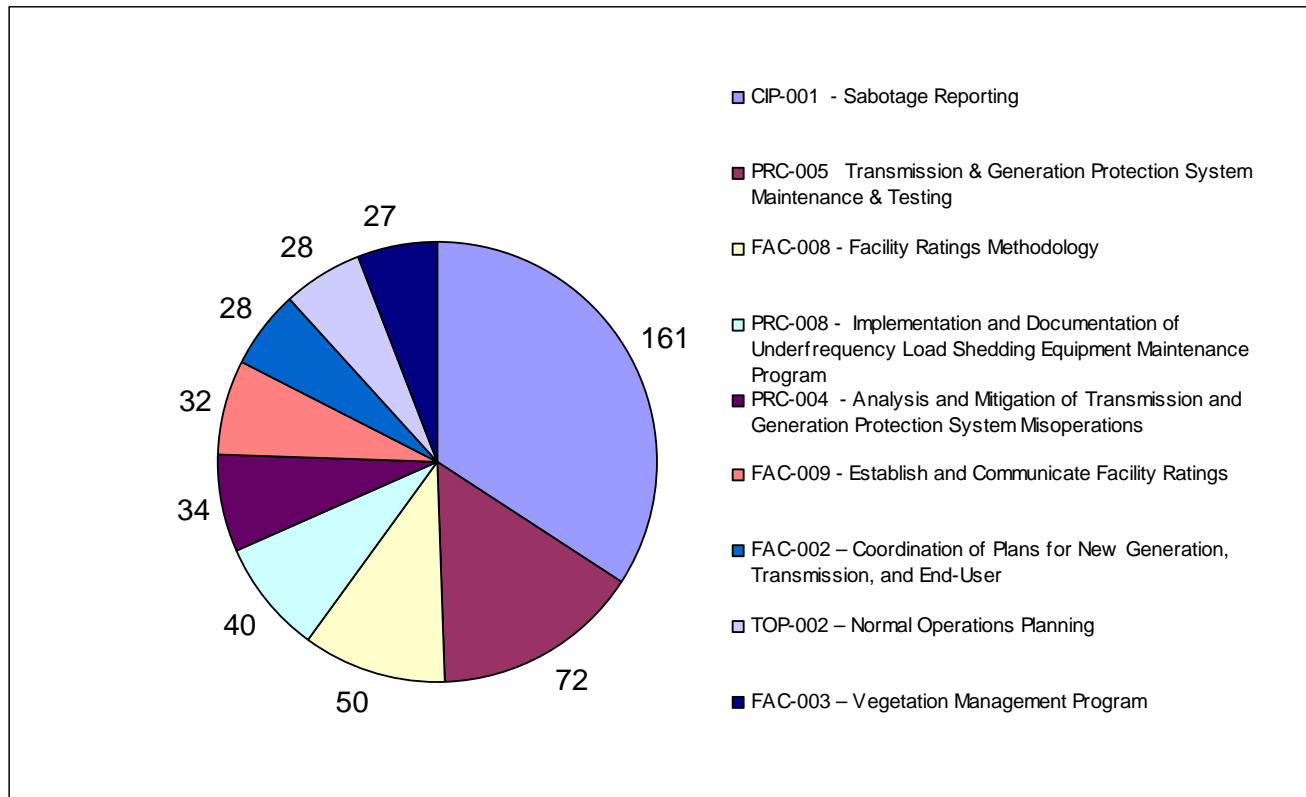


The top three, highest alleged violations identified June 18–December 31, 2007 are listed in Figure 2 below.

<sup>2</sup>

[ftp://www.nerc.com/pub/sys/all\\_updl/standards/sar/FERC\\_Filing\\_Volumes\\_I\\_II\\_III\\_Reliability\\_Standards\\_Development\\_Plan\\_2008\\_2010.pdf](ftp://www.nerc.com/pub/sys/all_updl/standards/sar/FERC_Filing_Volumes_I_II_III_Reliability_Standards_Development_Plan_2008_2010.pdf)

**Figure 2: Top Post-June 18, 2007 Alleged Violations**



Section 4.3 discusses the vegetation outage performance in 2007. The NERC Board of Trustees Compliance Committee (BOTCC) continues to express concern with the frequency of transmission line outages caused by vegetation growing into transmission lines.

Section 5 identifies key compliance activities performed in 2007. The entity registration process of identifying users, owners, and operators of the Bulk Power System resulted in the registration of over 1,800 entities. The Regional Entities conducted 23 compliance seminars to over 2,800 participants.

Section 6 identifies lessons learned including feedback from the Regional Entity Compliance Managers, the Compliance and Certification Committee and other stakeholders.

Section 7 identifies activities moving forward into 2008 and 2009 including staffing plans, communication efforts, improvements to compliance processes and data management activities.

## 4. Key Compliance Findings

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Eighty-eight planned compliance audits outlined in the Regional Entity implementation plans were conducted in 2007. Registered entities are committed to reliability of the Bulk Power System through compliance with Reliability Standards and most have developed internal compliance programs that help ensure a culture of compliance in their day to day operations and planning activities. This culture of compliance is encouraged by the Regional Entities during compliance audit presentations and through compliance seminars and workshops.

Possible violations identified in compliance audits, self-reported by registered entities, self-certified, or through other monitoring methods are reviewed by the Regional Entity Compliance staff. Registered entities are encouraged to submit mitigation plans to the Regional Entity at any point in the CMEP process. Mitigation plans are reviewed and approved with the goal of preserving reliability during the mitigation plan implementation and preventing future compliance violations in the future.

### 4.1 Pre-June 18th

Prior to the implementation of mandatory standards, NERC and the Regional Entities monitored compliance of approximately 200 entities including Reliability Coordinators, Balancing Authorities, and Transmission Operators. Registration of all users, owners, and operators of the bulk-power system yielded nearly 1,900 entities responsible for some aspects of the reliability standards. All registered entities were encouraged by NERC and the Regional Entities to self-report compliance violations before the Reliability Standards became mandatory on June 18, 2007. As a result, prior to June 18, registered entities reported approximately 5,000 compliance violation notifications to their respective Regional Entities, of which around 1,400 were eventually dismissed. This process allowed for approved mitigation plans for pre-June 18<sup>th</sup> violations to extend to December 31, 2007 without being subject to penalties and sanctions.

The following list identifies approved NERC Reliability Standards that had the most alleged violations during pre-June 18, 2007:

- CIP-001 — Sabotage Reporting (399)
- TOP-002 — Normal Operations Planning (205)
- PRC-005 — Transmission and Generation Protection System Maintenance and Testing (184)
- FAC-008 — Facility Ratings Methodology (183)
- FAC-009 — Establish and Communicate Facility Ratings (153)
- PRC-001 — System Protection Coordination (147)
- PRC-004 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations (106)
- TOP-001 — Reliability Responsibilities and Authorities (105)

Sabotage reporting tops the list of pre-June 18<sup>th</sup> violations. Most of these violations are from newly registered entities that lack reporting procedures with the FBI. Violations associated with Transmission and Generation Protection System Maintenance and Testing are high on the list. In combination with the system protection coordination violations and analysis of protection system misoperations, these violations are of concern. System protection has contributed to a number of large scale system events.

Managing and tracking the large number of pre-June 18<sup>th</sup> violations and corresponding mitigation plans strained Regional Entity and NERC processes. These processes were in the early stages of development and some Regional Entities were performing them manually.

## 4.2 Post-June 18th

Approximately 1,000 enforceable alleged violations of approved NERC Reliability Standards were identified June 18–December 31, 2007.

Reliability Standards that have the most alleged and enforceable violations post-June 18<sup>th</sup> include:

- CIP-001 — Sabotage Reporting (161)
- PRC-005 — Transmission and Generation Protection System Maintenance and Testing (72)
- FAC-008 — Facility Ratings Methodology (50)
- PRC-008 — Implementation and Documentation of Underfrequency Load Shedding Equipment Maintenance Program (40)
- PRC-004 — Analysis and Mitigation of Transmission and Generation Protection System Misoperations (34)
- FAC-009 — Establish and Communicate Facility Ratings (32)
- FAC-002 — Coordination of Plans for New Generation, Transmission, and End-User (28)
- TOP-002 — Normal Operations Planning (28)
- FAC-003 — Vegetation Management Program (27)

Sabotage reporting tops the list of post-June 18<sup>th</sup> violations. System protection is on the list with three separate Reliability Standards; violations of PRC-005 requiring the maintenance and testing of system protection devices on the transmission system and generators; PRC-008 requiring maintenance and testing of underfrequency load shedding equipment, and PRC-004 ensuring all transmission and generation protection system misoperations affecting the reliability of the Bulk Electric System (BES) are analyzed and mitigated.

Also of significance are the violations of FAC-003, the vegetation management standard. Vegetation management violations are among the most violated Reliability Standards since June 18, 2007.

### 4.3 Vegetation Outage Performance

The NERC BOTCC continues to express concern with the frequency of transmission line outages caused by vegetation growing into transmission lines. Many of these Category 1 outages occurred at a time when the line loading was very low. This trend is of concern and needs to be carefully evaluated to determine the reasons why so many grow-ins are occurring. Vegetation management programs, and the implementation of such programs, may need to be modified to help eliminate these types of outages. The committee has, and will continue to closely monitor this issue.

The NERC Reliability Standard FAC-003-1 requires that each vegetation-related transmission line outage is categorized as one of the following:

- Category 1     Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the right-of-way.
- Category 2     Fall-ins: Outages caused by vegetation falling into lines from inside the right-of-way.
- Category 3     Fall-ins: Outages caused by vegetation falling into lines from outside the right-of-way.

After June 18, 2007, Category 1 and 2 outages were considered violations of NERC standard FAC-003-1, with corresponding levels of noncompliance defined in the standard. Reporting these violations is handled separately as part of the NERC performance reporting process. Category 3 outages are not considered violations of NERC standard FAC-003-1.

During 2007 there were 35 vegetation-related outages reported for transmission lines at 200 kV and higher. Fifteen of these outages were due to vegetation contact from vegetation grow-ins from within the right-of-way (Category 1). NERC provides a detailed description of each of the vegetation-related outages in the [quarterly vegetation management reports](#)<sup>3</sup> posted on the NERC Web site.

Some types of corrective actions taken to address these outages included:

- Removal of additional danger trees.
- Increase of line patrols.
- Reevaluation of forestry staffing.
- Benchmarking with other forestry organizations to develop and adopt “best practices.”
- Modification of the vegetation management program to be more proactive and aggressive.

Table 1 summarizes the number of transmission outages by voltage level and category for all four quarters of 2007.

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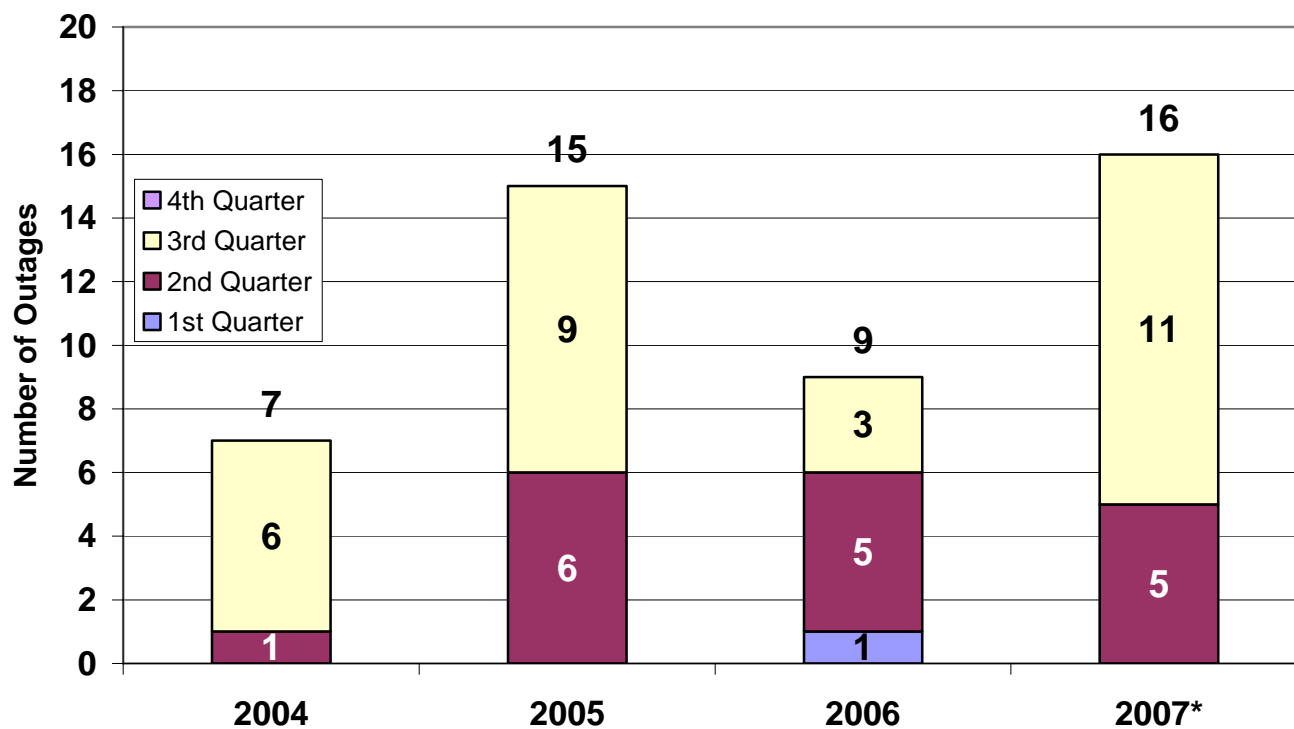
<sup>3</sup> [http://www.nerc.com/~comply/vegetation\\_management\\_reports.html](http://www.nerc.com/~comply/vegetation_management_reports.html)

**Table 1: 2007 NERC Vegetation-related Transmission Outage Statistics**

Region	First Quarter			Second Quarter			Third Quarter			Fourth Quarter		
	Category 1	Category 2	Category 3	Category 1	Category 2	Category 3	Category 1	Category 2	Category 3	Category 1	Category 2	Category 3
	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)
FRCC					1-230 kV	1-230 kV						
MRO			1 - 230 kV	1-345 kV			2-230 kV 1-345 kV					
NPCC							1-345 kV		1-230 kV			
RFC				1-230 kV 1-345 kV		1-230 kV 1-345 kV	2-230 kV 1-345 kV					
SERC				1-230 kV	1-500 kV	3-230 kV	1-230 kV		2-230 kV			
SPP				1-<200 kV								
TRE												
WECC			1-<200 kV 3 - 230 kV 1 - 500 kV				2-230 kV 1-500 kV		2-<200 kV		1-230 kV	2<200 kV 3-230 kV
Subtotal			1-<200 kV 4 - 230 kV 1 - 500 kV	1-<200 kV 2-230 kV 2-345 kV	1-230 kV 1-500 kV	5-230 kV 1-345 kV	7-230 kV 3-345 kV 1-500 kV		2-<200 kV 3-230 kV		1-230 kV	2<200 kV 3-230 kV
TOTAL	Category 1 (Grow-ins inside/outside ROW)			Category 2 (Fall-ins inside ROW)			Category 3 (Fall-ins outside ROW)					
	1-<200 kV; 9-230 kV; 5-345 kV; 1-500 kV			2-230 kV; 1-500 kV			5-<200 kV; 15-230 kV; 1-345 kV; 1-500 kV					

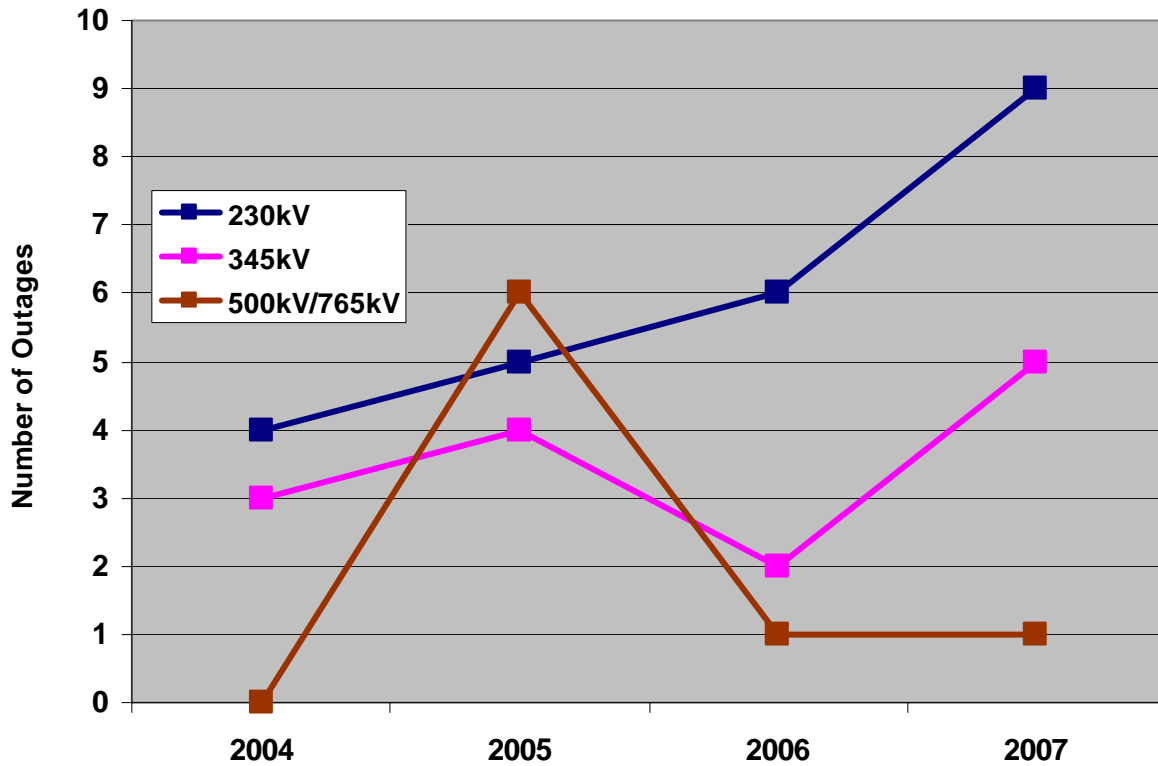
Figure 3 illustrates the number of outages caused by vegetation growing into transmission lines from within the right-of-way that have been reported since 2004. Figure 4 provides this information by voltage class for each year.

**Figure 3: Grow-In — Vegetation Related Outages of 230 kV and Higher Transmission within the Right-of-Way<sup>4</sup>**



<sup>4</sup> One outage of a regional designated critical line < 200kV is included for the second quarter of 2007.

**Figure 4: Grow-In— Vegetation Related Outages of 230 kV and Higher Transmission Within the Right-of-Way By Voltage Class**



## 5. Key Compliance Activities

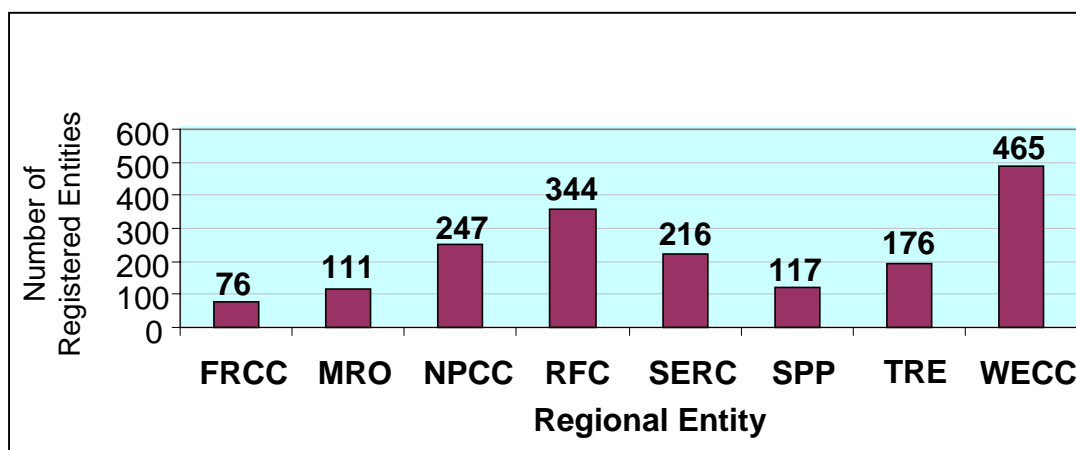
### 5.1 Organization Registration and Certification

#### Identifying and certifying, as applicable, the Users, Owners, and Operators of the Bulk Power System

The registration and certification of users, owners, and operators of the Bulk Power System per the NERC Rules of Procedure Section 500 is an ongoing task for NERC and the Regional Entities. Prior to 2007 NERC had identified approximately 200 entities who served as Reliability Coordinators, Transmission Operators, and Balancing Authorities. In 2007, NERC and the Regional Entities broadened the registration activities to include all functions identified as responsible for compliance with the NERC regulatory approved Reliability Standards. This resulted in a Regional Entity outreach to register many entities that had not been previously identified as users, owners, and operators of the Bulk Power System.

Figure 15 below details the number of entities registered in each Regional Entity as of December 31, 2007. This resulted in over 1,750 Registered Entities that registered for over 4,300 functions.

**Figure 5: Registered Entities by Regional Entity as of December 31, 2007**



The document that lists the criteria used for registration of functional entities is the NERC Statement of Compliance Registry Criteria. The NERC Compliance Registry is posted on the [NERC Web site](http://www.nerc.com/~org/)<sup>5</sup> in multiple formats and submitted to FERC each month. This monthly update process began in June 2007.

Registered entities have the option of appealing their inclusion on the NERC Compliance Registry to the NERC. The NERC BOTCC is the hearing body for these appeals and, in 2007, 18 Registered Entities (1 percent of entities registered) filed formal appeals with NERC. As of December 31, 2007, the BOTCC had issued final rulings on 16 of these appeals. The remaining two appeals filed in 2007 are expected to be ruled on by the BOTCC in 2008. Seven BOTCC rulings were appealed to FERC.

<sup>5</sup> <http://www.nerc.com/~org/>

**Table 1: BOTCC Appeals Rulings appealed to FERC**

FERC Docket No.	NERC RA No.	Region	Registered Entity	FERC Ruling
RC07-1-000	RA070008	FRCC	Mosaic Fertilizer	Appeal Denied
RC07-2-000	RA070011	FRCC	City of Tampa	Appeal Denied
RC07-3-000	RA070092	FRCC	Lee County	Appeal Denied
RC07-4-000	RA070041	RFC	Direct Energy	Appeal Upheld
RC07-5-000	RA070080	FRCC	Solid Waste Authority	Appeal Denied
RC07-6-000	RA070078	RFC	Sempra Energy	Appeal Upheld
RC07-7-000	RA070035	RFC	Strategic Energy	Appeal Upheld
RC08-1-000	RA070047	SERC	SEPA	Pending

In 2007, NERC and the Regional Entities began a project to revise the process and related procedures for the Certification of registered entities as set forth in the Rules of Procedure Section 500 and appendix 5. This project is scheduled to be completed in 2008. In addition, the certification process for a large Balancing Authority was undertaken by NERC and applicable Regional Entities and is expected to be completed in mid 2008. It involved the certification of a large multi-region ISO and the joining of this ISO with 26 smaller BAs into one large multi-region BA that is registered according to the NERC Rules of Procedure section 507, Joint Registration Organization. The certification process was completed in spring of 2008, certification was granted, and the BA is expected to commence normal operation in fall of 2008.

Some of the additional projects and tasks to be undertaken by the Organization Registration and Certification department in 2008 are:

- the addition of Joint Registration Organization data to the NERC Compliance Registry per the requirements of the Rules of Procedure Section 507. This will result in a database structure changes and the addition of large amounts of data to the NERC Compliance Registry. This project will also require the ability of the Compliance Registry to communicate directly with the NERC Standards database.
- the expansion of the NERC Compliance Registry database to include other types of registered entity contact information such as Cyber Security, Protection System, and Operations contacts. This will enable all NERC departments, as applicable, to contact Registered Entities and other entities as requested by organizations such as the Department of Homeland Security (DHS) Transmission Owners Group, etc.
- the approval by the Board of Trustees and FERC of the revised NERC Certification process and procedures and the related Rules of Procedure Section 500 requirements.

## 5.2 Seminars and Communications

Since the second year of a voluntary CMEP, seminars for compliance activities have been conducted at the regional level. NERC learned early that there are important interfaces between the users, owners, and operators of the Bulk Power System and the Regional Entities necessitating a more regional approach to communications. NERC provides material from the North American perspective for each of the regional seminars and the Regional Entities provide

much more detail regarding the specific program requirements in their particular regions. The Regional Entities conducted a total of 23 compliance seminars in 2007, reaching out to approximately 2,800 participants. NERC compliance staff attended most of the Regional Entity compliance seminars. Figure 6 below shows the number of compliance seminars conducted in each Regional Entity in 2007.

**Figure 6: Number of 2007 Compliance Seminars by Regional Entity**

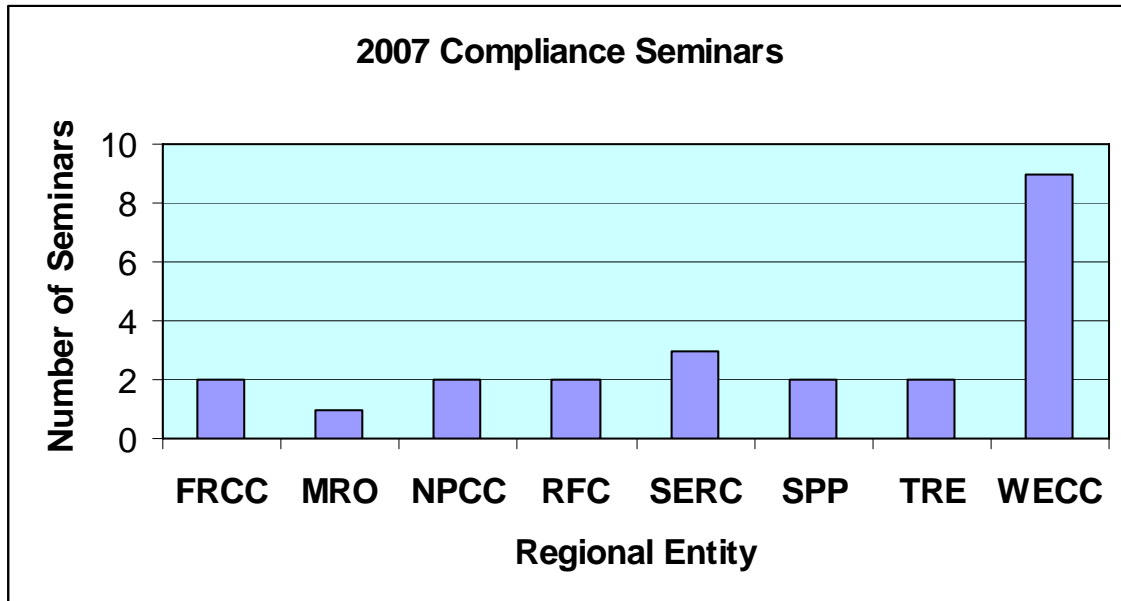
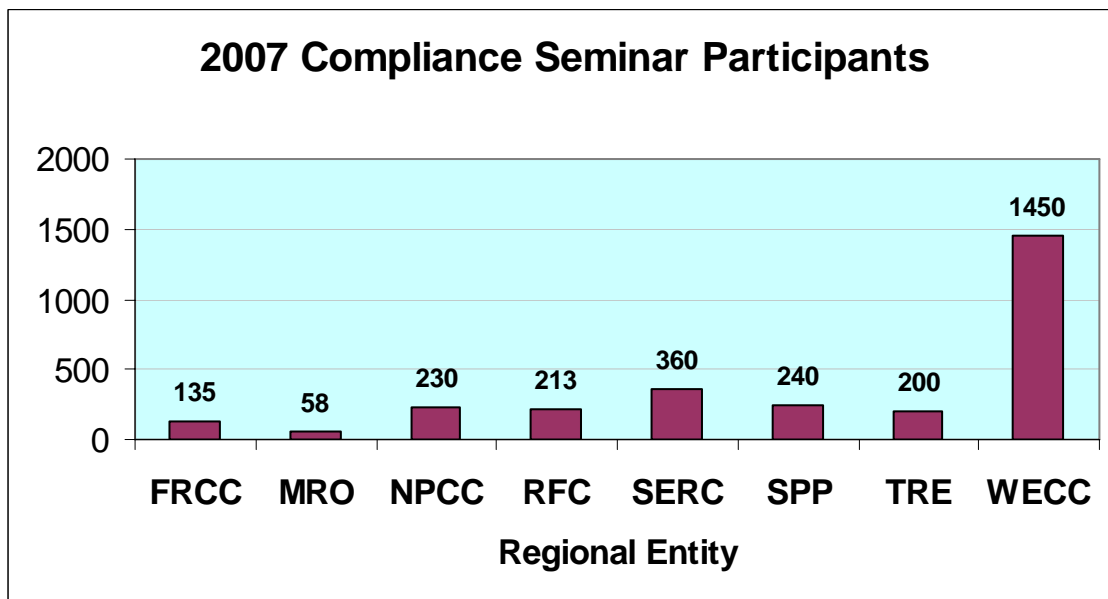


Figure 7 below details the total number of compliance seminar participants at each Regional Entity.

**Figure 7: Number of 2007 Compliance Seminar Participants by Regional Entity**



WECC conducted the most outreach seminars in 2007. More detail on the WECC compliance seminars is listed below:

1. Five CMEP Rollout Workshops — 500 participants total.
2. Two Advanced CMEP Workshops — 400 participants total.
3. Two Compliance User Group (CUG) Meetings — 550 participants total.

### 5.2.1 Feedback from Registered Entities

FRCC	<p>Participants stated that they liked:</p> <ol style="list-style-type: none"><li>1. The variety of speakers — this included personnel from NERC, FRCC, and registered entities.</li><li>2. Panel Discussion — included talks and Q&amp;A from three registered entities about their internal compliance programs.</li><li>3. Responsiveness — Registered entities appreciated the opportunity to get answers to their questions about compliance.</li><li>4. Roles Explanations — Registered entities appreciated learning about the roles and responsibilities of the FRCC staff.</li></ol>
MRO	<p>Describing and discussing the details of the annual compliance program were identified as being most beneficial.</p>
NPCC	<p>The participants stated that it was beneficial meeting the NPCC compliance staff face-to-face and having the opportunity to discuss compliance issues with the staff. They also expressed that hearing first hand from the staff the expectations of the compliance program and what the registered entities needed to fulfill those expectations was very beneficial. The participants also found the user group session for the program used to submit compliance to be both beneficial and educational. The participants also stated that the mock hearing that NPCC had at the fall meeting gave a very insightful view of the hearing process.</p>
RFC	<p>The participants felt that the workshop was a great forum to:</p> <ol style="list-style-type: none"><li>1. Meet the compliance staff.</li><li>2. Afford entities an opportunity to ask questions face to face.</li><li>3. Exchange thoughts concerning compliance and registration activities.</li><li>4. Express concerns on the direction NERC and RFC are taking for implementing mandatory compliance programs.</li></ol> <p>Make suggestions on how RFC can assist registered entities in the transition towards mandatory compliance.</p>

- SERC** Feedback from attendees indicated that the most helpful topics were those associated with preparation for audits, the audit process, expectations for documentation, and the live presentation of the SERC Internet portal that is used for periodic compliance filings and data submittals.
- SPP RE** During the spring 2007 compliance workshop, the emphasis of the activities included entity registration and the 2007 Actively Monitored Standards list. Also, the APPA, NRECA, and EEI sponsored panel discussions conducted by their respective members to discuss issues ranging from registration to conducting internal compliance programs.
- During the fall 2007 compliance workshop, the emphasis was on preparing the registered entities for the self-certification process in the SPP RE Compliance Data Management System (CDMS) as well as discussing the compliance results to date, including pre-June 18th and post-June 18th registered entity performance.
- The SPP RE received numerous comments at each workshop concerning the contents as well as suggestions for future content. Generally, the comments were favorable with suggestions for the SPP RE to do more focused workshops for specific registered functions.
- TRE** Participants liked the “hands-on” approach that showed certain forms and helped navigate the TRE Web pages.
- WECC** The registered entities provided great feedback in regards to WECC’s outreach efforts in 2007. The most beneficial aspect of the workshops was the continued flow of information during the implementation of mandatory Reliability Standards and the availability to have their many questions answered directly.

### **5.2.2 Ideas for Future Seminars**

- FRCC** There was a request to include a smaller registered entity on a panel that discusses ways and means that the registered entities have implemented internal compliance programs at their companies. Some wanted more detail about the procedures used in the compliance processes.
- MRO** Include a presentation that describes the audit process and the type of documentation and supporting evidence requirements and include a presentation describing “what is a good compliance program”.
- NPCC** In general participants in the workshops were satisfied with what was presented but emphasized the need to be kept informed and notified promptly of any changes that occur in the program either from NPCC or NERC.

- RFC** The participants commented that the workshop needed to devote more time addressing the expectations regarding how to satisfy compliance to the specific standard requirements. They also indicated that they would like to be kept informed on the progress of the CMEP implementation and its effects on their compliance obligations and reporting responsibilities. RFC is doing this very aggressively through the monthly newsletters. Lastly, the participants recommended increasing the number of workshops.
- SERC** Respondents suggested the 2008 seminars should include a “state of compliance” report including the top ten trends that the region has observed, standards resulting in the most violations, and lessons learned. SERC also received suggestions to use more scenarios and examples of what constitutes compliance with and/or violation of standards.
- SPP RE** The participants have liked the use of panels of their peers to discuss specific issues such as audit preparation and relay maintenance. SPP RE received a number of good suggestions on how to conduct these panel discussions that SPP RE will incorporate into the future workshops.
- TRE** The participants would like to learn about updates to the CMEP and how to use the software for compliance submittals once it is implemented. Critical infrastructure protection Reliability Standards will be a topic of discussion in future seminars.
- WECC** Registered entities stressed the importance of regularly scheduled meetings/workshops. They appreciate the CUG allowing them to meet with WECC Compliance staff on a quarterly basis.

### **5.2.3 Other Communication Mediums**

- FRCC** Other communication mediums included nine meetings with the FRCC Compliance Committee which had representatives from many of the registered entities in the region. In addition, FRCC posts key compliance program items on its public Web site. These items included the 2007 Implementation Plan, the FRCC CMEP, FRCC Audit Guides, Audit Schedules, Audit Procedure documents, compliance forms, compliance contact information, registration information, and several other items. FRCC compliance staff was one of the presenters at three continuing education sessions conducted for the system operators in the region. FRCC Compliance staff was one of the presenters at a general update session conducted annually by three of the registered entities in the region. FRCC Compliance staff also participated on a compliance panel in the NERC Standards Workshop held in the fall of 2007.

**MRO** The MRO compliance Web site and e-mail announcements were used. The primary audience for the workshop was the compliance contact person from each registered entity. Prior to June 18, 2007 MRO held numerous conference calls with registered entities, Compliance Committee, and local government authorities.

**NPCC** NPCC conducted an Entity Registration Verification Survey early in the year in order to compile the Compliance Registry. NPCC also conducted 14 in house training sessions for users of the CMEP Data Acquisition Application (CDAA). These sessions brought together the users of the application with the NPCC Compliance Staff in a hands tutorial regarding the implementation of CDAA.

**RFC** Instructional workshops were conducted to introduce entities to RFC's Compliance Data Management System (CDMS) compliance reporting system. Teleconferences were also arranged to further familiarize entities with CDMS through an actual simulation of reporting compliance via CDMS.

Information regarding the 2007 Compliance Program was also communicated to registered entities via the RFC Web site, monthly Compliance update letters, RFC monthly newsletters, and e-mail notifications. Registered Entities were well informed of program changes and expectations on an ongoing basis.

The monthly update letter contains detailed information on compliance submittal requirements and upcoming due dates to aid the registered entities to satisfying their submittal obligation. RFC received positive feedback from the registered entities regarding the monthly Compliance update letter. A number of registered entities consider this letter a "best practice" and have expressed the hope that other Regional Entities will adopt this practice.

**SERC** SERC announced the schedule for the seminars at various committee and subcommittee meetings but primarily relied on a posting on the SERC portal to provide details of the seminars and links to register to attend. An e-mail of the announcement was sent to members of the SERC board and to SERC Standing Committee members. It is difficult to measure the "success" of these methods, but all sessions filled to capacity well in advance of each event.

**SPP RE** SPP RE uses a Web site to post important documents with links to specific files, to the NERC Web site and to the SPP RE CDMS.

The SPP RE also maintains an active compliance contact list with at least one contact from each registered entity. For announcements that concern all registered entities, SPP RE uses this list for communications. For specific communications that need to target specific functions, the list can be sorted and sent to the target audience.

SPP RE also produced a hardcopy notebook as well a labeled CD-ROM for the 2007 compliance workshops. All attendees received these products. Any non-attendee that requested one or both of these products was accommodated during the course of the calendar year.

**TRE** TRE Web pages and informational e-mails provided communications regarding the CMEP.

**WECC** WECC has implemented a monthly “Open Mic” conference call that is open to all registered entities. This allows WECC to provide monthly updates, details on any changes to the process, implementation of new processes, discuss reporting forms, etc. WECC has received a huge amount of support and positive feedback for hosting these calls.

WECC has also implemented an email distribution list that contains two compliance contacts from each of the 500+ registered entities. This allows WECC Compliance staff to communicate with the registered entities on a more day to day basis, in regards to keeping them informed of changes, implementation, report forms, etc.

### **5.3 Compliance Monitoring**

The NERC Regional Compliance Program Oversight staff is responsible for overseeing the Regional Entity implementation of the CMEP. NERC allocated 10 positions (including a manager and nine Regional Compliance Program Coordinators) in its 2007 organization to the compliance oversight staff. By September 1, 2007, NERC filled seven of the nine Regional Compliance Program Coordinator positions. Each Regional Compliance Program Coordinator is assigned to one or more Regional Entities to actively monitor the Regional Entities’ implementation of the CMEP. The key focus area in 2007 was monitoring the compliance audit process of registered entities.

#### **5.3.1 Uniformity of Compliance Processes**

NERC Compliance staff established communication forums with the Regional Entity Compliance Managers (RECM). Beginning in June 2007, NERC facilitated weekly conference calls with the RECM to augment the collaborations in the six face-to-face meetings per year (bi-monthly). The meetings and conference calls between NERC Compliance and the RECM are closed staff meetings to discuss CMEP implementation issues and to promote uniformity of the Regional Entity processes to implement the CMEP.

NERC Regional Compliance Program Coordinators assisted Regional Entities as needed in CMEP implementation activities.

### **5.3.2 Compliance Audit Process**

The NERC and Regional Entity compliance audit process is consistent with the Government Accountability Office (GAO) Generally Accepted Government Auditing Standards for performance audits. NERC Regional Compliance Program Coordinators participated on Regional Entity led audit teams to audit registered entities. The Regional Entity compliance audit processes were monitored and the Regional Compliance Program Coordinators provided feedback to their respective Regional Entities. Uniformity of the compliance audit process is a high priority of NERC and significant improvements in compliance audit uniformity occurred in 2007.

The Regional Compliance Program Coordinators monitored the compliance audit process steps for conducting a compliance audit each time they participated on a Regional Entity led audit of registered entities. Feedback was provided to the audit team lead immediately following the compliance audit and the Regional Compliance Program Coordinator followed up with documented feedback. This process of training and monitoring of the compliance audit process implementation improved the uniformity of this process at all Regional Entities.

NERC led four registered entity compliance audits in 2007 in order to remove a conflict of interest between a Regional Entity and an affiliated registered entity. NERC will continue to lead registered entity compliance audits in the FRCC, SPP RE, TRE and WECC.

### **5.3.3 Auditor Training Activities**

NERC Training and Compliance staff developed and deployed compliance auditor training for lead auditors in 2007. Beginning June 18, 2007, all audit team leaders were required to take NERC lead auditor training. The NERC compliance auditor training is based on the GAO Generally Accepted Government Auditing Standards for performance audits. NERC conducted seven sessions of the compliance auditor training beginning May 1, 2007.

The compliance auditor training material is continuously being improved based on feedback from compliance audit experiences and changes to the GAO Generally Accepted Government Auditing Standards, CMEP and ROP. In anticipation of the requirement for all compliance audit team members to be trained on the compliance audit process by NERC in 2008, the NERC Training department worked with a consultant to develop online audit team member training modules. NERC Regional Compliance Program Coordinators provided support to this effort. All lead compliance auditors must still take the face-to-face training sessions.

Additional training modules enhancing the Regional Entity and NERC Compliance auditor skills will be developed and offered in 2008.

### **5.3.4 Reliability Standard Audit Worksheets**

NERC and the Regional Entity Compliance staffs collaborated to develop Reliability Standard Audit Worksheets (RSAWs). The RSAWs were initially developed to be an auditing tool for the compliance audit teams. The RSAWs break down information detailed in the Reliability

Standard requirements so that the compliance auditor reviews evidence for all aspects of the requirements.

Once developed, NERC posted the RSAWs on the NERC Web site. This gives all registered entities an opportunity to use this tool in preparing for a compliance audit.

As Reliability Standards are added to the compliance program each year, additional RSAWs will be developed and existing RSAWs will be maintained as later versions of Reliability Standards are approved.

### **5.3.5 Focus Groups**

The need to discuss CMEP implementation topics in great detail resulted in the NERC and the RECMs forming focus groups. These groups can be ongoing or project driven and will make recommendations to improve processes based on experience and lessons learned. Focus groups formed in 2007 include the Audit Observation Team (AOT), RSAW Task Group, and the Compliance Data Group (CDG). The AOT and CDG are ongoing groups that make recommendations to NERC and the RECM. The focus groups are led by NERC Compliance staff.

## **5.4 Enforcement and Mitigation**

The Regional Entities and NERC collaborate extensively on enforcement and mitigation processes. Achieving appropriate penalties and sanctions in a uniform manner at all eight Regional Entities is essential in implementing the CMEP. NERC and the Regional Entities worked together to develop all the necessary templates and forms needed for the enforcement and mitigation activities as well as for correspondence with the registered entities.

The status of enforcement in Canada varies from province to province, depending on the particular laws of each jurisdiction. In Ontario, for example, NERC Reliability Standards are mandatory and are enforced within Ontario by the Ontario Independent Electric System Operator as part of its market rules. NPCC and NERC monitor only the Independent Electricity System Operator (IESO) for compliance. Other jurisdictions are in various stages of considering or implementing legislation that would make Reliability Standards mandatory and enforceable. The enforcement mechanism will likely vary from jurisdiction to jurisdiction. In jurisdictions that have not yet enacted legislation, at least some Reliability Standards are made mandatory by contract (for example, the MRO membership agreement and the WECC Reliability Management System). NERC continues to work with governmental authorities and industry representatives to make Reliability Standards mandatory and enforceable in all jurisdictions. Appendix C provides the enforcement status in Canadian jurisdictions.

## **5.5 Reporting, Analysis, and Tracking**

Compliance reporting is an area where NERC and the Regional Entities agree improvements are warranted. The legacy system of reporting compliance information to NERC is not intended to be the ongoing solution. NERC investigated alternative solutions in 2007 and has a plan for improvement in 2008. NERC will implement a new Compliance Reporting, Analysis, and Tracking System (C-RATS) in 2008 using an outside software developer. This tool is expected to provide a much improved reporting interface for the Regional Entities and to enable more efficient reporting to appropriate governmental authorities including FERC. The tool will

consolidate the registration, compliance violation, mitigation and enforcement databases to allow efficient flow and analysis of information.

## 6. Lessons Learned

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NERC received the following feedback from the Regional Entity Compliance Managers:

- Make sure communications between NERC and the Regional Entity Compliance staffs regarding policy decisions impacting the implementation of the CMEP are formalized in the form of bulletins or directives.
- Improve communications between Compliance and Standards departments to provide compliance feedback related to compliance program implementation regarding Reliability Standards development.
- An effective, efficient, and consistent CMEP requires that data and documents be managed in an accurate and timely manner and made readily available to Regional Entity Compliance staffs, NERC, FERC and other appropriate regulatory entities in the execution of their respective duties. The amount, type, breadth, and scope of the data and documents being generated in the mandatory Reliability Standard environment are outpacing the capabilities of the current information management systems used for program startup. It is essential that enhanced data and document management system be put in place that provides these capabilities and provides for the error free sharing of crucial information between the Regional Entities, NERC, FERC and other appropriate regulatory entities.
- All data reporting to NERC should be done using a common database to collect all findings, whether they are compliance findings, violations, or data submittals.
- NERC should work to be more proactive in the implementation of the CMEP. In several cases, required processes, template letters, and forms were not developed until NERC and the Regional Entities were in a phase where use was required.

NERC received additional feedback from the Compliance and Certification Committee and other stakeholders. All feedback and input from these groups, among others, is reviewed on a continuous basis for opportunities for improvement. NERC and the Regional Entities are committed to continuous improvement of the CMEP in these formative years of the program.

- Share details regarding CMEP implementation as much as possible to show registered entities that NERC and Regional Entity Compliance staffs are meeting ERO responsibilities as specified in the CMEP and ROP.
- Registered entities that are located in multiple Regional Entity areas request coordination from the Regional Entities while implementing the CMEP.
- Continue to improve consistency of the implementation of the CMEP processes across all Regional Entities.
- NERC and Regional Entity Compliance staffs should provide feedback to the NERC Standards staff on needed improvements to clarify Reliability Standard requirements.

## 7. Moving Forward

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### 7.1 Focus Areas 2008

NERC and the Regional Entities have an opportunity in 2008 to better understand data and become more results oriented in compliance. Efforts to systematically minimize the risk of the BPS while mitigation plans are being completed and to focus on risk-based methods will result in strategic approaches to ensuring reliability.

NERC Compliance will assist NERC management in its strategic plan initiative to actively seek to achieve a comparable level of enforceability of its industry-approved, continent-wide standards throughout North America.

#### Staffing Plans

The NERC Compliance Department increased its number of Regional Compliance Program Coordinator positions to 12 (from nine in 2007). A new Manager of Compliance Program Interfaces position was also created in the NERC Compliance Department. The Manager of Compliance Program Interfaces facilitates the Compliance and Certification Committee meetings and is responsible for conducting Regional Entity compliance program audits. These new positions result in a total of 27 full time equivalents in the NERC Compliance Department.

FRCC has justified and received approval from its board for four additional compliance positions. Filling these positions with capable personnel is critical to the success of the CMEP in the FRCC region for 2008.

MRO increased its staffing in 2007 to a total of five and one-fourth full time equivalents in the MRO Compliance Department. MRO staff will perform all processes associated with the compliance and enforcement program for 2008 with a compliance staff of nine.

NPCC is looking to expand the compliance staff in 2008 to a total of seven and one-half full time equivalents.

RFC compliance staff consists of eleven positions and will increase by another eight positions in 2008.

SERC increased staff significantly in 2007, especially in the compliance area with 11 and one-half full time equivalents.

The SPP RE dedicated staff supporting the compliance program was three employees in 2007 growing to four in 2008. SPP RE utilizes contractors to supplement the compliance staff on audits and for event analysis purposes.

At the beginning of 2007, TRE had eight and one-half FTE's dedicated to compliance. TRE staff for compliance, standards, and other functions was budgeted to increase from 12 to 22 positions during 2008.

WECC hired a cyber security compliance engineer bringing the total WECC compliance department to 14 positions in 2008.

### **Data Reporting and Document Management System Common Platform**

NERC agrees that a better system must be in place to improve data transfer and reporting between the Regional Entities and NERC. NERC also recognizes that a better mechanism is also needed to transfer data and reports to FERC and other appropriate regulatory entities.

NERC and six Regional Entities are developing a common reporting platform. The NERC C-RATS is planned for development and implementation in 2008. This platform is a database feeding a Web-based portal. Provisions will be made for Regional Entities not using the common reporting platform to submit violation data through the Web service.

### **Communication with Registered Entities**

NERC views the WECC monthly “Open Mic” sessions with registered entities as a best practice and will encourage all Regional Entities to incorporate an enhanced communication including “Open Mic” sessions.

NERC views the SERC pre-audit WebEx sessions with the audited entity as a best practice and will encourage the Regional Entities to conduct WebEx sessions with registered entities before the compliance audit is conducted.

NERC plans to communicate information about new and revised Reliability Standard requirements directly to the registered entities via the registration database contacts. These communications will be targeted to match to the appropriate registered functions.

NERC plans to conduct Webinars on various topics including compliance. These Webinars are open to the industry. NERC Compliance staff also will present information about the compliance process at various trade association meetings and other industry forums.

### **Compliance Audits of Multi-Regional Registered Entities**

NERC and the Regional Entities will develop a plan to coordinate compliance audits of entities registered in multiple Regional Entity areas.

### **Audits of NERC and Regional Entity CMEP Implementation**

In preparation for a FERC audit of the NERC CMEP implementation, NERC will document all of its procedures and processes used to implement the CMEP and will hire an independent auditor to audit the NERC CMEP program. The results of the independent audit will help NERC identify process gaps and other areas of improvement.

The NERC Manager of Compliance Interfaces will develop the audit plan for auditing the Regional Entity CMEP implementation beginning in 2008. The Regional Entity CMEP audits will be led by an independent contract auditor.

### **Uniformity of the Compliance Monitoring and Enforcement Program**

The following activities will improve the uniformity of the CMEP in 2008:

- Formalization of Directives from NERC to Regional Entities: NERC will formalize and capture directives, consensus items and resolutions of issues related to the implementation of the CMEP.
- Development of common templates and a change management process for updating existing templates and forms.
- Develop metrics to measure performance of CMEP implementation.

## **7.2 Focus Areas 2009**

NERC will direct all Regional Entities to conduct spot checks on all registered entities that are subject to table 1 in the CIP-002-1 through CIP-009-1 implementation plan when 13 requirements reach the Auditably Compliant stage beginning July 1, 2009.

### **Staffing Plan**

The NERC Compliance Department is seeking to increase its number of full time equivalents in 2009 by five positions totaling 32 positions. These new positions will be added to the Compliance Reporting and Tracking, Enforcement and Mitigation, and Certification and Registration groups to support internal activities and new activities required by the Rules-of Procedure and just now coming into play including audits of the Regional Entity program implementation and the NERC CMEP implementation.

FRCC Compliance Department is evaluating the need for additional personnel for 2009 and beyond as the tasks associated with settlements and hearings begin to develop.

NPCC is planning to add one position in 2009 allocated to its compliance staff. This addition will result in a total of eight and one-half FTE to support NPCC compliance activities.

The RFC business plan for 2009 is expected to reflect a total staff to support compliance activities of 22–25 positions.

SERC is evaluating the need for added staff in 2009, particularly regarding critical infrastructure protection Reliability Standards implementation.

SPP RE is planning to add one additional position in 2009 to a total of five full time equivalents.

TRE is evaluating the need to add two additional compliance positions in its 2009 staffing plan.

WECC is planning to add nine positions in 2009 bringing its total compliance department to 23 positions.

### **48-Hour Reporting**

The 48-hour reporting list of Reliability Standards process was developed in the voluntary compliance timeframe to increase the reporting frequency of violations from Regional Entities to NERC. Since the implementation of the CMEP, Regional Entities report all violations to NERC within five business days. The need for a fixed list of 48-hour reporting Reliability Standards will be refocused to other CMEP activities that require 48-hour reporting to NERC. These activities include issuing remedial action directives to registered entities that are in violation of a

Reliability Standard or requirement and the impact of the violation is a risk to the reliability of the BPS. In 2008, NERC and the RECM will begin identifying circumstances that can trigger remedial action directives. Remedial action directives must be reported to NERC within two days (48 hours).

Compliance violation investigations (CVIs) must be initiated within two days of identifying a possible violation circumstance, following Regional Entity or NERC compliance review, resulting from a system event or one of the compliance monitoring methods described in the NERC CMEP. Once NERC receives notice from a Regional Entity that a CVI has been initiated, NERC will report the CVI initiation to FERC and other appropriate regulatory entities within two days.

More detail about 48-hour reporting will be documented in the NERC 2009 CMEP Implementation Plan.

## Appendix A – Actively Monitored Standards

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
<b>Resource and Demand Balancing</b>									
BAL-001-0	All	<b>Real Power Balancing Control Performance</b>	BA	To maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time.		M	√		
BAL-002-0	All	<b>Disturbance Control Performance</b>	BA, RSG, RRO	To ensure the Balancing Authority is able to utilize its Contingency Reserve to balance resources and demand and return Interconnection frequency within defined limits.		Q	√		
BAL-003-0	All	<b>Frequency Response and Bias</b>	BA	This standard provides a consistent method for calculating the Frequency Bias component of ACE.				√	
<b>Critical Infrastructure Protection</b>									
CIP-001-1	All	<b>Sabotage Reporting</b>	RC, BA, TOP, GOP, LSE	Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, governmental agencies, and regulatory bodies.	√				
CIP-002-1 through CIP-009-1	All	<b>Critical Infrastructure Protection Standards</b>	BA, GO, GOP, IA, LSE, NERC, RC, RRO, TO, TOP, TSP	Cyber Security Standards- Follow revised Implementation Plan for Cyber Security Standards CIP-002-1 through CIP-009-1	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
<b>Communications</b>									
COM-001-1	R2 and R5	<b>Telecommunications</b>	TOP, BA, RC, NERCNet User Organizations.	Each Reliability Coordinator, Transmission Operator and Balancing Authority needs adequate and reliable telecommunications facilities internally and with others for the exchange of Interconnection and operating information necessary to maintain reliability.	√				
<b>Emergency Preparedness and Operations</b>									
EOP-001-0	All	<b>Emergency Operations Planning</b>	BA, TOP	Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator.	√				
EOP-003-1	All	<b>Load Shedding Plans</b>	BA, TOP	A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection.	√				
EOP-005-1	All	<b>System Restoration Plans</b>	BA, TOP	To ensure plans, procedures, and resources are available to restore the electric system to a normal condition in the event of a partial or total shut down of the system	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
EOP-006-1	All	<b>Reliability Coordination – System Restoration</b>	RC	The Reliability Coordinator must have a coordinating role in system restoration to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.	√				
EOP-008-0	All	<b>Plans for Loss of Control Center Functionality</b>	BA, RC, TOP	Each reliability entity must have a plan to continue reliability operations in the event its control center becomes inoperable.	√				
EOP-009-0	All	<b>Documentation of Blackstart Generating Unit Test Results</b>	GO, GOP	To ensure that the quantity and location of system blackstart generators are sufficient and that they can perform their expected functions.	√				
Facilities Design, Connections, and Maintenance									
FAC-003-1	All	<b>Vegetation Management</b>	RRO, TO	To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines	√	Q			
FAC-008-1	All	<b>Facility Ratings Methodology</b>	GO, TO	To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on an established methodology	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
FAC-009-1	All	<b>Establish and Communicate Facility Ratings</b>	GO, TO	To ensure that Facility Ratings used in the reliable planning and operation of the Bulk Electric System (BES) are determined based on an established methodology or methodologies.	√				
Interconnection Reliability Operations and Coordination									
IRO-001-1	All	<b>Reliability Coordination – Responsibilities and Authorities</b>	BA, GOP, LSE, PSE, RC, RRO, TOP, TSP	Reliability Coordinators must have the authority, plans, and agreements in place to immediately direct reliability entities within their Reliability Coordinator Areas to re-dispatch generation, reconfigure transmission, or reduce load to mitigate critical conditions to return the system to a reliable state. If a Reliability Coordinator delegates tasks to others, the Reliability Coordinator retains its responsibilities for complying with NERC and regional standards. Standards of conduct are necessary to ensure the Reliability Coordinator does not act in a manner that favors one market participant over another.	√				
IRO-004-1	All	<b>Reliability Coordination – Operations Planning</b>	BA, GO, GOP, LSE, RC, TO, TOP, TSP	Each Reliability Coordinator must conduct next-day reliability analyses for its Reliability Coordinator Area to ensure the Bulk Electric System can be operated reliably in anticipated normal and Contingency conditions.	√			√	

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
IRO-014-1	All	<b>Procedures, Processes, or Plans to Support Coordination Between Reliability Coordinators</b>	RC	To ensure that each Reliability Coordinator's operations are coordinated such that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas and to preserve the reliability benefits of interconnected operations.	√				
IRO-015-1	All	<b>Notifications and Information Exchange Between Reliability Coordinators</b>	RC	To ensure that each Reliability Coordinator's operations are coordinated such that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas and to preserve the reliability benefits of interconnected operations.	√				
IRO-016-1	All	<b>Coordination of Real-time Activities Between Reliability Coordinators</b>	RC	To ensure that each Reliability Coordinator's operations are coordinated such that they will not have an Adverse Reliability Impact on other Reliability Coordinator Areas and to preserve the reliability benefits of interconnected operations.	√				
Personnel Performance, Training, and Qualifications									
PER-002-0	All	<b>Operating Personnel Training</b>	BA, TOP	Each Transmission Operator and Balancing Authority must provide their personnel with a coordinated training program that will ensure reliable system operation.	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
PER-003-0	All	<b>Operating Personnel Credentials</b>	BA, RC, TOP	Certification of operating personnel is necessary to ensure minimum competencies for operating a reliable Bulk Electric System.				√	
PER-004-1	All	<b>Reliability Coordination — Staffing</b>	RC	Reliability Coordinators must have sufficient, competent staff to perform the Reliability Coordinator functions.	√				
Protection and Control									
PRC-004-1	All	<b>Analysis and Mitigation of Transmission and Generation Protection System Misoperations</b>	DP*, GO, TO	Provide trip operation / misoperation information per regional process.	√		√		
PRC-005-1	All	<b>Transmission and Generation Protection System Maintenance and Testing</b>	DP*, GO, TO	Document/implement transmission protection system maintenance/testing/monitoring PROGRAM	√				
PRC-008-0	All	<b>Implementation and Documentation of Underfrequency Load Shedding Equipment Maintenance Program</b>	DP, TO	Document/implement UFLS maintenance/testing PROGRAM	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
PRC-010-0	All	Technical Assessment of the Design and Effectiveness of Undervoltage Load Shedding Program.	DP, LSE, TO, TOP	ASSESS design and effectiveness of UVLS programs	√				
PRC-011-0	All	UVLS System Maintenance and Testing	DP, TO	Document/implement UVLS maintenance/testing PROGRAM	√				
PRC-016-0	All	Special Protection System Misoperations	DP, GO, TO	DOCUMENT/analyze misoperations	√		√		
PRC-017-0	All	Special Protection System Maintenance and Testing	DP, GO, TO	Document/implement SPS maintenance/testing PROGRAM	√				
PRC-021-1	All	Under-Voltage Load Shedding Program Data	DP, TO	DOCUMENTATION of undervoltage load shedding program	√				
Transmission Operations									
TOP-003-0	All	Planned Outage Coordination	BA, GOP, RC, TOP	Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators.	√				√

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
TOP-004-1	R6	Transmission Operations	TOP	To ensure that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies.	√				
TOP-005-1	All	Operational Reliability Information	BA, PSE, RC, TOP	To ensure reliability entities have the operating data needed to monitor system conditions within their areas.	√			√	
TOP-007-0	All	Reporting System Operating Limit (SOL) and Interconnection Reliability	RC, TOP	Ensure SOL and IROL violations are being reported to the Reliability Coordinator so that the Reliability Coordinator may evaluate actions being taken and direct additional corrective actions as needed.				√	
Transmission Planning									
TPL-001-0	All	System Performance Under Normal (No Contingency) Conditions	PA, TP	System performance under normal conditions	√				
TPL-002-0	All	System Performance Following Loss of a Single Bulk Electric System Element	PA, TP	System performance under single contingency	√				

2007 CMEP Matrix NERC Reliability Standards									
Std #	Requirements	Standard	Who	Purpose	Self-Certification	Monthly/Quarterly Reporting	Data Submission	Exception Reporting	Investigation
TPL-003-0	All	<b>System Performance Following Loss of Two or More Bulk Electric System Elements</b>	PA, TP	System performance under multiple contingencies	√				
TPL-004-0	All	<b>System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk Electric System Elements</b>	PA, TP	System performance under extreme contingencies	√				
<b>Voltage and Reactive</b>									
VAR-001-1	All	<b>Voltage and Reactive Control</b>	PSE, TOP	To ensure 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.	√				

## Appendix B – Regulatory Actions

### 2006 Regulatory Activities in Preparation for 2007 ERO Implementation

- **2/3/2006** — FERC's Final Rule on Reliability (Order No. 672), Docket No. RM05-30-000
- **3/30/2006** — FERC's Final Rule; Order on Rehearing (Order No. 672-A), Docket No. RM05-30-001
- **4/4/2006** — Request of the North American Electric Reliability Council and North American Electric Reliability Corporation for Certification as the Electric Reliability Organization, RR06-1-000
- **7/20/2006** — ERO Certification Order Docket No. RR06-1-000
- **9/18/2006** — NERC Compliance Filing of the North American Electric Reliability Council and North American Electric Reliability Corporation Addressing Governance Issues and Request for Expedited Treatment, Docket No. RR06-1-002
- **10/18/2006** — Compliance Filing of the North American Electric Reliability Council and the North American Electric Reliability Corporation Addressing Non-Governance Issues, Docket No. RR06-1-000
- **10/24/2006** — Order on 2007 Business Plan and Budget, Docket No. RR06-3-000
- **10/30/2006** — Order Accepting Governance Compliance Filing, Docket Nos. RR06-1-001, RR06-1-002
- **11/15/2006** — Petition of the North American Electric Reliability Council and North American Electric Reliability Corporation for Approval of Proposed Reliability Standards, Docket No. RM06-16-000
- **11/29/2006** — Compliance filing regarding revised pro forma delegation agreement and uniform Compliance Monitoring and Enforcement Program, filed November 29, 2006, in Docket No. RR06-1-004
- **11/29/2006** — Request to approve regional delegation agreements, filed November 29, 2006, in Docket No. RR07-1, *et al.*

### 2007 Regulatory Activities for ERO Implementation

- **1/18/2007** — Order on Compliance Filing, Docket No. RR06-1-003
- **02/06/07** — Revision 3 to NERC's Statement of Compliance Registry Criteria, filed February 6, 2007, Docket No. RM06-16-000
- **02/23/07** — Request of the North American Electric Reliability Corporation for Approval of Violation Risk Factors for Version 0 Reliability Standards, Docket No. RM06-16-000

- **3/16/2007** — Mandatory Reliability Standards for the Bulk-Power System Docket No. RM06-16-000, Order No. 693
- **3/19/07** — NERC Compliance Filing for FERC January 18, 2007 and March 9, 2007 Orders, Docket Nos. RR06-1-003, RR06-1-005
- **3/23/07** — Request of the North American Electric Reliability Corporation for Approval of Violation Risk Factors for Version 1 Reliability Standards, Docket No. RR07-10-000
- **03/26/07** — Request for Approval of Regional Reliability Standards of the Western Electricity Coordinating Council, Docket No. RR07-11-000
- **4/19/2007** — Order Accepting ERO/Regional Entity Delegation Agreements, Docket No. RR06-1-004 *et al.*
- **4/19/2007** — Order on Clarification and Rehearing, Docket No. RR06-1-006
- **5/18/2007** — Order on Violation Risk Factors, Docket Nos. RR07-9-000, RR07-10-000
- **5/18/2007** — Applicability of Federal Power Act Section 215 to Qualifying Small Power Production and Cogeneration Facilities (Final Rule), Docket No. RM07-11-000
- **6/7/2007** — Order on Compliance Filing, Docket No. RR06-1-007
- **6/8/2007** — Order Approving Regional Reliability Standards for the Western Interconnection and Directing Modifications, Docket No. RR07-11-000
- **06/13/07** — North American Electric Reliability Corporation's Work Plan and Status Report for Order No. 890, Docket Nos. RM05-17-000, RM05-25-000
- **06/26/07** — Order on Violation Risk Factors, Docket No. RR07-12-000
- **07/19/07** — Order 693-A, Order on Rehearing, Docket No. RM06-16-001
- **07/19/07** — Order on Joint Registration Organization Filing, Docket No. RM06-16-003
- **08/09/07** — Order on Rehearing and Compliance Filing, Docket Nos. RR07-9-001, RR07-9-002, RR07-10-001, RR07-10-002
- **08/21/07** — Request for Approval of Amended and Restated Bylaws of Northeast Power Coordinating Council, Inc. and for Substitution of Northeast Power Coordinating Council, Inc. as Regional Entity, Docket No. RR07-15-000
- **10/18/07** — Order conditionally accepting 2008 Business Plan and Budget of NERC and Ordering Compliance Filings, Docket No. RR07-16-000

- **08/31/07** — Request of the North American Electric Reliability Corporation for Acceptance of its 2008 Business Plan and Budget and the 2008 Business Plans and Budgets of Regional Entities and for Approval of Proposed Assessments to Fund Budgets, Docket No. RR07-16-000
- **10/05/07** — North American Electric Reliability Corporation Work Plan in Response to Paragraph 206 of Order No. 693, Docket Nos. RM05-17-000, RM05-25-000, RM06-16-000
- **10/12/07** — Request for Approval of Section 1600 of the Rules of Procedures of North American Electric Reliability Corporation, Docket Nos. RM06-16-000, RR08-1-000
- **10/30/07** — Compliance Filing of the North American Electric Reliability Corporation in Response to April 19, 2007 Order – CMEP, ROP, Pro forma delegation agreement and Regional Entity delegation agreement changes for approval, Docket Nos. RR06-1-004 *et al.*
- **11/2/07** — Request of the North American Electric Reliability Corporation and Western Electricity Coordinating Council for approval of proposed revisions to the WECC Bylaws and Request for clarification, Docket No. RR08-2-000

## Appendix C: Status of Enforcement in Canadian Jurisdictions

Jurisdiction	Status
Alberta	A mechanism is in place for reliability standards to become mandatory, but none are yet mandatory. That mechanism is for the Alberta Electric System Operator to submit standards to the Alberta Energy Board for approval. The reliability standards in force will be the NERC standards, to the extent the AESO adopts them, recommends them to the Board for approval, and the Board approves them. The AESO may also adopt and recommend for Board approval other reliability standards to take the place of one or more NERC standards. Enforcement of reliability standards within Alberta is to be conducted by the AESO. The AESO is a signatory to the WECC Reliability Management System agreement.
British Columbia	A mechanism is in place for standards to become mandatory, but none are yet mandatory. The British Columbia Utilities Commission would set and enforce mandatory reliability standards. The British Columbia Transmission Corporation is a signatory to the WECC Reliability Management System agreement.
Manitoba	No legislative authority currently exists for reliability standards to be made mandatory and enforceable in Manitoba. As an interim measure, NERC, Midwest Reliability Organization and Manitoba Hydro are negotiating an agreement by which reliability standards would be binding on Manitoba Hydro until such time as broader legislative authority is adopted.
New Brunswick	NERC Reliability Standards are mandatory in New Brunswick by operation of law. NERC, NPCC and the New Brunswick System Operator are negotiating an MOU under which NERC and NPCC would monitor compliance and carry out enforcement as to the NBSO. The NBSO would monitor and enforce compliance with reliability standards by those within New Brunswick as a part of its market rules.
Nova Scotia	The Nova Scotia Utilities and Review Board has legislative authority to adopt and enforce mandatory reliability standards. No standards are yet in force. The NSUARB retains the authority to make findings of violation and impose sanctions within Nova Scotia. NERC and NPCC could make recommendations to the NSUARB regarding compliance matters. NERC and the NSUARB have signed an MOU regarding their respective roles. NERC, NPCC and the NSUARB are discussing a further implementation agreement.

Jurisdiction	Status
Ontario	NERC Reliability Standards are mandatory in Ontario by operation of law. The Ontario Energy Board was recently given the authority to remand a standard in certain circumstances. Pursuant to an MOU between NERC and the Ontario Energy Board and an MOU between NERC, NPCC, and the Ontario Independent System Operator, NERC and NPCC monitor compliance and carry out enforcement as to the IESO. The IESO monitors and enforces compliance with reliability standards by those within Ontario as a part of its market rules.
Québec	The Québec Régie de l'énergie has statutory authority to set and enforce reliability standards. Standards are to be proposed by the Québec reliability coordinator to the Régie for adoption. Standards are not yet in force in Québec. NERC and the Régie have signed an MOU describing their respective roles in reliability. NERC, NPCC, and the Régie are negotiating a services agreement under which NERC and NPCC would provide compliance and enforcement monitoring services to the Régie. The Régie has the authority to make the decision on enforcement matters and impose penalties. NERC and NPCC would make recommendations to the Régie on compliance and enforcement matters as well as provide reports and advice on other matters related to reliability.
Saskatchewan	Saskatchewan does not have a separate regulatory authority. Saskatchewan Power Corporation has the authority to set, monitor, and enforce reliability standards within Saskatchewan. NERC, Midwest Reliability Organization and Saskatchewan Power are negotiating a memorandum of understanding covering the respective roles of the parties regarding reliability. This is viewed as an interim step pending possible future changes in legislation.
National Energy Board	The National Energy Board has jurisdiction only with respect to International Power Lines ("IPLs"). The NEB has announced an intention to require owners of IPLs to follow NERC reliability standards. NERC and the NEB have signed an MOU describing their respective roles in reliability.