Agenda
Compliance Committee
November 4, 2015 | 10:30 a.m. – 12:00 p.m. Eastern
The Westin Buckhead Atlanta
3391 Peachtree Road
Atlanta, GA 30326
(404) 365-0065

Introductions and Chair’s Remarks

NERC Antitrust Compliance Guidelines

Agenda Items
1. Minutes* – Approve
   a. Meeting of August 12, 2015
2. Follow-up Regarding Action Items from Prior Meeting
3. CIP-014 Implementation* – Update
4. CIP V5 Implementation* – Update
5. Development of Compliance Metrics* – Update
   a. Regional Entity Implementation Experience
   b. NERC Oversight of Compliance Monitoring Activities
   c. NERC Oversight of Enforcement Activities
7. Adjournment

*Background materials included.
Antitrust Compliance Guidelines

I. General
It is NERC’s policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC’s compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC’s antitrust compliance policy is implicated in any situation should consult NERC’s General Counsel immediately.

II. Prohibited Activities
Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants’ expectations as to their future prices or internal costs.
- Discussions of a participant’s marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC’s General Counsel before being discussed.
III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC’s Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.
Janice B. Case, Chair, called to order the duly noticed meeting of the Board of Trustees Compliance Committee (BOTCC) of the North American Electric Reliability Corporation (NERC) on August 12, 2015, at approximately 10:00 a.m. Eastern, and a quorum was declared present.

Present at the meeting were:

**Committee Members**
- Janice B. Case, Chair
- Frederick W. Gorbet
- David Goulding
- Douglas Jaeger
- Jan Schori
- Roy Thilly

**Board of Trustees Members**
- Gerry W. Cauley, President and Chief Executive Officer
- Paul F. Barber
- Robert G. Clarke
- George S. Hawkins
- Kenneth G. Peterson

**NERC Staff**
- Valerie Agnew, Senior Director of Reliability Assurance
- Charles A. Berardesco, Senior Vice President, General Counsel, and Corporate Secretary
- Sonia Mendonça, Vice President of Enforcement and Deputy General Counsel
- Steven Noess, Director of Compliance Assurance

**Regional Entity Management Group**
- Carter Edge, Director, Coordinated Activities

**NERC Antitrust Compliance Guidelines**
Ms. Case directed the participants’ attention to the NERC Antitrust Compliance Guidelines.

**Chair’s Opening Remarks**
Ms. Case highlighted current trends in enforcement and compliance, including the progress in the implementation of the risk-based Compliance Monitoring and Enforcement Program (CMEP).

**Follow-up Regarding Action Items from Prior Meeting**
Ms. Case reviewed the status of the action items from the May 6, 2015, Open meeting. She noted that the Critical Infrastructure Protection Version 5 Transition items would be discussed during the August 12, 2015,
Member Representatives Committee (MRC) meeting and the Multi-Region Registered Entity Program update would be provided at the May 2016 BOTCC Open meeting.

Minutes
Upon motion duly made and seconded, the BOTCC approved the May 6, 2015, meeting minutes as presented at the meeting.

CIP-014 Implementation
Mr. Noess provided an update to the BOTCC on NERC’s key activities supporting implementation of CIP-014-1. He clarified that while NERC’s original approach was to provide guidance for each requirement, in response to policy input, NERC is evaluating and coordinating with stakeholder groups on the need for any additional formal guidance regarding the Standard. Additionally, NERC is continuing to coordinate with other industry groups such as the North American Transmission Forum on their efforts.

Risk-Based Registration
Ms. Agnew updated the BOTCC on phase II of the Risk-Based Registration initiative. She highlighted that NERC is considering multiple options to align the registration of entities with the different levels of risk to the reliability of the bulk power system. NERC also seeks to ensure that compliance obligations are commensurate with risk, specifically for Generator Owners, Generator Operators, Transmission Owners, and Transmission Operators.

Regional Consistency Tool
Mr. Edge updated the BOTCC on the use of the Regional Consistency Tool. He highlighted that 16 issues, representing both known and newly identified areas for improvement, had been received, processed, and posted on the Regional Consistency Tool website.

Key Compliance Assurance and Enforcement Metrics
Ms. Mendonça presented the current compliance assurance and enforcement metrics, explaining the focus of the report was on implementation of the risk-based CMEP in the second quarter of 2015. Specifically, her report focused on the ERO Enterprise’s metrics related to the effectiveness of the risk-based CMEP, and described the ERO Enterprise’s progress in self-logging, compliance exceptions, and mitigation plan activities, among other CMEP activities.

Adjournment
There being no further business, and upon motion duly made and seconded, the meeting was adjourned at approximately 11:00 a.m. Eastern.

Submitted by,

Charles A. Berardesco
Senior Vice President and General Counsel
CIP-014 Implementation

**Action**
Update

**CIP-014 Oversight Program**
As part of oversight of responsible entities’ compliance with Reliability Standard CIP-014-2, ERO Enterprise staff have already begun engaging with registered entities through a variety of outreach activities and coordinated site visits to discuss and understand their implementation of CIP-014-2. Based on initial observations from both NERC and Regional Entity staff, the industry is making significant progress towards effective implementation and compliance of CIP-014-2. Physical security plans appear to be focused on mitigating risk from specific threats to the critical stations or substations, and NERC is encouraged by the industry’s initial progress and continued focus on a successful CIP-014-2 implementation.

The ERO Enterprise will monitor compliance to the standard in a manner that emphasizes assessing and supporting effective implementation.¹ The focus areas throughout the rest of 2015 and during early 2016 relate to CIP-014-2’s requirements to identify critical stations and substations and ensuring that such identifications are appropriate and risk-informed. In essence, NERC, in collaboration with the Regional Entities, plans to confirm who the Reliability Standard is applicable to, whether each of those applicable registered entities performed a required risk assessment to determine whether they have critical facilities, and whether that required risk assessment resulted in the identification of critical facilities.²

In Q2 of 2016, NERC and the Regional Entities will prioritize understanding of effective application of the first three requirements related to critical facility identification.³ This approach will be described in NERC’s 2016 Compliance Monitoring and Enforcement Program (CMEP) Implementation Plan planned to be completed in November of 2015, with formal notices to applicable registered entities expected to be provided by Regional Entities in Q1 of 2016. With targeted application of compliance monitoring tools (e.g., spot checks and guided self-certifications), NERC and the Regional Entities will seek to understand from applicable registered entities the following:

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¹ Prior guidance from February 9, 2015 related to the risk assessment and third party verifications required by the Reliability Standard also emphasized that compliance assurance activities will expect registered entities to be able to demonstrate that they implemented the requirement effectively. That guidance is available at: [http://www.nerc.com/pa/CI/PhysicalSecurityStandardImplementationDL/CIP-014%20Memo%20to%20the%20ERO%20021015.pdf](http://www.nerc.com/pa/CI/PhysicalSecurityStandardImplementationDL/CIP-014%20Memo%20to%20the%20ERO%20021015.pdf).

² These confirmations are also intended to address quarterly reporting expectations to the Board of Trustees (the Board) in support of its monitoring of the standard’s implementation. NERC management, per the Board’s instruction when adopting the Physical Security Reliability Standard, will monitor and assess implementation of CIP-014-2. This monitoring includes the general number and characteristics of assets identified as critical and the scope of security plans developed to meet the requirements in CIP-014-2, including the timelines provided for implementation of the various security and resiliency measures included in the plan.

³ The obligations of those requirements become effective through staggered enforcement dates beginning on October 1, 2015 through Q1 of 2016.
• Why certain stations or substations are identified to meet the criteria in Requirement R1 (e.g., understanding registered entities’ analysis of determining which facilities are critical and that the analysis is sound);

• Similarly, why certain stations or substations were not identified by Requirement R1;

• Which Transmission Owners and Transmission Operators meet the initial criteria for the Reliability Standard’s applicability section;

• Organizations that should have completed the requirements of CIP-014 and why they did not (e.g., a Transmission Owner to whom the standard is applicable should have performed the required risk assessment of its applicable stations and substations to identify whether it has critical facilities. If it did not perform the risk assessment, why not);

• What the defining characteristics are of stations and substations identified by Requirement R1; and

• How the third party verifying the risk assessment meets the qualifications in Requirement R2 and the means the third party used to ensure effective verification.

Oversight of CIP-014-2 will also involve direct oversight of the Responsible Entities’ CIP programs by NERC and, in some cases, with staff from Applicable Governmental Agencies. For example, the Federal Energy Regulatory Commission (FERC) and NERC have been coordinating joint visits of registered entities in 2016. While specific entities and the scope of these visits have not been fully determined, NERC anticipates continued coordination with FERC to minimize any duplication of effort, with emphasis given to ensure that Responsible Entity resources are not unduly burdened.

NERC will continue providing regular communications and outreach on key information to support the industry’s implementation of the standard. NERC and the Regional Entities have conducted webinars to reflect the most recent guidance communication throughout 2015, and they will continue providing updates via webinar and other means during key milestones during the implementation period. Going forward, NERC may also conduct additional workshops based on feedback from industry and in conjunction with Regional Entity outreach activities. The industry can access several NERC and Regional Entity outreach presentations on CIP-014-2 here.
CIP V5 Implementation

**Action**
Update

**Critical Infrastructure Protection (CIP) Version 5 Oversight Program**

While NERC has been continuing its efforts to accomplish the goals of the CIP Version 5 Transition Program and is entering its final stage of completing remaining guidance for outstanding topics, a focused effort has been underway to design an ERO Enterprise-wide oversight plan for 2016. NERC understands that the implementation of CIP Version 5 represents a significant shift in addressing cybersecurity. As industry gains implementation experience with this new set of Reliability Standards, NERC’s oversight of CIP Version 5 will rely on risk-based compliance monitoring and enforcement concepts. In particular, 2016’s focus will be on key areas to determine how well security risk is being managed, with emphasis on effective collaboration across the ERO Enterprise and industry to address security and compliance. NERC and the Regional Entities will incorporate that focus in phased approaches based on function and risk throughout 2016 and beyond. NERC’s oversight plan for CIP Version 5 in 2016 includes three primary components.

The first component includes on-site audit engagements in each Region at certain entities that could have the highest impact to the reliable operation of the Bulk Electric System (BES), identified through risk assessment and as otherwise required to occur on a three-year cycle under the NERC Rules of Procedure. These engagements will be risk-informed. They will focus specifically on understanding progress and effectiveness of certain controls and standards identified through risk-based compliance monitoring principles, with particular emphasis on CIP-002’s requirement to identify assets that meet the criteria for high- and medium-impact ratings. In addition, NERC and the Regional Entities will leverage the CIP Version 5 areas of focus identified in the 2016 CMEP Implementation Plan. The Implementation Plan’s areas of focus are shown in Table 1 below.

Second, through risk-informed application of risk-based compliance monitoring tools (e.g., spot checks and guided self-certifications), NERC and the Regional Entities will seek to understand from applicable entities the quantities of facilities that possess high- and medium-impact Bulk Electric System Cyber Systems (BESCS) in CIP-002. This data, in conjunction with risk-informed evaluations, will enable each Regional Entity to tailor ongoing and future compliance monitoring efforts. Care will be taken in coordination with Responsible Entities to ensure sensitive information such as locations, maps, or other related BCS Information is protected.

The types of information that may be requested as part of the compliance assurance activities are as follows:

- Number of facilities possessing high impact BCS;
- Number of facilities possessing medium impact BCS; and
- Approximate number of locations that have low impact BCS.
The third component of the CIP Oversight Program will involve direct oversight of the Responsible Entities’ CIP programs by NERC and, in some cases, with staff from Applicable Governmental Authorities. For example, the Federal Energy Regulatory Commission (FERC) and NERC have been coordinating to support joint visits of registered entities in 2016. While specific entities and the scope of activities have not been fully determined, NERC anticipates continued coordination with FERC to minimize any duplication of effort, with emphasis given to ensure that Responsible Entity resources are not unduly burdened.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Requirements</th>
<th>Entities for Attention</th>
<th>Asset Types</th>
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</thead>
<tbody>
<tr>
<td>CIP-002-5.1</td>
<td>R1, R2</td>
<td>Balancing Authority, Generator Operator, Generator Owner, Reliability Coordinator, Transmission Operator, Transmission Owner</td>
<td>Control Centers, Backup Control Centers, Data Centers, Substations, Generation Facilities</td>
</tr>
<tr>
<td>CIP-005-5</td>
<td>R1, R2</td>
<td>Balancing Authority, Generator Operator, Generator Owner, Reliability Coordinator, Transmission Operator, Transmission Owner</td>
<td>Control Centers, Backup Control Centers, Data Centers, Substations, Generation Facilities</td>
</tr>
<tr>
<td>CIP-006-5</td>
<td>R1, R2, R3</td>
<td>Balancing Authority, Reliability Coordinator, Transmission Operator, Transmission Owner</td>
<td>Control Centers, Backup Control Centers, Data Centers, Substations</td>
</tr>
<tr>
<td>CIP-007-5</td>
<td>R1, R2, R3, R5</td>
<td>Balancing Authority, Reliability Coordinator, Transmission Operator, Transmission Owner</td>
<td>Control Centers, Backup Control Centers, Data Centers</td>
</tr>
</tbody>
</table>

**Table 1: 2016 CMEP Implementation Plan Areas of Focus**
Development of Compliance Metrics

Action
Update

Summary
The Board of Trustees Compliance Committee (BOTCC) requested information on the work being performed by the Compliance and Certification Committee (CCC) and others at the request of the Reliability Issues Steering Committee (RISC) to identify ways that compliance data can inform actions to reduce the risk to the bulk power system. The effort, led by Terry Bilke on behalf of the CCC, is reflected in two proposed metrics and related recommendations outlined in the attached report. One metric reflects trends associated with the risk of noncompliance\(^1\) (referred to as the “risk metric”), and the other metric is a quarterly count of the number of reported instances of noncompliance with observed reliability impact. These metrics should not be considered in isolation from other efforts noted below but can provide useful information for the ERO Enterprise and registered entities with respect to common causes or patterns associated with violations that posed a serious risk or had an observable impact. NERC expects to include these new metrics in its quarterly reports to the BOTCC. Once the proposed metrics are calculated regularly, there will be opportunity for further enhancement of the metrics and analysis.

It is important to note that the ERO Enterprise tracks the effectiveness of its activities related to the reliability of the bulk power system in a number of ways, and no single metric, including any one of the two metrics referenced above, can be considered in isolation. The ERO Enterprise also is committed to evaluating the impact of its compliance and enforcement processes on reliability performance, reduction of reliability risks, and compliance efficiencies. The following are activities undertaken by the ERO Enterprise to further this goal:

- One of the key indicators for the overall effectiveness of the ERO Enterprise efforts is the state of reliability of the bulk power system in North America. Each year, NERC publishes a State of Reliability Report, which reviews ongoing trends and objectively provides an integrated view of reliability performance.

- ERO Enterprise Metric 2, Assurance Effectiveness, requires NERC to assess all Category 3 and above events for Standards and Compliance gaps and close identified gaps within one year of the gap analysis report’s conclusion being released, unless a technical study is needed.\(^2\) In addition to providing information regarding potential gaps, this metric provides a significant feedback mechanism among Event Analysis, Standards, Compliance Assurance, and Compliance Enforcement.

\(^1\) For information on how the ERO Enterprise determines the risk of a particular instance of noncompliance, please review the [ERO Self-Report User Guide](http://www.nerc.com/AboutNERC/Documents/ERO_Self-Report_User_Guide.pdf).

• NERC also regularly monitors the violations that caused serious risks to the bulk power system and the standards associated with these violations based on data gathered since 2010.

• The ERO Enterprise also analyzes noncompliance at all risk levels to identify patterns, trends, and areas of focus. In particular, over the course of 2015, NERC is tracking noncompliance with the Reliability Standards and Requirements associated with the risk elements identified as priorities for monitoring in 2015.

Over time, these tracking mechanisms should allow the ERO Enterprise to understand better the impact of the identification of such priorities on compliance with the related Reliability Standards and Requirements, from the perspective of the number and seriousness of noncompliance.
ERO Compliance Metrics, Risk, and Reliability

Recommendations to the NERC Board of Trustees
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Preface

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system (BPS) in North America. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the BPS through system awareness; and educates, trains, and certifies industry personnel. NERC’s area of responsibility spans the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is the electric reliability organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada. NERC’s jurisdiction includes users, owners, and operators of the BPS, which serves more than 334 million people.

The North American BPS is divided into several assessment areas within the eight Regional Entity (RE) boundaries, as shown in the map and corresponding table below.

![Map of the North American BPS with Regional Entities](image)

<table>
<thead>
<tr>
<th>RE</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRCC</td>
<td>Florida Reliability Coordinating Council</td>
</tr>
<tr>
<td>MRO</td>
<td>Midwest Reliability Organization</td>
</tr>
<tr>
<td>NPCC</td>
<td>Northeast Power Coordinating Council</td>
</tr>
<tr>
<td>RF</td>
<td>ReliabilityFirst</td>
</tr>
<tr>
<td>SERC</td>
<td>SERC Reliability Corporation</td>
</tr>
<tr>
<td>SPP-RE</td>
<td>Southwest Power Pool Regional Entity</td>
</tr>
<tr>
<td>TRE</td>
<td>Texas Reliability Entity</td>
</tr>
<tr>
<td>WECC</td>
<td>Western Electricity Coordinating Council</td>
</tr>
</tbody>
</table>

The Reliability Issues Steering Committee (RISC) is an advisory committee that triages and provides front-end, high-level leadership for issues of strategic importance to BPS reliability. The RISC offers stakeholder leadership engagement and input on issues that impact BPS reliability. The committee also advises the NERC Board of Trustees (Board), NERC standing committees, NERC staff, regulators, Regional Entities, and industry stakeholders to establish a common understanding of the scope, priority, and goals for the development of solutions to address these issues, including the use of solutions other than the development of new or revised Reliability Standards. In doing so, the RISC provides a framework for steering, developing, formalizing, and organizing recommendations to help NERC and the industry effectively focus their resources on the critical issues needed to best improve the reliability of the BPS.

This report documents the result of the RISC’s continued work to define risks to the reliable operation of the BPS and provide guidance to the Board on activities that NERC should take to manage those risks.
Executive Summary

This report outlines the work performed by the NERC Compliance and Certification Committee (CCC) and others based on a request by the RISC in June 2014 to identify ways compliance data can inform actions to reduce the risk to the bulk power system (BPS). This is based on a NERC Board request of the RISC in February 2013:

FURTHER RESOLVED, the Board hereby directs NERC management to work with the RISC and, as appropriate, NERC committee leadership to consider how NERC should utilize a data-driven reliability strategy development process that integrates with budget development and overall ERO planning (e.g., Standing Committee planning, department and employee goal setting).

The team that was formed to support the RISC request of the CCC focused on the following objectives:

- Identify one or two high-level metrics to track BPS risk due to compliance violations.
- Utilize these global metrics as well as currently available granular compliance metrics to reduce risk by:
  - identifying with some confidence which requirements, when violated, pose greater risk to reliability;
  - encouraging timely mitigation of Possible Violations (PVs) and sharing of lessons learned (mitigation and controls);
  - fostering a culture of self-inspection, self-correction, and self-reporting;
  - modeling after other industries focused on “lessons learned,” such as those whose foundation relies on safety triage; and
  - tailoring compliance monitoring and enforcement effort (both industry and the ERO enterprise) based on risk.

The team developed two compliance process (CP) metrics: CP-1 (Risk Focus) and CP-2 (Impact Focus). These metrics could offer significant value in achieving the objectives above. Detailed recommendations are found in Chapter 3.

The proposed metrics, in conjunction with the self-correction model presented in the report, should prove effective in helping entities prioritize efforts to find and fix small issues before they lead to larger reliability disturbances or problems.
Chapter 1 – Previous Global Metrics Efforts and Limitations

Background
From 2010 to 2012, there were two prior attempts at creating global compliance metrics focused on compliance violations and the associated risk to reliability: the Key Compliance Monitoring Index (KCMI) and the ALR CP-1. Both metrics had some value and were a useful start, but each had limitations. Both projects built on the idea of an intersection of compliance, performance, and reliability. The concept of that intersection is illustrated in Figure 1 below.

![Figure 1: Conceptual Diagram of Risk Indices](image)

**Key Compliance Monitoring Index (KCMI)**
The first attempt at a global compliance metric was KCMI (originally named Standards-Driven Index, or SDI). This metric, meant to serve as a single performance measure on the state of the BPS, was based on a set of 26 high Violation Risk Factor (VRF) requirements that a team of subject matter experts deemed to be most important to reliability. The set of requirements were thought of as a Dow Jones average of important requirements.

To measure the ongoing risk to the BES, the KCMI tracked the number of unmitigated KCMI-requirement violations in the ERO’s queue. The limitations of KCMI were:

- The 26 requirements selected as “bellwether” requirements were largely based on judgment.
- There was no feedback mechanism defined to retire less-impactful requirements and replace them with new, more consequential bellwether requirements.
- The KCMI set did not include CIP requirements, which raised questions of a potential shortcoming.
- By tracking unmitigated violations, the new observations in a recent quarter were masked by those already in queue. The metric was overstated by old requirements that were nearly fully mitigated but had not progressed through the administrative process of closing out the mitigation plan.
In short, the metric was inflated, was not sensitive to recent changes in recent violations, and did not vary much quarter to quarter due to the administrative process.

**ALR CP-1 (Original)**

The other previously tested metric was called ALR CP-1. This metric was proposed in 2013 but never accepted by the Planning Committee or Operating Committee for use in evaluating the impact of registered entity compliance on reliability. The name was intended to conform to other NERC Adequate Level of Reliability (ALR) metrics. Rather than relying on a set of defined higher-risk requirements, this metric relied on the judgment of Enforcement staff as indicated in risk assessments filed with FERC. As a violation progresses through Enforcement, it is assigned situation-specific risk based on the facts and circumstances of the case. The most egregious violations are deemed “serious risk.”

Somewhat similar to KCMI, ALR CP-1 proposed to track unmitigated serious-risk violations (as deemed by Enforcement) by quarter. There were limitations, some similar to the limitations of KCMI:

- Including unmitigated violations inflated the metric due to administrative lag and also reduced the visibility of near-term changes in the number of violations.
- As it can take years to close out a serious-risk violation, the approach to assess risk in the past may not reflect the current situation of the BPS.
- While relying on the judgment of Enforcement staff was a useful start, the metric did not have a feedback loop. A review of the data showed significant differences between Regions on which standards had serious-risk violations. While there were likely legitimate reasons for the differences, the metric provided no mechanism to compare approaches and refine the process.
- Compared to KCMI, there was also an additional administrative lag in the original ALR CP-1. KCMI was a straightforward derivation of a requirement’s VRF and Violation Severity Level (VSL). These two values are immediately known when a violation is identified. With ALR CP-1, the final risk value assessed by Enforcement was not deemed official for many months, if not years.
Chapter 2 – Proposed Metrics

Introduction
The team recommends the development of two compliance metrics, focusing on the risk to and impact upon the BPS. The data to support these metrics would come from the dispositions of noncompliance each month. NERC Enforcement would calculate the metrics based on the factual descriptions and risk assessments of the noncompliance submitted by the Regional Entities. The key is to provide information of value to registered entities and the ERO Enterprise.

Caveats
To avoid incorrect conclusions when reading about the suggested metrics, it is important to keep these caveats in mind:

• Most violations have not resulted in BES events or disturbances.
• A violation posing a serious risk to reliability may not have an actual impact on reliability.
• A PV that causes impact to the BPS may not have posed a serious risk to reliability.
• This effort is not intended to affect or link to NERC’s Events Analysis process.

CP-1 (Risk) Metric

Definition
Compliance Process-1 (CP-1) is a quarterly count of PVs that Regional Entity staff determines posed a serious risk to the reliability of the BPS.

Description
The team recommends using some of the concepts of the previously discussed ALR CP-1, with one modification:

1. Count violations in the quarter in which they began.
   NERC currently tracks serious risk violations based on the quarter in which they are filed. Under this metric, NERC will track filed serious risk violations based on the quarter in which the violations occurred. This will facilitate tracking of the trends of serious risk violations without regard to the length of time it takes to process the violations.

Benefits
This metric has multiple benefits:

• Requirements that most frequently lead to serious-risk violations can provide priorities for registered entities to develop internal controls.
• Sharing lessons learned on the serious-risk violations (root causes, mitigation steps, and internal controls) should help registered entities reduce the number and impact of future violations of these requirements.
• This metric does not rely on a static set of requirements.
• The differences in the relative proportion of violations and the standards designated serious risk by the Regions may point to:
• unique Regional risks that can then become part of the focus areas\(^1\) of the Regional CMEP Implementation Plans; and
• opportunities for refinement and improvement of the risk assessment process.

**Initial Observations**

Figure 2 depicts the trend in serious-risk violations.

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\(^1\) Focus Areas are standards that receive particular emphasis in a Region’s CMEP Implementation Plan.
Figure 3 depicts the standards and requirements that were filed at FERC as serious-risk violations since 2012. Note that Critical Infrastructure Protection (CIP) requirements are some of the most often violated as well as those most often assigned serious risk.

The requirements in the Figure 3 can provide one input for the development of internal controls.

Figure 3: Standards and Requirements with Most Occurrences of Serious-Risk Violations

**CP-2 (Impact) Metric**

**Definition**

Compliance Process-2 (CP-2) is a quarterly count of the number of noncompliance with observed reliability impact.

**Description**

While the CP-1 (Risk) metric is expected to provide value to the ERO Enterprise, it has two primary limitations:

1. While feedback loops among NERC and the Regional Entities should continue to improve the quality of the risk assessments, there is still some subjectivity in the assignment of risk.
2. Serious-risk violations are relatively rare occurrences, so their rarity provides limited opportunity for learning.
Figure 4: Final Risk Assessments (2013–2014)

Figure 4 depicts the risk breakdown of violations processed in 2013 and 2014. A small percentage of violations were deemed serious risk. Since BPS impact is a combination of probability and risk magnitude, the determination of actual reliability impact of a PV is another aspect that could provide significant benefit in trending. The team’s proposed CP-2 provides a measure of the observable BPS impact due to compliance violations.

A common business approach to address a problem is to learn from similar but more mature processes and procedures in other industries. Industrial and utility safety programs provide a useful model that reduces the magnitude and frequency of serious safety mishaps by addressing the causes of more common, lower-level safety incidents. The theory behind this safety model is that major injuries are prevented by continuously finding and rooting out small issues. A parallel reliability model suggests that reducing serious impact on the BPS due to non-compliance can be achieved by addressing the causes of more frequent and more common lower-level impacts. Figure 5 depicts the alignment of the reliability model to the safety program model.
Chapter 2 – Proposed Metrics

Figure 5: Safety and Reliability Models

At NERC Board meetings, FERC Commissioner Cheryl LaFleur has noted that she supports the theory of the Accident Pyramid. This theory says that major events are prevented by continuously finding and rooting out small issues. H.W. Heinrich\(^2\) developed the original concept that there is a domino effect whereby a cluster of small problems can form a chain of events that lead to major mishaps. He presented data that implies a direct relationship between the number of unsafe acts, minor accidents, and major injuries.

Some of the most effective industrial safety programs are built upon the pyramid’s approach by developing a culture in which all employees have a stake in safety and are expected to continuously look for, report, and correct problems. The culture is achieved if the program is focused less on punishment and more on the correction of unsafe acts. This idea supports aggressive correction actions and intolerance of negligence.

A common approach to track success in safety programs is by collecting simple observation reports. The flow of observation reports shows that people are actively looking for problems. The reports provide useful data on patterns of problems as well as a means to document corrective action. Similarly, in the electric power industry, the flow of self-reports and compliance exception log entries speaks to the maturity of the entity’s compliance culture, the attitude of self-monitoring and self-correcting, and the transparency to share lessons learned with others in the industry. To the extent that minor problems are aggressively found and corrected, there should be a decline in the more consequential mishaps higher in the pyramid.

Using this approach to reduce the impact of standard violations on the BPS requires an assessment of the observable reliability impact of the noncompliance. If the guidelines for assessing impact are clear, it should not matter who records the impact determination or at what stage of the process. Accordingly, impact determinations would become part of the self-identified noncompliance process (including self-reported, self-certified, and self-logged noncompliance), performed by registered entities, as well as the evaluation of noncompliance discovered by Regional Entities.

There was a violation or PV and it led to:

- **Tier 3: Major BES Disturbances**
  - Caused or contributed to a major BES disturbance

- **Tier 2: Moderate Impact**
  - IROL exceeded
  - BES limit (non-IROL SOL, frequency, voltage, or ACE) exceeded for > 30 minutes
  - BES facilities tripped unexpectedly
  - Emergency action taken (e.g., reconfiguration, load shed) to mitigate or prevent the impact of the violation
  - Equipment damage
  - Major (> 50%) loss of visibility, control, state estimation, or contingency analysis for over 30 minutes

- **Tier 1: Minor Impact**
  - Observations similar to those in tier 2 but of lesser magnitude
  - Loss of ability to monitor cybersecurity intrusions

- **Tier 0: No Impact**
  - No observed impact

**Figure 6: Impact Observations Mapped to the Impact Pyramid Tiers**

Figure 6 maps the four data tiers that define the impacts used for CP-2. This metric only requires capturing a small amount of data along with each noncompliance. The observed impacts in the figure were used to advance the development of this report. Because of the subjectivity inherent in the definitions of observable impacts and the establishment of the tiers, it is expected the list will evolve over time based on experience.

**Benefits**

Capturing the data (tier and type of impact) associated with the requirement for each noncompliance would offer several potential benefits:

- Tracking the high-impact noncompliance occurrences using approaches proven in other industries and fields of study.
- Identifying the requirements believed to be most often associated with observed impacts provides added value:
  - Lends to creating focus areas for CMEP Implementation Plans.
  - Likely input for development of internal controls and sharing of underlying causes and mitigation activities.
- Providing feedback to the standards process:
  - Confirm that requirements slated for retirement have not had a record of impacts associated with their violation.
• Requirements that are most violated yet have no impacts recorded may need adjustment of their measures or may need to be clarified to ensure they continue to address a reliability risk.

**Initial Observations**

Figure 7 represents the occurrence dates of the violations filed in 2014 that had some observed impact on reliability. Tier 0 observations (no observed impact) are not depicted.

**Figure 7: CP-2 Occurrences (2014-2015 Data)**

Figure 8 shows the breakdown by requirement of the most frequently impactful violations filed in 2014 and 2015. A refined list of impactful requirements would be useful for registered entities seeking guidance on where to focus their internal controls program.
Figure 8: Most Frequently Filed Standards and Requirements (2014-2015 Data)
Chapter 3 - Recommendations

The team offers the following recommendations for achieving the objectives of the RISC’s request as well as additional benefits.

NERC and Regions

1. Move forward with proof of concept of CP-1 and CP-2.
   a. Work with NERC CCC and the Performance Analysis Subcommittee (PAS) to refine the definitions of impact annually and consider proposed changes.
   b. Create quarterly trends of CP-1 and CP-2.

2. NERC Enforcement and Reliability Risk Management staff work together to develop and share common-cause information (patterns) for impactful (CP-2) violations as well as root-cause information on violations that caused or contributed to system disturbances.

3. NERC and Regions work with the CCC to extract and post case-note-type data from self-reports, logs, and mitigation plans for the Top 20 lists (most violated, high impact, serious risk).

4. Use the CP-1 and CP-2 metrics as input to the CMEP’s Risk Elements and Focus Areas.

5. Several of the team members had not seen the presently published granular metrics. Raise the visibility of the compliance trends information by including them in the State of Reliability Report.

6. NERC and the Regions should periodically review differences among Regions’ serious-risk violations as an input to developing Risk Elements, identifying Regional specific risks, and increasing consistency in the risk assessment process.

7. Establish goals and approaches to encourage a culture of self-detection, self-correction, and self-reporting. Develop metrics to track this as well as the lessons learned from near misses and small disturbances.

Registered Entities

1. Review the Top 20 lists as possible starting points for the development of your standard and requirement level controls:
   a. Most violated list.
   b. Serious-risk (CP-1) requirements.
   c. Impactful requirements (CP-2).


3. Capture underlying causes, observed impact, and actions taken to correct noncompliance.
NERC publishes quarterly enforcement-related metrics, several of which can be leveraged to evaluate the compliance maturity of industry and also to meet the goals of RISC’s request of the CCC:

- Encouraging timely mitigation of PVs and sharing of lessons learned (mitigation and controls).
- Fostering a culture of self-inspection, self-correction, and self-reporting.
- Tailoring compliance monitoring and Enforcement effort (both industry and NERC) commensurate with the risk of the infraction.

Additionally, the team recommends adding Top 20 most-violated requirement graphs from both a risk (CP-1) and impact (CP-2) perspective to NERC’s quarterly compliance statistics.
Appendix 2 - Team Members

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- Ed Kichline (NERC)
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- Melinda Montgomery (NERC PAS)
- Michael DeLoach (NERC CCC)
- Paul Kure (NERC PAS, RF)
- Peter Raia (NERC)
- Stanley Kopman (NPCC)
- Terry Bilke (NERC CCC)
Appendix 3 – Definitions

Compliance Process – 1 (CP-1): A quarterly count of PVs determined by Enforcement staff to pose a serious risk to the reliability of the BPS.

Compliance Process – 2 (CP-2): A quarterly count of the number of Compliance Exceptions or PVs with observed reliability impact.

Major BES Disturbance: An event that results in Bulk Electric System instability or Cascading.
Progress Report on Implementation of the Risk-Based Compliance Monitoring and Enforcement Program

Action
Update

Background
On a quarterly basis, NERC provides the Board of Trustees Compliance Committee (BOTCC) an update on the implementation of the Compliance Monitoring and Enforcement Program (CMEP). The instant report focuses on the ERO Enterprise’s implementation of the risk-based CMEP in the third quarter of 2015 (Q3 2015). In particular, this report describes the ERO Enterprise’s progress in self-logging, and Compliance Exceptions, among other CMEP activities. In addition, this report provides an update on the ERO Enterprise processing-related goals and metrics in 2015 and other relevant trends.

Finding and Analyzing Publicly Available NERC Enforcement Data
In addition to periodic reports such as this, NERC makes a significant amount of enforcement data and analysis available on its website and updates it regularly. An August 2013 presentation explains how to navigate the enforcement pages and analyze enforcement data.

The publicly available data includes searchable lists of all Notices of Penalty, Spreadsheet Notices of Penalty, and Find, Fix, Track, and Report issues processed since the inception of these enforcement mechanisms. Recently, NERC added a searchable list of Compliance Exceptions on its website. In addition to this quarterly compliance analysis, annual reports associated with the CMEP also are available on NERC’s website.¹

Questions regarding finding publicly available NERC enforcement data can be sent to enforcement@nerc.net.

¹ http://www.nerc.com/pa/comp/Resources/Pages/default.aspx
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Introduction

On a quarterly basis, NERC provides the Board of Trustees Compliance Committee (BOTCC) an update on the Compliance Monitoring and Enforcement Program (CMEP) trends. The instant report focuses on the ERO Enterprise’s implementation of the risk-based CMEP in the third quarter of 2015 (Q3 2015). In particular, this report describes the ERO Enterprise’s progress in implementing self-logging and Compliance Exceptions among other CMEP activities. In addition, this report provides an update on the ERO Enterprise processing-related goals and metrics in 2015 and other relevant trends and includes information on the continued development of the ERO Enterprise’s metrics related to the effectiveness of its programs.

1 The ERO Enterprise includes NERC and the eight Regional Entities.
Serious Risk Violation Trends

The ERO Enterprise is committed to evaluating the effect of its compliance and enforcement processes on reliability performance, reduction of reliability risks, and compliance efficiencies.

Since 2010, NERC has gathered data on and regularly monitored violations posing serious risk to the bulk power system (BPS) and the Standards associated with these violations. These violations are show in Figure 1, below. Since the Southwest Blackout in the third quarter of 2011, the number of serious risk violations has declined. Standards related to reliability coordination and transmission operations are the most violated Operations and Planning (O&P) standards associated with serious risk violations. From the CIP group of standards, CIP-007 is the most commonly violated standard leading to serious risk violations, but other CIP standards such as CIP-005 and CIP-006 have also been associated with serious risk violations.

Figure 1: Serious Risk Violations by Quarter in Which the Violations Occurred

The chart includes those violations that were processed between 2010 and Q3 2015. The chart only includes violations individually identified as having posed a serious or substantial risk to the reliability of the BPS. In some cases, individual instances of noncompliance may be classified as minimal or moderate but in the aggregate, pose a serious risk to the reliability of the BPS. See, for example, NERC Full Notice of Penalty regarding Unidentified Registered Entity, Docket No. NP15-33-000, filed August 31, 2015, available at: http://www.nerc.com/pa/comp/CE/Enforcement%20Actions%20DL/PUBLIC_FinalFiled_NOC-2435_Full_NOP_SETTLEMENT_8-31-15.pdf.
Figure 2: Most Commonly Violated Reliability Standards Associated With Serious Risk

As shown below in Figure 3, serious risk violations continue to account for a small portion of all instances of noncompliance reviewed by the ERO Enterprise.

Figure 3: All Violations by Quarter in Which the Violations Occurred
NERC analyzes noncompliance at all risk levels to identify patterns, trends, and areas of focus. While the percentage of serious risk violations is small, the review and analysis of past issues can help identify practices that could be helpful in preventing similar violations. In Q3 2015, NERC conducted a preliminary analysis of the 93 non-CIP serious risk violations shown in Figure 1. This analysis used the cause code assignment process to identify applicable trends.\(^3\)

Five main initial trends were identified through this review. Management/Organization, Individual Human Performance, Equipment/Material Problem, Communication and Training Deficiency were the most common causes identified within this set of serious risk violations. The analysis also highlighted the importance of comprehensive processes and controls in safeguarding reliability.

This section briefly summarizes examples of violations associated with the most prevalent causes observed and identifies opportunities and means for avoiding or minimizing the risk of similar violations in the future. However, nothing in this document is intended to create requirements or obligations.

**Trend 1: Management/ Organization**

Management/organization deficiencies are related to a variety of areas such as: (a) insufficiency in guidance, monitoring, assessment, accountability, or corrective action, (b) inadequate resource allocation, work organization, and planning, and (c) supervisory methods and/or change management.

Management/organization deficiencies were particularly noticeable in violations discovered and reported prior to 2012 (71% of the serious risk violations reviewed). Nearly half of these issues were discovered through audits and investigations.

For violations discovered in 2007-2009, change management was the main cause of violations. In 45% of the cases, there was a failure to anticipate the challenges of transitioning from voluntary to mandatory Reliability Standards. Since that time, efforts related to preparedness from the ERO Enterprise and industry increased. These efforts include increased communication through reports, lessons learned, training, webinars and other activities in addition to higher engagement and collaboration between industry and ERO Enterprise staff.

NP11-18-000\(^4\) is an example of typical issues that arose during the early years of mandatory compliance with Reliability Standards. During the early years, the registered entities often could not produce required evidence to demonstrate expected actions such as completion of periodic testing of protection systems. Entities often lacked evidence for a large number of assets and array of components. Also, registered entities lacked sufficient documentation of procedures. In other cases, existing documentation had not been reviewed or updated for years.

Less than adequate preparation has led to change management issues after the 2007-2009 period, but in those cases, the root cause of the problem was often related to delay or deficiencies in recognizing internal issues. In the majority of the filings reviewed, the entity did not recognize the problem until it manifested itself through a series of related or unrelated issues. Understanding the interdependencies among various processes, systems and tools is key to the organization’s ability to identify, communicate, manage and mitigate risk.

For example, in NP15-24-000, the entity experienced a failure of its energy control system (ECS) for approximately 91 minutes. During this period, the transmission operations control center lost monitoring and control capabilities.

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\(^3\) The cause code assignment process was used for analysis of the violations and identification of frequent and common causes. It was not a factor in the determination of the risk or the outcome of the violations reviewed. The analysis was based on information available from the public filings associated with these serious risk violations. No additional information was collected.

\(^4\) All notices of penalty discussed here are available in the Enforcement and Mitigation page.
Effectiveness of the Compliance Monitoring and Enforcement Program

The root cause of the service interruption was that the entity had not assessed a software upgrade released at the time of the ECS outage. Registered entities should closely evaluate the timing and potential consequences of software upgrades, use real-time monitoring tools, and have compensating measures in place to mitigate the risk of exposure. Issues experienced by registered entities in the filings reviewed often revealed problems in one or more areas that were previously unknown or were neglected.

Another observed trend stemmed from organizations’ documentation methods. Documentation and recordkeeping are essential aspects of risk management and should be part of an organization’s operations strategy. Proper, complete, and quality documentation allows entities to reduce their risk of exposure and provide a well-controlled change process that detects, identifies, and corrects issues that may have unintended consequences.

For example, in NP13-26-000, a line fault was caused when an aluminum carport was lifted by high winds and blown into a transmission line within a substation. During the commissioning of the breaker at the substation, wiring errors went unnoticed and the instructions for the design provided an incorrect current transformer ratio that the commissioning engineer followed while performing his duties. These two factors in conjunction exacerbated the event. The errors made during commissioning prevented the breaker from tripping as designed for the line fault. If the registered entity followed its commissioning procedure according to its protection system maintenance and testing program which contained a checklist of items to be performed and had a formal assurance process to verify completion of the work, the entity could have detected the errors and corrected the commissioning errors in order to prevent the event.

In summary, it is highly beneficial to implement controls to ensure internal processes are followed. Registered entities need tools, documentation, and periodic reviews in place to monitor the controls. By implementing proper controls any missed or unresolved issues can be identified sooner and compensating measures can be initiated to correct the issues before they manifest into larger complications.

Trend 2: Individual Human Performance
While it is not unusual to find a degree of individual human performance involved in noncompliance issues, the vast majority of individual errors in the violations reviewed were related to latent organizational weaknesses such as poor data integrity or less than ideal decision making tools. For example, in NP14-33-000, a skill-based error occurred when experienced staff was faced with a large number of issues occurring simultaneously. It is important to ensure proper assistance and support are available to an organization’s staff, in order to decrease the likelihood of individual human errors. Decision making tools for individuals also need to be sufficient, functioning properly, and permanently available. In addition, proper contingency plans should also be ready to be deployed or implemented as needed. In the majority of serious risk violations reviewed, registered entities mitigated individual human error through training to correct and prevent recurrence. Training serves as a valuable tool to educate, restore, and emphasize expectations of an organization.

Trend 3: Equipment or Material Issues
Less than adequate inspection and testing methods was the most frequently observed subcategory under this main code. As an example, in NP13-10-000, the entity practices resulted in some of its protection system devices being tested outside of the entity’s defined intervals established by its Protection System maintenance program. The significant number of Protection System devices and the wide range of missed test dates for such entity with a considerable amount of load were some of the contributing factors resulting in the serious assessment of the violation. Inadequate maintenance and testing practices can lead to performance degradation that may have otherwise been discovered and mitigated earlier. An organization may utilize a range of tools based on its level of risk to manage, track, communicate and alert risk owners of time-sensitive actions.
**Trend 4: Inadequate Communication**

In many of the cases reviewed, the root cause of inadequate communication originated from a lapse in the organization in recognizing a change and its impact on various areas. For example, NP13-56-000 described an event involving multiple entities where a combination of misunderstanding, miscommunication, lack of communication, lack of knowledge and awareness including training on updated plans and procedure hindered the load shedding necessary to relieve the exceeded stability limit and restore the bulk power system to a stable mode.

It is important for organization to perform periodic reviews of policies, processes and procedures associated with areas of risk it identifies. The periodic review will also determine the need for further actions such as staff training, risk reevaluation, to address organization’s current business needs.

**Trend 5: Training Deficiency**

Training is a key activity that could impact many different aspect of an organization’s business and performance. The violations that resulted from training deficiencies often encompassed additional causes such as individual human error or management and organizational issues. Entities should continuously assess their training goals, objectives and needs of their organizations to identify deficiencies and opportunities which can be addressed through training and education. As an example, NP13-56-000 described a situation in which an entity did not fully execute its load shedding procedure because the entity had not completed training of its operations personnel on the new procedures prior to the event. Consequently, on the day of the event, the operator attempted to execute the superseded, older process for load shedding, resulting in less than the requested load being shed.
Mitigation Completion Status

The ERO Enterprise actively tracks mitigation of noncompliance through Mitigation Plans and mitigation activities. NERC also conducts oversight of the Mitigation Plan processes and procedures to identify deficiencies and establish best practices.

During the fourth quarter of 2014, NERC conducted a review of 120 Mitigation Plans submitted to FERC in the calendar year 2013. The purpose of the Mitigation Plan review was to evaluate the Regional Entities’ internal procedures and practices related to Mitigation Plan review and acceptance, certification, and verification. The review was a supplement to NERC’s ongoing review of all Mitigation Plans, which are accepted by the Regional Entities and submitted to NERC for approval before they are submitted to FERC.

Based on its analysis of the review results, NERC concluded that the Regional Entities follow the procedural and content requirements of the CMEP, as they relate to mitigation activities associated with noncompliance with the NERC Reliability Standards. During 2015, NERC observed improvement across the ERO Enterprise related to the description of interim risk mitigation and cause analysis in Mitigation Plans.

NERC is closely monitoring noncompliance for which mitigation has not been completed. The ERO Enterprise encourages all registered entities to submit timely and detailed certifications of completion of Mitigation Plans or mitigation activities.

The outstanding mitigation activities from 2010 and before largely involve federal entities that have had limited interaction with their Regional Entities during the pendency of federal litigation related to NERC’s ability to assess financial penalties against federal entities. Since the litigation has been resolved in 2014, the Regional Entities have made significant progress in working with the federal registered entities to resolve their noncompliance and associated mitigation. (See Figure 24.)
As of Q3 2015, mitigation has been completed for 67.9% of the instances of noncompliance discovered in 2014, which is an increase from 53.25% in Q2 2015.

The table below shows the ERO Enterprise’s targets and thresholds for mitigation activity completion by discovery year of the noncompliance.

<table>
<thead>
<tr>
<th>Time frame</th>
<th>Required Mitigation</th>
<th>On going</th>
<th>Progress toward the goal</th>
<th>Threshold</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 and older</td>
<td>4182</td>
<td>19</td>
<td>99.55%</td>
<td>98%</td>
<td>100%</td>
</tr>
<tr>
<td>2011</td>
<td>1742</td>
<td>8</td>
<td>99.54%</td>
<td>95%</td>
<td>98%</td>
</tr>
<tr>
<td>2012</td>
<td>1461</td>
<td>49</td>
<td>96.65%</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>2013</td>
<td>1159</td>
<td>112</td>
<td>90.34%</td>
<td>75%</td>
<td>80%</td>
</tr>
<tr>
<td>2014</td>
<td>972</td>
<td>312</td>
<td>67.90%</td>
<td>75%</td>
<td>80%</td>
</tr>
</tbody>
</table>

**Table 1: Mitigation Completion Status Table**
Improved Self-Assessment and Identification of Noncompliance

The ERO Enterprise Continues to Promote Self-Assessment and Identification of Noncompliance

The ERO Enterprise monitors noncompliance discovery trends and promotes self-identification of noncompliance. The ERO Enterprise has set a target that the registered entities should discover 75% of noncompliance in 2015 through internal discovery methods. Since the beginning of the year, registered entities self-identified 86% of the instances of noncompliance discovered in the year. Typically, registered entities identify a higher percentage of noncompliance in the first quarter of each year when they conduct internal compliance evaluations and submit self-certification forms to the Regional Entities. In Q1, Q2, and Q3 2015, the percentage of internally discovered instances of noncompliance was higher compared to the same periods in 2014. In Q3 2015, the registered entities self-identified about 78% of noncompliance internally, compared to less than 74% in Q3 2014. The first three quarters of 2015 identified more internally discovered noncompliance than any other compared year.\(^5\)

Registered entities’ ability to self-identify noncompliance allows for timely mitigation of such noncompliance, which in turn results in a more timely reduction of risk to the BPS. The ERO Enterprise continues to encourage all registered entities to develop internal processes that would allow them to promptly self-identify and mitigate instances of noncompliance.

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\(^5\) The number of reported instances of noncompliance has been on the decline since 2011. In 2011, there were 2,618 total violations discovered; in 2014, there were 1,191; and as of Q3 2015, there have been 667 violations discovered as of Q3.
Figure 6: Internal Discovery Increased in 2015 Compared With the Prior Year
Risk-Based CMEP Implementation

In November 2014, NERC management identified a number of success factors, listed below, to be measured over the course of 2015 in connection with the implementation of the risk-based CMEP. NERC, in coordination with the Regional Entities, collects information related to each measurement and will, over the course of the year, determine the appropriate benchmarks and possible targets for future years, as well as identify refinements to these metrics, as appropriate. Each metric described in this report may support more than one of the 2015 success factors. In addition to the measures and metrics described below, NERC and the Regional Entities continue to measure qualitatively the implementation of the risk-based CMEP activities. NERC also considers the results of stakeholder surveys, such as the 2015 ERO Effectiveness Survey, in measuring success under these factors. In particular, the 2015 ERO Effectiveness Survey provided the baseline information that NERC will use in connection with success factors 1, 2, 5, and 7.

1. ERO Enterprise Staff Competency (Competency and Perception): ERO Enterprise staff performing key activities are trained and competent in their areas of responsibility, such as risk assessment, audit, internal controls evaluation, and enforcement, and are regarded by registered entities as being well qualified in their roles.

2. Information and Outreach: Registered entities have the information they need—through outreach, program transparency, and sharing of best practices—to prepare for engaging with the Regional Entities and NERC in the risk-based compliance and enforcement activities.

3. Consistency: The common tools, processes, and templates used by Regional Entities for risk-based compliance activities with registered entities are consistent on matters where consistency is important, and NERC has adequate oversight of that interface.

4. Regulator Trust: The ERO Enterprise has strengthened the trust of the Federal Energy Regulatory Commission (FERC) and applicable Canadian government authorities regarding risk-based compliance and enforcement.

5. Balanced Transparency: An appropriate level of transparency has been determined for various facets of risk-based compliance and enforcement, balancing efficiency and the confidentiality needs of a registered entity with the needs of the industry as a whole to learn from others (e.g., transparency of Compliance Exceptions and self-logs, as well as feedback to each entity regarding Inherent Risk Assessment (IRA) and Internal Control Evaluation (ICE)).

6. Metrics Identified: Metrics are identified for key expected results from risk-based compliance and enforcement and benchmarked for 2015.

7. Recognized Value: The value of risk-based compliance and enforcement of registered entities is of demonstrable value to the consuming public and can be articulated clearly and publicly.

Utilization of Self-Logging (success factor 3)
The self-logging program\(^6\) allows participating registered entities to keep track of minimal risk noncompliance and their mitigation activities on a log that is periodically reviewed by the Regional Entity. Under the program, all properly mitigated minimal risk issues that the registered entity tracks on its log are presumed to be resolved as Compliance Exceptions. As of September 30, 2015, 40 registered entities are self-logging.\(^7\) This represents a slight increase from the number of entities self-logging at the end of 2014 (23). The registered entities that have been

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\(^6\) See ERO Enterprise Self-Logging Program.

\(^7\) There were a few registered entities that were deregistered from the NERC Compliance Registry while other new registered entities were added, increasing the overall number of self-logging entities. Many of the registered entities currently in self-logging program are carry-overs from the pilot programs.
approved for self-logging represent a diverse group performing various reliability functions. Currently, seven out of eight Regional Entities have registered entities participating in the self-logging program.\(^8\)

\(^8\) One of the ReliabilityFirst entities in the program logs noncompliance associated with activities in the SPP RE footprint as well. Currently, no registered entities are self-logging at FRCC and FRCC has not had any formal requests from entities to date. The fact that a new program document is currently pending before FERC may have delayed or reduced applications in recent months.
**Trends in Compliance Exceptions and Find, Fix, Track, and Report (FFT) Issues (success factor 3)**

The ERO Enterprise Has Appropriately Treated Instances of Noncompliance Posing Minimal and Moderate Risk as Compliance Exceptions and Find, Fix, Track, and Report issues, respectively.

In Q3 2015, out of 178 instances of noncompliance posing a minimal risk to the reliability of the BPS, the ERO Enterprise disposed of 114 (64%) as Compliance Exceptions. The Compliance Exception disposition track allows the Regional Entities to dispose noncompliance posing a minimal risk efficiently, so that they can focus on noncompliance posing a moderate or serious risk to the reliability of the BPS.

The use of various processing tracks in the third quarter of 2015 is consistent with prior periods, except for an increase in the number of violations disposed through the Notice of Penalty (NOP) disposition track, as shown in Figures 9 through 11. That increase is due to the filing of three NOPs disposing of 48 minimal risk noncompliance along with violations posing a more serious or substantial risk to the reliability of the BPS. Use of the NOP was necessary because of the aggregated risk of the subject violations, unusual circumstances, and subsequent above and beyond mitigation activities—the important details of which would not have been adequately conveyed in spreadsheet format.

The ERO Enterprise treated the remaining instances of noncompliance posing a minimal risk as FFTs, Spreadsheet Notices of Penalty (SNOPs), or Compliance Exceptions based on the underlying facts and circumstances.

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Figure 10: Compliance Exceptions Continue to Lead as a Disposition Track

The NOP disposition track included three Settlement Agreements filed in Q3. One of these agreements disposed of 102 violations.

Figure 11: Regional Entities Use All Disposition Methods Appropriately
ERO Enterprise Staff Risk-based Compliance and Enforcement Training and Education (success factor 1)

NERC and the Regional Entities recognize the importance of training and education to help support and ensure their staffs are equipped with a comprehensive understanding needed to implement consistent IRA and ICE processes and develop compliance oversight plans for registered entities. The information below reports on both NERC-led and Regional Entity-specific training conducted during the reporting period. The ERO Enterprise does not anticipate or expect to conduct risk-based compliance and enforcement training every month but rather will assess and provide training based on needs identified throughout the year. Regional Entities can also identify training and education needs and conduct activities as appropriate. Although reporting on these metrics focuses on risk-based CMEP training, NERC and the Regional Entities continue to train on other topics related to CMEP activities such as performance audits and Reliability Standards.

Figure 12 provides information on total training hours delivered to ERO Enterprise staff through various delivery methods by competency area and content. Figure 12 represents 42 Regional Entity training sessions for Regional Entity staff that included at least two participants and up to 21 participants. In addition to the Regional Entity-led training hours represented in Figure 12, NERC hosted Regional Entity staff for 16 hours of vendor-led training on internal controls.

<table>
<thead>
<tr>
<th>Enrollment processes</th>
<th>IRA, ICE, and Enforcement Process</th>
<th>Risk Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Led</td>
<td>1</td>
<td>111</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Workshop</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Figure 12: Regional Entity-led Training Hours by Competency Type YTD
Figure 13 demonstrates that Regional Entity staff received a collective 2,318 man-hours\textsuperscript{10} of training during Regional Entity-led events such as workshops and instructor-led training. The training included the following topics:

- IRA, ICE, and Enforcement Process (286 attendees);
- Risk Analysis (114 attendees); and
- Enforcement Processes (32 attendees).

Altogether, Regional Entity staff attended an average of 5.4 hours of training per person led by the respective Regional Entities.

\textbf{Figure 13: Total Training Hours Completed by Competency Type YTD}

\textbf{Upcoming Training Activities in 2015 (success factor 1)}

NERC, working with Regional Entity staff, continues to identify relevant and available online courses to include as part of the overall ERO Enterprise risk-based training curriculum within the learning management system. In addition, NERC will continue to develop training on risk-based concepts, which may include a course coordinated with NERC Events Analysis staff members on risk analysis.

\textsuperscript{10} One man-hour is one hour of training for one person.
Furthermore, during Q2 2015, NERC hired a vendor to perform a compliance monitoring personnel competency analysis to be performed during Q3-Q4 2015, to assist with long-term curriculum development for the risk-based compliance monitoring portion of the CMEP. The product deliverables for this effort will include a well-defined task list by role and a recommended training and education plan to inform the qualification program for the ERO risk-based CMEP.

**ERO Enterprise Industry Outreach Events for Risk-based Compliance Monitoring and Enforcement (success factor 2)**

This metric reports on the number of industry outreach activities completed by the ERO Enterprise and includes activities such as webinars, workshops, bulletins, etc. This metric also provides results from post-outreach event surveys that will support ongoing and continued outreach.

During Q3 2015, and as part of the ERO Enterprise’s continued outreach efforts in the implementation of its risk-based CMEP, the ERO Enterprise continued the risk element webinar series. Each webinar focuses on one risk element, and includes guidance and discussion on the areas of focus identified in the 2015 ERO Enterprise CMEP Implementation Plan. During the webinars, presentations are given by NERC and Regional Entities. The webinar series started on April 16, 2015, and takes place on the third Thursday of every month. The length of each webinar is dependent on the content and areas of focus associated with the featured risk element, but the webinars usually are no longer than one hour.

![Figure 14: NERC-hosted Risk Elements Webinar Attendance for Q3 2015](image-url)

**Figure 14: NERC-hosted Risk Elements Webinar Attendance for Q3 2015**
Participant feedback noted that the webinar series provides a good overview of how a particular risk element was identified and how Reliability Standards are used to mitigate the risk identified. Participants mentioned that the webinar series provides helpful information to registered entities that may be used to target areas that pose a material risk to reliability. Feedback on the webinar series has been highly positive and participants have appreciated the content.

Throughout 2015, Regional Entities continue to conduct webinars, workshops, and other outreach events to address the industry’s questions and concerns. Although there is a continued focus of outreach activities on the risk-based CMEP approach, Regional Entities have also conducted outreach for other areas such as new Reliability Standards and the CIP Version 5 transition through face-to-face meetings and conferences with industry.

Figure 15 summarizes the outreach events conducted by Regional Entities year-to-date for 2015. Due to scheduling of reoccurring outreach events, like Regional Entity compliance workshops and compliance user group meetings, some Regional Entities may have no events during a specific quarter.

**Figure 15: Regional Industry Outreach Events Year-to-date for Risk-based Compliance Monitoring**

Figure 16 summarizes the year-to-date stakeholder participation at Regional Entity outreach events. Based on the feedback received, NERC and Regional Entities will continue to conduct outreach activities that focus on self-logging, Compliance Exceptions, risk elements, frequently asked questions, and examples of completed IRAs and
ICEs. NERC plans to use existing industry events, like the Standards and Compliance workshops, to provide information on risk-based activities.

Figure 16: Total Participation in Regional Entity Outreach Events YTD

ERO Enterprise IRA and ICE Utilization (success factor 3)
These metrics track the completion of IRAs and ICEs for registered entities across the ERO Enterprise. The purpose of these metrics is to demonstrate the ERO Enterprise’s progress in implementation of this portion of risk-based compliance monitoring, as well as to represent effort by Regional Entities in assessing the myriad risks posed to the BPS by a variety of registered entities within a given audit cycle.

At the end of this reporting period, there are 246 registered entities scheduled to be audited in 2015 in the United States. Throughout the year, Regional Entities update their audit schedules based on possible changes in entity registrations, assessments of risks and decisions to change monitoring tools, decisions to combine or separate audits involving CIP and O&P scope areas, etc.

The ERO Enterprise is committed to complete IRAs for all registered entities on the 2015 audit schedule. Figure 17 below shows that Regional Entities completed IRAs for 194 registered entities, 79% of the entities scheduled for an audit in 2015.
Figure 17: Total Number of Entities on 2015 Audit Schedule Compared to Total Number of IRAs Completed for Audit Schedule

Figure 18 below depicts that before the end of Q3 2015, Regional Entities have completed a total of 255 IRAs, which represents approximately 18% of registered entities in the United States and Canada.\textsuperscript{11} Approximately 194 of these completed IRAs are for entities currently on the 2015 audit schedule. An additional 61 IRAs were completed for entities that are not on the 2015 audit schedule.

\textsuperscript{11} Due to activities occurring under risk-based registration, like the de-registration of Purchasing-Selling Entities and Interchange Authorities, the total number of registered entities across the ERO Enterprise has decreased. The number of registered entities is based on the NCR list at the end of the reporting period.
Regional Entities will continue conducting IRAs over the next few years to assess inherent risk. NERC and the Regional Entities have identified an opportunity to assess performance of IRAs across the ERO Enterprise and are subsequently developing an associated compliance oversight plan for all registered entities.

Regional Entities also completed 26 ICEs associated with 194 completed IRAs for registered entities on the 2015 audit schedule, as referenced in Figure 19. As mentioned previously, Regional Entities have completed 61 IRAs and 18 ICEs for entities that are not scheduled for an audit in 2015. Ongoing ICE related activities, not reflected in the figure below, also continue for registered entities who opt-in for an ICE or who are interested in having an ICE performed. For example, Regional Entities may have held initial discussions with registered entities or sent internal control questionnaires to registered entities to begin the ICE process.
Though the primary focus during this implementation year is on completing IRAs for registered entities on the 2015 audit schedule, Regional Entities are also coordinating with registered entities and performing other IRAs and ICEs outside the audit schedule. In some instances, IRAs and ICEs are performed as a risk-based measure to preemptively gauge, outside of the normal audit cycle, the level of risk that a particular entity poses to the BPS. An example would be when an IRA is performed after an organization makes an acquisition or a significant change to its footprint. ICEs outside the Regional Entity’s current work plan will be scheduled and planned based on availability of Regional Entity resources and at the discretion of the Regional Entity. Additional ICEs are in progress or are in planning stages and will be completed throughout the year.

Table 2 summarizes the overall IRA and ICE activities related to both the annual 2015 audit schedule and overall IRA and ICE activities.
Risk-based Compliance Activities | Count
---|---
IRA | 
IRAs Conducted for Registered Entities on 2015 Audit Schedule | 194
IRAs Completed for Registered Entities not on 2015 Audit Schedule | 61
**Total IRAs Completed YTD within the ERO Enterprise** | **255**
IRAs Remain to be Completed for all Registered Entities within the ERO Enterprise | 1,187
ICE | 
ICEs Conducted for Registered Entities on 2015 Audit Schedule | 26
ICEs Completed for Registered Entities not on 2015 Audit Schedule | 18
**Total ICEs Completed YTD within the ERO Enterprise** | **44**

**Table 2: Summary of Overall Risk-Based Compliance Monitoring Activities**
Coordinated Oversight of Multi-Region Registered Entities (MRREs)

In 2014, the ERO Enterprise developed a comprehensive coordinated oversight program. The program is designed to streamline risk assessment, compliance monitoring, and enforcement for the registered entities that use, own, or operate assets in areas covering more than one Regional Entity’s territory.

Under the program, Regional Entities coordinate their oversight responsibilities over multi-region registered entities (MRREs) by designating one or more Lead Regional Entities (LREs) to each MRRE or a group of MRREs. The LRE is selected based on reliability considerations and the registered entity’s operational characteristics. The selected LRE works collaboratively with the remaining Regional Entities, known as Affected Regional Entities (AREs), and informs NERC of activities as appropriate.

The program has undergone several stages of gradual implementation and is now in its full implementation phase. In Q3 2015, the participation level increased to 152 registered entities, over twofold from Q2. Figure 20 represents the distribution of 152 MRREs by Regional Entity, and Figure 21 represents the distribution of MRREs by registered function. The registered entities that opted to join the program are registered for various reliability functions in multiple regions.

The ERO Enterprise has selected the LREs for each participating MRRE group, and the LREs and AREs have already signed memorandums of understanding outlining their respective responsibilities. At this time, the ERO Enterprise is engaging in outreach activities to make the details of the program available to all registered entities.\(^\text{12}\)

\(^{12}\) See Coordinated Oversight of Multi-Region Registered Entities Program Development and Implementation.

![Figure 20: Number of MRRE NCRs in Each Lead Regional Entity](image-url)
Each line represents the number of instances of reliability functions across the ERO Enterprise for registered entities in the MRRE program.

**Figure 21: Registered Entities from All Reliability Functions Join Coordinated Oversight**

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13 Each line represents the number of instances of reliability functions across the ERO Enterprise for registered entities in the MRRE program.
Noncompliance Processing Metrics

Processing Metrics and Trends for Q3 2015

The ERO Enterprise continues to monitor several measures that relate to efficiency in processing noncompliance. Currently, the efficiency-related metrics reflect the state of the Regional Entities’ inventories and indicate that the ERO Enterprise has reached a steady processing state. The caseload index indicates that instances of noncompliance continue to be processed in a timely manner and even more efficiently compared to Q1 2015. For Q3 2015, the NERC-only caseload index slightly increased to 0.5 from the previous quarter’s 0.2. In Q3 2015, the ERO Enterprise caseload index initially dropped below the threshold of 8 but between August and September of 2015, increased to slightly above the threshold with 8.3. The increase in the overall caseload index is largely due to several Full NOPs scheduled for filing at the end of October 2015.

![Figure 22: ERO Enterprise Caseload Index](image)

<table>
<thead>
<tr>
<th>Average Regional Entity Caseload Index</th>
<th>NERC Caseload Index</th>
<th>ERO Enterprise Caseload Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8</td>
<td>0.5</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Table 3: ERO Enterprise Caseload Index Q3 2015
**ERO Enterprise’s Pre-2014 Caseload**

Violation Processing On Target to Reach Threshold in 2015

The ERO Enterprise monitors several measures that relate to the processing of open violations from prior years. In Q3 2015, the non-federal entity pre-2014 noncompliance inventory continued to decline, dropping to less than one-third of the starting number from January 2015.

![Non-federal Pre-2014 Noncompliance Left in Inventory](image)

**Figure 23: Non-federal Pre-2014 Noncompliance in Inventory Continues to Decline**

The inventory for instances of noncompliance related to federal entities is also declining mainly because Regional Entities are currently processing these cases, which were on hold for several years. In Q3, the federal entity noncompliance inventory dropped to 254 primarily through the use of Compliance Exceptions and FFTs.
Figure 24: Federal Pre-2014 Noncompliance in Inventory Steadily Declining
Average Age of Noncompliance in the ERO Enterprise by Month

The average age of noncompliance continues to fluctuate but remains well below the threshold.

**Figure 25: Average Age of Noncompliance in ERO Enterprise's Inventory**

*Excludes violations that are held by appeal, a regulator, or a court*

Since all Regional Entities began applying the Compliance Exception and FFT disposition tracks to qualifying minimal and moderate risk violations, the average processing time has declined. As shown in Figure 26 below, 61% of the inventory of noncompliance for the ERO Enterprise is less than one year old, and only 9% is over two years old.
Third Quarter Noncompliance Processing Trends
The trends associated with serious or substantial, moderate, and minimal risk noncompliance resolved in Q3 2015, as shown in charts below, are consistent with prior reporting periods.
The serious or substantial risk violations disposed in Q3 2015 were included in two Full Notices of Penalty filed with FERC. The largest Settlement Agreement covering 102 violations of CIP Reliability Standards was filed in August 2015. These violations primarily began before 2012 and the Regional Entity determined that, when aggregated, the violations posed a serious or substantial risk to the BPS. The second Settlement Agreement was filed in July 2015 that included one serious or substantial risk non-CIP violation.

**Figure 28: Top Moderate Risk CIP Noncompliance Disposed of in Q3 2015**

The most violated moderate risk CIP Reliability Standards disposed in Q3 2015 remain similar to those from the previous quarter.

**Figure 29: Top Moderate Risk O&P Noncompliance Disposed of in Q3 2015**
Figures 29 and 30 show that PRC-005 is one of the most commonly violated standards involving moderate risk, in addition to being one of the most frequently violated for minimal risk violations.

![Most Violated O&P Standards with Minimal Risk - Q3 2015](image)

**Figure 30: Top O&P Minimal Risk Noncompliance Disposed of in Q3 2015**

PRC-005 R2 continues to be the most violated O&P Reliability Standard for minimal risk violations. While PRC-005 is one of the top ten most violated Reliability Standards filed since 2012,\(^{14}\) PRC-005-2(i), which became effective on May 29, 2015, provides additional information on how to establish a technical basis for initial and continued use of a performance-based, protection-system, maintenance program. The new version of the Standard should help to reduce the frequency of noncompliance.

\(^{14}\) PRC-005 instances of noncompliance were determined to pose a minimal risk in about 81% of the cases processed since 2012.
Additional information regarding all noncompliance disposed of by the ERO Enterprise is found on the NERC website. That includes searchable lists of all NOPs, SNOPs, and FFTs, as well as a searchable list of Compliance Exceptions.
**Update on 2015 Enforcement Oversight Activities and Results**

**Find, Fix, Track, and Report Process Review**
On September 18, 2015, NERC Enforcement filed its annual report on the FFT Program.\(^{15}\) During the first quarter of 2015, NERC and FERC jointly performed the annual sampling and process review of the Regional Entities’ FFT programs. The purpose of the review was to gather information on the implementation and effectiveness of the FFT program across all eight Regional Entities.

NERC and FERC’s 2015 review involved a coordinated sample of 100 processed FFTs for the period of October 2013 through September 2014. NERC’s and FERC’s review of the record included evaluation of the methods used by the Regional Entities to process Possible Violations as FFTs. NERC and FERC reviewed Regional Entity internal documents, including enforcement process diagrams, procedure manuals, step-by-step internal processes, checklists, and FFT Notice Letters.

Of the 100 FFTs reviewed, NERC and FERC did not identify any noncompliance that was inappropriate for FFT treatment. The results of the review indicate that the program remains successful and continues to be properly implemented.

**Upcoming Reviews**
NERC is conducting reviews on dismissals and the triage process. A combined review of Compliance Exceptions and FFTs will begin, in coordination with FERC, in Q4 of 2015. Review of the self-logging program will be conducted in 2016 to encompass activities performed under the current version of the process document.\(^{16}\)

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