

State of Florida



Public Service Commission
CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

-M-E-M-O-R-A-N-D-U-M-

DATE: July 17, 2014
TO: Carlotta S. Stauffer, Commission Clerk, Office of Commission Clerk
FROM: Clayton Lewis, US Engineering Specialist, Division of Engineering *CKL*
RE: DN 140122-EU - Petition to modify transmission structure inspection cycle, by
Tampa Electric Company.

Please file the attached e-mail and North American Electric Reliability Corporation documents in the correspondence side of the above mentioned docket file.

Thank you.

Compliance Application Notice

Compliance Application: FAC-008 and FAC-009

Posted: January 7, 2011

Primary Interest Groups

Transmission Owners
Generation Owners

Issue: Constructed facilities not matching a registered entity's design specifications

NERC Compliance received a request for clarification regarding whether registered entities should self-report a violation of either FAC-008-1 R1 or FAC-009-1 R1 when constructed Facilities do not match a registered entity's design specifications.

Reliability Objective

To ensure that a registered entity's Facility Ratings are based on actual field conditions and that a registered entity's Facilities are therefore operated in accordance with their actual capability.

Background

On October 7, 2010, NERC issued the *Recommendation to Industry: Consideration of Actual Field Conditions in Determination of Facility Ratings* (Recommendation) that identified a reliability concern due to Facilities in the field not matching a registered entity's design specifications. This Recommendation contained a call to action for industry with key dates, which were revised on November 29 as follows:

- October 20, 2010 – acknowledge receipt of Recommendation
- October 28, 2010 – attend Webinar (optional)
- November 29, 2010 – attend second Webinar (optional)
- January 18, 2011– assess impact of the alert and provide an action plan, as required, to NERC, including any extension requests for completing assessments (originally December 15, 2010)
- Complete assessments - Identify all discrepancies between the design and actual field conditions that are outside the registered entity's design tolerances and report those discrepancies to NERC, applicable Reliability Coordinators, Transmission Operators, and Regional Entities by (originally April 7, 2011):
 1. **December 31, 2011 for High Priority Facilities**
 2. **December 31, 2012 for Medium Priority Facilities**
 3. **December 31, 2013 for Lowest Priority Facilities**

Page 1 of 5

Compliance Application: FAC-008 and FAC-009

- Remediation to correct all issues identified during the assessment should occur as quickly as practical but within one year of identification OR obtain approval from NERC to extend deadline

In addressing this important reliability Recommendation, registered entities may discover operational Facilities with discrepancies between design specifications used for the development of ratings and actual field conditions that are outside the entity's design tolerances. While the importance of correcting these discrepancies within the above dates cannot be overstated, any such discrepancy is not necessarily a violation of the Reliability Standards.

Nevertheless, such a discrepancy may contribute to a possible violation of FAC-008-1 R1 or FAC-009-1 R1 or R2 based on the facts and circumstances specific to each instance, as described below. NERC encourages each registered entity to closely examine its Facilities Rating Methodology (FRM) required by FAC-008-1 R1 and the application of its FRM as required by FAC-009 R1 and R2 to determine if it is in compliance. Where the registered entity makes a determination that it is not compliant, the entity should self report to the appropriate Regional Entity.

Compliance Application

FAC-008

FAC-008-1 requires a registered entity to have a documented FRM for developing Facility Ratings of its solely and jointly owned Facilities. The methodology is to include consideration of the following:

- R1.3.1. Ratings provided by equipment manufacturers.
- R1.3.2. Design criteria (*e.g.*, including applicable references to industry Rating practices such as manufacturer's warranty, IEEE, ANSI or other standards).
- R1.3.3. Ambient conditions.
- R1.3.4. Operating limitations.
- R1.3.5. Other assumptions.

Compliance Application: FAC-008 and FAC-009

Where an entity's FRM considered equipment manufacturer's provided ratings (R1.3.1), design criteria (R1.3.2), ambient conditions (R1.3.3), operating limitations (R1.3.4) and other assumptions (R1.3.5), the registered entity would be in compliance with FAC-008-1 R1.

FAC-009 R1

FAC-009-1 R1 requires each Transmission Owner and Generator Owner to establish Facility Ratings for its solely and jointly owned Facilities that are consistent with the associated FRM.

In order to be compliant with FAC-009-1 R1, a registered entity's Facility Ratings must be established pursuant to its FRM required by FAC-008-1 R1.

In order to determine whether a registered entity's Facility Ratings were established pursuant to its FRM, a registered entity should first evaluate whether its FRM addresses design criteria for Transmission Facilities, including clearances and, if so, whether the design criteria and clearances that are included are:

- 1) the actual physical application of the design criteria in the field for individual Facilities and/or actual clearances for individual Facilities; ***or***
- 2) stated broadly as general policy requirements.

Where an entity's FRM requires the inclusion of the actual clearances or the physical applications of design criteria in the field for individual Facilities in the calculation of the Facility's Rating (#1):

- If the entity's calculated Facility Ratings do not reflect the FRM requirement, then the registered entity would possibly be non-compliant with FAC-009 R1.
- Additionally, where an entity's Facility Ratings include the FRM requirement, the Facilities must be constructed to the actual clearances and/or design criteria specified in the entity's FRM. If the Facilities in the field are not constructed to design specifications and/or within acceptable tolerances for clearances, or the registered entity would possibly be non-compliant with FAC-009 R1.

Compliance Application: FAC-008 and FAC-009

Where clearances or design criteria are stated broadly as general policy requirements, actual field construction would not be considered in determining noncompliance with FAC-009 R1.

FAC-009 R2

FAC-009-1 R2 requires each Transmission Owner and Generator Owner to provide Facility Ratings for its solely and jointly owned Facilities that are existing Facilities, new Facilities, modifications to existing Facilities and re-ratings of existing Facilities to its associated Reliability Coordinator(s), Planning Authority(ies), Transmission Planner(s), and Transmission Operator(s) as scheduled by such requesting entities.

For compliance with FAC-009-1 R2, an entity that provides its current Facility Ratings as scheduled by the requesting entities would be in compliance with the requirement. As R2 includes “new Facilities, modifications to existing Facilities and re-ratings of existing Facilities,” the standard contemplates that transmission owners update their ratings to address changing field conditions and would thus be positioned for compliance with the standard.

Possible Compliance Actions

The first order of business under FAC-009 is for registered entities to operate reliably within the requirements and or assumptions contained in the registered entity’s FRM.

In contrast, the Recommendation addresses whether Facilities were constructed pursuant to a registered entity’s design specifications and required clearances.

Registered entities that included the actual physical application of its design criteria in the field for individual Facilities and/or actual clearances for individual Facilities in its FRM have exhibited an attention to detail and a concern for reliability. In the event a registered entity discovers a noncompliance as a result of this Recommendation, the registered entity’s continuation of its robust FRM; timely and thorough evaluations of its system using accurate measurement methods and technologies; timely self-disclosure of any compliance gaps; prompt corrective actions and consistent completion of its Mitigation Plan milestones will be strong considerations in the determination of a zero-dollar penalty.

Compliance Application: FAC-008 and FAC-009

Further, NERC and Regional Entity staff will exercise enforcement discretion to hold the processing of all possible violations reported as a result of the assessments until the entity's assessments are complete, as long as the registered entity reporting such possible violations is proceeding in good faith to complete the assessments.

Please note that in the unlikely circumstance that an actual event occurs in which NERC or the Regional Entity determines a discrepancy between actual conditions and facility ratings was a cause or contributing factor, then NERC or the Regional Entity would proceed to investigate that case directly and not wait. Similarly, any possible violations of FAC-003 should continue to be reported immediately and may be processed separately and immediately by the Regional Entity or NERC.

Prior Related Communications

- *FAC-008-1 RSAW November 2, 2009 – Facility Ratings Methodology
- *FAC-009-1 RSAW November 2, 2009 – Establish and Communicate Facility Ratings
- *Order 693, ¶ 736 - 771, March 16, 2007

For more information please contact:

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This document is designed to convey compliance guidance from NERC's various activities, including basis for current ERO enforcement determinations. It does not establish new requirements under NERC's Reliability Standards or modify the requirements in any existing NERC Reliability Standard, but is intended to convey transparency for industry. Compliance will continue to be assessed based on language in the NERC Reliability Standards as they may be amended from time to time. Implementation of this compliance application notice is not a substitute for compliance with requirements in NERC's Reliability Standards.



NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

November 30, 2010

Industry CEOs

Ladies and Gentlemen:

On October 7, 2010 NERC issued the *Recommendation to Industry: Consideration of Actual Field Conditions in Determination of Facility Ratings* (Recommendation), requiring selected entities to submit plans by December 15, 2010, to assess their transmission facilities and mitigate any discrepancies found between actual field conditions and design specifications. Since NERC issued this alert you have shared your many concerns regarding the potential impacts and impracticality of implementing all aspects of this alert within the specified timeline. I have heard you; let me share my thoughts on the importance of this activity and clarify expectations for responding to the alert.

The Electric Reliability Organization (ERO) model contemplates that, from time to time, possible risks that could affect electric reliability may be identified such that NERC will need to identify certain actions necessary to mitigate these risks. This is one such risk. As a result of detailed analysis of one entity's compliance with reliability standard FAC-003 (Transmission Vegetation Management Program), the entity performed a system-wide assessment that identified a number of discrepancies in facility ratings caused by differences between field conditions versus design specifications. Additional discussions with other entities who have undertaken assessments similar to those contemplated by the NERC Recommendation have confirmed these findings — that numerous discrepancies from design specifications are being found, which have the potential to reduce the facilities' calculated ratings. As a result, under my leadership and direction, NERC issued the Recommendation to proactively identify the scope of the risk, and promote corrective actions, both in the interim and in the long term to address the concerns identified.

I understand and agree that the task before us is a challenging one. But importantly, it is a task that places reliability as the foremost consideration and has widespread support within the industry. While the current condition was created over many years; I expect our response will be proactive and measured in a manner that maximizes reliability. The goal is not to address this issue as a temporary correction. Rather, it is a strategy that creates a systematic and sustainable path for the future to effectively identify and address clearance issues in bulk power system rights-of-way, as needed to ensure that line ratings are accurate and reflective of actual conditions.

In consideration of the complexity of this task, I am modifying the response date for submittal of plans from December 15, 2010 to January 18, 2011. Furthermore, I am modifying the expected timeline for identification of facilities for which actual conditions may impact line ratings. First,

reporting of identified discrepancies applies only to those facilities within the scope of the NERC-defined Bulk Electric System for which facility ratings are determined to be in error or inconsistent with actual conditions. Discrepancies for the highest priority facilities with regard to bulk power system reliability should be identified and reported to your applicable Regional Entity no later than December 31, 2011. Medium priority facilities should be assessed and discrepancies reported no later than December 31, 2012, and lowest priority facilities no later than December 31, 2013. Entities requiring longer than three years to complete their initial assessments should provide justification within their plans submitted by the January 18, 2011 date. I aim to avoid any action by entities focused on expediency or to avoid perceived compliance risk that undermines the quality of the review and the creation of a systematic and sustainable path forward.

In general, your plan for performing the assessments should contemplate the following categories in order of importance:

- Transmission facilities that are components of an identified IROL or key transfer paths
- Transmission facilities identified as critical to reliability
- Facilities in higher voltage classes before lower voltage classes

Additional prioritization should be considered based on the most heavily loaded lines within each category, spans with known transmission underbuilds and crossing situations, other spans that may be suspect, and spans for which access to rights-of-way has been previously requested by external parties. Whereas entities have expressed considerable concern regarding the availability of certain technologies (e.g., LIDAR) to complete these assessments, NERC is not prescribing how you should assess your system. Your individual circumstances will drive how to best achieve an accurate portrayal of in-field conditions relative to design specifications and facility ratings and should be reflected in your plans. If concerns regarding the availability of LIDAR services exist, then your plan should identify alternatives (e.g., conductor monitoring, field visits, etc.)

Each entity reporting facilities with rating discrepancies in accordance with the revised schedule outlined above should include in their report an expected timeline for remediation to correct the conditions in the right-of-way or modification of the facility ratings. Remediation should be completed as quickly as practical, consistent with maintaining bulk power system reliability. Any remediation requiring longer than one year from the date the discrepancy is identified should be documented in a mitigation plan submitted to the Regional Entity for approval.

Finally, I recognize that the industry has raised significant questions about the implications of this Recommendation for registered entities' compliance with the reliability standards. It is our view that a difference between design criteria and actual field conditions is not a *per se* violation of the reliability standards. Whether such a difference is determined to be a possible violation of any of the reliability standards will depend on the facts of any given case. To provide clarity on this point, I instructed NERC staff to prepare the attached draft Compliance Application Notice (CAN) to explain how the conditions addressed in the Recommendation interrelate with compliance with the reliability standards.

As noted above, I believe it is important the industry approach its response to the Recommendation by putting the interests of reliability of the bulk power system ahead of concerns about discovering a possible non-compliance and any potential penalty that may ensue. To that end, and per our sanctions guidelines, NERC and Regional Entity enforcement staff will take account of thorough

assessments completed in response to this Recommendation in accordance with the revised timelines outlines above, including self-disclosure of any compliance gaps and voluntary corrective action. Such activities will be considered as significantly mitigating factors for any possible violation identified as a result of the assessments.

To further ensure compliance concerns do not supersede the desired activity under the Recommendation, I have directed NERC and Regional Entity staff to exercise their enforcement discretion to hold the processing of all possible violations reported as a result of the assessments until the entity's assessments are complete, as long as the registered entity reporting such possible violations is proceeding in good faith to complete the assessments in accordance with the revised timelines. This will allow registered entities to allocate their resources to the tasks called for under the Recommendation, and will ensure the record for any possible violations is complete, including evidence of the full scope of all creditable voluntary corrective actions taken by a registered entity in response to the Recommendation.

In the unlikely circumstance an actual event occurs in which NERC or the Regional Entity determines a discrepancy between actual field conditions and design specifications was a cause or contributing factor, then NERC or the Regional Entity would proceed to investigate that case directly without delay. Similarly, any possible violations of FAC-003 should continue to be reported without delay and may be processed separately and immediately by the Regional Entity or NERC.

I am confident that the effective handling of this significant issue will demonstrate our industry's commitment to reliability in a forthright manner. Proactive plans and assessments, coupled with rigorous follow-up throughout the term of mitigation timelines are imperative. This, in turn, should culminate in greater confidence on the part of the applicable governmental authorities of our commitment to reliability.

Sincerely,

A handwritten signature in black ink that reads "Gerald W. Cauley". The signature is written in a cursive style with a large, stylized initial "G".

Gerald W. Cauley
President and CEO

February 14, 2014

Mr. Keith O'Neal
Director, Division of Reliability Standards
Office of Electric Reliability
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: *Recommendation to Industry: Consideration of Actual Field Conditions in Determination of Facility Ratings* issued October 7, 2010 and updated November 30, 2010

Dear Mr. O'Neal:

This is the North American Electric Reliability Corporation's ("NERC") seventh and final summary report following the issuance of the "Facility Ratings Recommendation" ("Recommendation") on October 7, 2010,¹ which was updated November 30, 2010.² NERC is submitting this report to the Federal Energy Regulatory Commission ("FERC" or the "Commission") pursuant to Rule 810 of the NERC Rules of Procedure. This report provides a final update on the progress that Transmission and Generator Owners have made toward completing remediation for discrepancies discovered on their high- and medium-priority transmission facilities, and efforts to complete assessments on their low-priority transmission facilities.

Background

In 2010, NERC and the Regional Entities became aware of discrepancies between the design and actual field conditions of transmission facilities.³ NERC and the Regional Entities thought these discrepancies were significant and widespread and that they could result in incorrect line ratings.

On October 7, 2010, NERC distributed the Recommendation as a Level 2 Alert. NERC recommended that Transmission and Generator Owners (also referred to as Transmission Facility Owners) of Bulk Electric System transmission facilities review their current Facility Ratings Methodology for solely and jointly owned transmission facilities to verify that the methodology used to determine facility ratings was based on actual field conditions. Initially, NERC requested that Transmission Facility

¹ *Recommendation to Industry Consideration of Actual Field Conditions in Determination of Facility Ratings* (October 7, 2010) http://www.nerc.com/fileUploads/File/Events%20Analysis/Ratings_Recommendation_to_Industry_20100929Final.pdf

² *Recommendation to Industry Consideration of Actual Field Conditions in Determination of Facility Ratings* (November 30, 2010) <http://www.nerc.com/fileUploads/File/Events%20Analysis/Ratings%20Recommendation%20to%20Industry%20FINAL-REVISED.pdf>

³ The term "transmission facilities" includes generator tie lines, radial lines, and interconnection facilities that fall under the scope of the current NERC-approved definition of Bulk Electric System.

Owners: (1) issue their plans for assessing their facilities by December 15, 2010; (2) report any discrepancies that resulted from the assessment by April 7, 2011; and (3) mitigate issues by October 2012, unless otherwise extended by NERC and the Regional Entities. Facility owners were also expected to answer a series of survey questions that accompanied the Recommendation. In order to coordinate any changes in facility ratings with the appropriate operating and planning entities, the Recommendation was also distributed to Reliability Coordinators, Transmission Operators, Generator Operators, Transmission Planners, and Planning Authorities.

NERC hosted an industry webinar on October 28, 2010 to discuss the expectations of the Recommendation for the Transmission Facility Owners. NERC then engaged in discussions with Transmission Facility Owners responsible for responding to the Recommendation at the November 2010 NERC Member Representatives Committee and Board of Trustees meetings. As a result of the concerns expressed, NERC issued a revised Recommendation on November 30, 2010, which provided applicable Transmission Facility Owners an additional month (until January 18, 2011) to submit their assessment plans using a modified implementation strategy. The revised Recommendation requested that entities submit their assessment plans using a prioritized approach: high-priority facilities (as determined by the Transmission Facility Owner) assessed by the end of 2011, medium-priority facilities by the end of 2012, and the remaining facilities by the end of 2013. In addition, if Transmission Facility Owners identify discrepancies that result in potentially incorrect facility ratings, they have one year from the date the issue is identified and confirmed to mitigate the issue, unless an extension is granted.

To support this modification, NERC conducted a second industry webinar on November 29, 2010, and NERC's President and CEO, Gerry Cauley, issued a letter outlining revised expectations. NERC also provided a compliance application notice and published a question and answer document to support the Recommendation effort. This guidance was intended to focus on reliability while providing an avenue for industry to emphasize associated compliance activities in a positive, proactive manner.⁴

Of the 1,122 applicable NERC registered entities targeted to receive the Recommendation, approximately 98 percent submitted a response that was approved by a company officer or designee on or around the January 18, 2011 submission date. NERC, in conjunction with the Regional Entities, reviewed the submitted responses and accompanying assessment plans. NERC and the Regional Entities worked with the Transmission Facility Owners over the next three months to provide guidance on the expectations of the Recommendation. To assist in this effort, NERC developed the Assessment Plan Review Criteria and posted it onto NERC's Facility Ratings Alert webpage on May 11, 2011. NERC also conducted a third industry webinar on May 12, 2011, to discuss the Assessment Plan Review Criteria and to answer questions about the Recommendation. NERC developed responses to each of the questions posed during the webinar and posted the responses on the Facility Ratings Alert webpage on June 14, 2011.

To date, NERC has submitted six summary reports to the Commission. A summary of each report and the information for this seventh and final report follow.

⁴ These documents are available on the "Facility Ratings Alert" page on the NERC website, *available at* <http://www.nerc.com/pa/rrm/bpsa/Pages/Facility-Ratings-Alert.aspx>.

Past Reports to the Commission

1. February 17, 2011 Report

NERC submitted its initial Facility Ratings Recommendation summary report to the Commission on February 17, 2011. The information in that update indicated that 1,122 registered entities were targeted and received the Recommendation; 1,102 registered entities submitted a response approved by a company officer. Of those responses, 930 were submitted by Transmission Owners, Generator Owners, or both. Of the Transmission Facility Owners who responded to the alert, 228 (nearly 25 percent) reported that they had already addressed the Recommendation, and 409 (44 percent) had submitted their proposed plans to address the Recommendation. In the remaining 293 responses, mostly from Generator Owners, entities reported that the Recommendation was not applicable to their facilities.

2. August 12, 2011 Report on High-Priority Transmission Facilities

NERC submitted its second summary report to the Commission on August 12, 2011. After the January 18, 2011 initial responses from the Transmission Facility Owners, NERC encouraged the owners to review the Assessment Plan Review Criteria for guidance on how to implement the Recommendation. In Section C of the Review Criteria, owners were requested to provide their first high-priority assessment update to their Regional Entities by July 15, 2011. By that date, 202 Transmission Facility Owners reported to their Regional Entities and NERC that they had completed high-priority assessments on 1,557 circuits and indicated there were 248 discrepancies discovered. Of the discrepancies reported, 96 were for inadequate clearances between the transmission line and under-built distribution lines. Transmission Facility Owners also indicated that approximately 169 of the discrepancies identified had already been mitigated. NERC conducted an industry webinar on September 22, 2011 to provide stakeholders with information from the first high-priority assessment reporting period.

3. March 2, 2012 Report on High-Priority Transmission Facilities

NERC submitted its third summary report to the Commission on March 2, 2012. This report provided information on the progress that Transmission Facility Owners made toward completing their high-priority assessment plans through December 31, 2011. NERC and the Regional Entities received responses from 202 Transmission Facility Owners. The report indicated that 197 of the Transmission Facility Owners had performed assessments covering 4,271 circuits and 69,623 miles of transmission line. However, 20 of these 202 Transmission Facility Owners requested an extension. Reasons for requesting extensions included damage received and repair required from Hurricane Irene in August 2011 (for Transmission Facility Owners in the Northeast), the high use of and limited number of Light Detection and Ranging / Power Line Systems - Computer Aided Design and Drafting (“LiDAR/PLS-CADD”)⁵ vendors, coordination with other entities, and insufficient manpower. By the end of 2011, Transmission Facility Owners reported 5,100 discrepancies and had completed 2,142 remediation plans. Registered entities began reporting multiple discrepancies on a single circuit during this report period. NERC conducted an industry webinar on March 20, 2012, to provide stakeholders with information from the second high-priority assessment reporting period.

⁵ The majority of Transmission Facility Owners utilized LiDAR/PLS-CADD technology in performing their assessments.

4. October 10, 2012 Report on High- and Medium-Priority Transmission Lines

NERC's fourth summary report, submitted to the Commission on October 10, 2012, provided both an update on the progress registered entities made toward completing remediation plans for discrepancies discovered on high-priority transmission facilities and on the completion of their assessment plans for the first of two updates on their "medium" priority transmission facilities. This first update on each registered entity's medium-priority transmission facilities was due by July 17, 2012.

With respect to high-priority assessments, Transmission Facility Owners, including those who had been granted extensions, reported they had completed their assessments. The Transmission Facility Owners discovered 7,966 high-priority discrepancies. Of those discrepancies reported, 3,968 have been mitigated. LiDAR/PLS-CADD technology, which was used in 58 percent of the high-priority assessments, was the primary choice of Transmission Facility Owners in performing their assessments.

The fourth report was also the first of two updates on each Transmission Facility Owner's medium-priority transmission lines due to the Regional Entities on July 17, 2012. NERC received assessment responses from 147 Transmission Facility Owners covering 46,275 miles and 2,215 medium-priority transmission circuits. From these assessments, 6,284 discrepancies were discovered. The most reported type of discrepancy for this update was inadequate clearance between the transmission line and the ground or structure underneath the line. Of the discrepancies reported in the July 17, 2012 submissions, 2,388 had already been mitigated.

NERC conducted an industry webinar on October 3, 2012 to provide stakeholders with updates on the high-priority remediation efforts and to provide information from the first medium-priority assessment reporting period.

5. March 20, 2013 Report on High- and Medium-Priority Transmission Lines

NERC's fifth summary report, submitted to the commission on March 20, 2013, provided an update on: 1) the progress registered entities made toward completing remediation plans for discrepancies discovered on high-priority transmission facilities; and 2) the completion of their assessment plans for the second update on their medium-priority transmission facilities.

With respect to high-priority assessments, all high-priority transmission facilities had been assessed as of the fifth summary report. For the 7,966 discrepancies that were discovered from the 76,125 miles of high-priority transmission lines, 718 circuits that contained discrepancies were mitigated. Transmission Facility Owners who provided high-priority remediation completion dates mostly reported that their high-priority circuit mitigations are expected to be complete by July 2013, with one exception involving required U.S. Bureau of Land Management approvals.

NERC and the Regional Entities received all the Transmission Facility Owners' medium-priority assessment responses by the requested January 15, 2013 report date. The responses indicated 14,993 discrepancies were discovered for 87,560 miles of medium-priority transmission lines on 6,284 circuits. Of those discrepancies, 73 percent were identified as inadequate clearance between the transmission line and the ground or structure underneath the line. Of the 14,993 discrepancies, 5,098 medium-

priority discrepancies (34 percent) had already been mitigated. Fifteen (15) Transmission Facility Owners had requested extensions for completing their medium-priority assessments. In the Northeast, the extensions were primarily related to repairs and state-required work from Hurricane Irene in August 2011 and the effects of Hurricane Sandy in October 2012. Other reasons cited by the Transmission Facility Owners include limited LiDAR/PLS-CADD vendors, budgeting constraints, coordination issues with other entities, and required federal permitting. Seventy percent of Transmission Facility Owners used LiDAR/PLS-CADD technology to perform their assessments. Of the total 101,473 medium-priority miles reported by the owners, 13,908 still require assessment.

6. August 14, 2013 Report on High-, Medium-, and Low-Priority Transmission Lines

NERC's sixth summary report, submitted to the commission on August 14, 2013, provided an update on: 1) the progress registered entities made toward completing remediation plans for discrepancies discovered on high- and medium-priority transmission facilities; and 2) the progress registered entities made toward completing their assessment plans for the first of two updates on their low-priority transmission facilities.

With respect to high-priority assessments, all high-priority transmission facilities had been assessed as of the fifth summary report. For the 7,966 discrepancies that were discovered from the 76,125 miles of high-priority transmission lines, 785 circuits that contained discrepancies were remediated. Twenty-two (22) registered entities had not completed remediation on their 156 identified high-priority transmission lines with a total of 1,577 discrepancies. Of that total, eight specific transmission lines, owned by two registered entities, accounted for 965 of the 1,577 discrepancies. An additional eight registered entities representing 40 high-priority transmission lines did not provide estimated completion dates or additional information. Taking into account facilities assessed with no discrepancies, 95.6 percent of the high-priority transmission lines had as-built field conditions consistent with their design.

With respect to medium-priority assessments, registered entities had completed assessments on 5,962 of 6,428 medium priority transmission facilities, or 93 percent of the total population. Responses indicated that 1,927 (32 percent) of those facilities contained a total of 16,862 discrepancies. Of the 1,927 medium-priority transmission lines with discrepancies, 1,087 lines (56 percent) had been fully remediated. Given that 4,035 medium-priority facilities were assessed without any discrepancies during the course of the Facility Ratings Alert project, 79.7 percent of the medium-priority transmission lines had as-built field conditions consistent with their design.

The sixth report presented initial information following the first of two updates on each Transmission Facility Owner's low-priority facilities. NERC received assessment responses from 71 percent of low-priority facility owners indicating that approximately 27 percent of their circuits had been assessed. LiDAR and PLS-CADD was the most common assessment method (54 percent), ground or structure clearance was the most common discrepancy (50 percent), and raising a transmission structure was the most common method of remediation (47 percent). More than one third of the low-priority facilities assessed with discrepancies had already been remediated at the time of the report, and remediation efforts had begun on another 58 percent of low-priority facilities.

Current Report on High-, Medium- and Low- Priority Transmission Lines

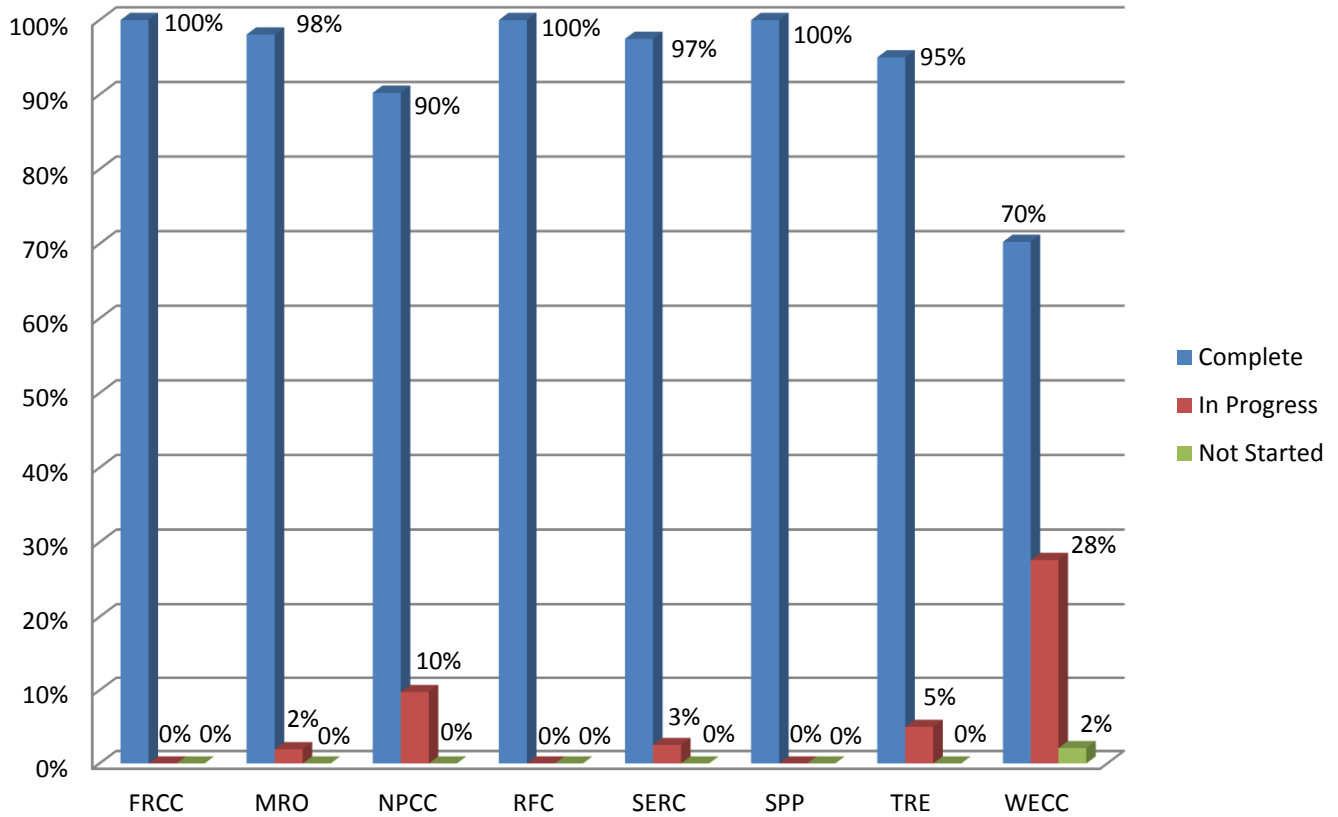
NERC's seventh and final summary report provides an update on the progress registered entities have made toward completing remediation for discrepancies discovered on their high- and medium-priority transmission facilities, and on the results of low-priority facility assessments. The second of the two low priority assessments, due on January 15, 2014, was completed by registered entities.

1. High-Priority Transmission Lines

All high-priority transmission facilities were assessed prior to NERC's fifth summary report submitted on March 19, 2013. That report summarized 7,966 discrepancies discovered during the assessment of 941 high-priority transmission lines comprising 76,125 circuit miles. Of the 941 high-priority transmission lines with discrepancies, 828 lines (88 percent) have been fully remediated. Given that 3,519 high-priority facilities have been assessed during the course of the Facility Ratings Alert project, 96.8 percent of the high-priority transmission lines have as-built field conditions consistent with their design.

Thirteen (13) registered entities have not completed remediation on their 113 identified high-priority transmission lines with a total of 1,426 identified discrepancies. Of that total, seven specific transmission lines, owned by two registered entities, account for 983 of the 1,426 discrepancies. Those two entities did not provide specific estimated completion dates for the high-priority remediation due to the complexity and interdependency of the outage scheduling required to complete remediation; despite the lack of a reported estimated date of completion, both entities made significant progress in remediating their high-priority deficiencies. An additional five registered entities representing 17 high-priority transmission lines did not provide estimated completion dates or information.

High-Priority: Remediation Status by Region (Based on Percent of Circuits Assessed with a Discrepancy)



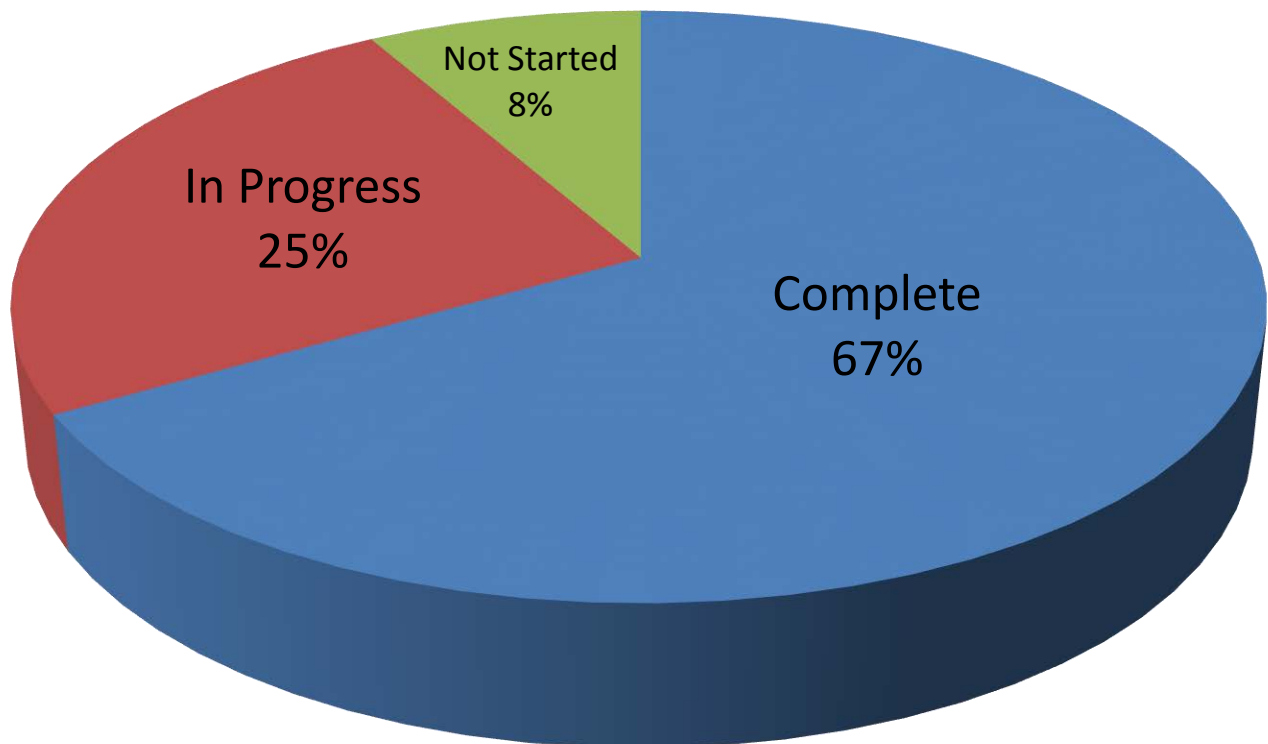
Region	FRCC	MRO	NPCC	RFC	SERC	SPP	TRE	WECC	Totals
Circuits Assessed	388	188	289	809	711	246	304	584	3519
Circuits with Discrepancy	90	103	82	132	119	62	20	333	941
Discrepancies	1140	961	568	913	444	350	77	3513	7966
Circuits Mitigated	90	101	74	132	116	62	19	234	828

2. Medium-Priority Transmission Lines

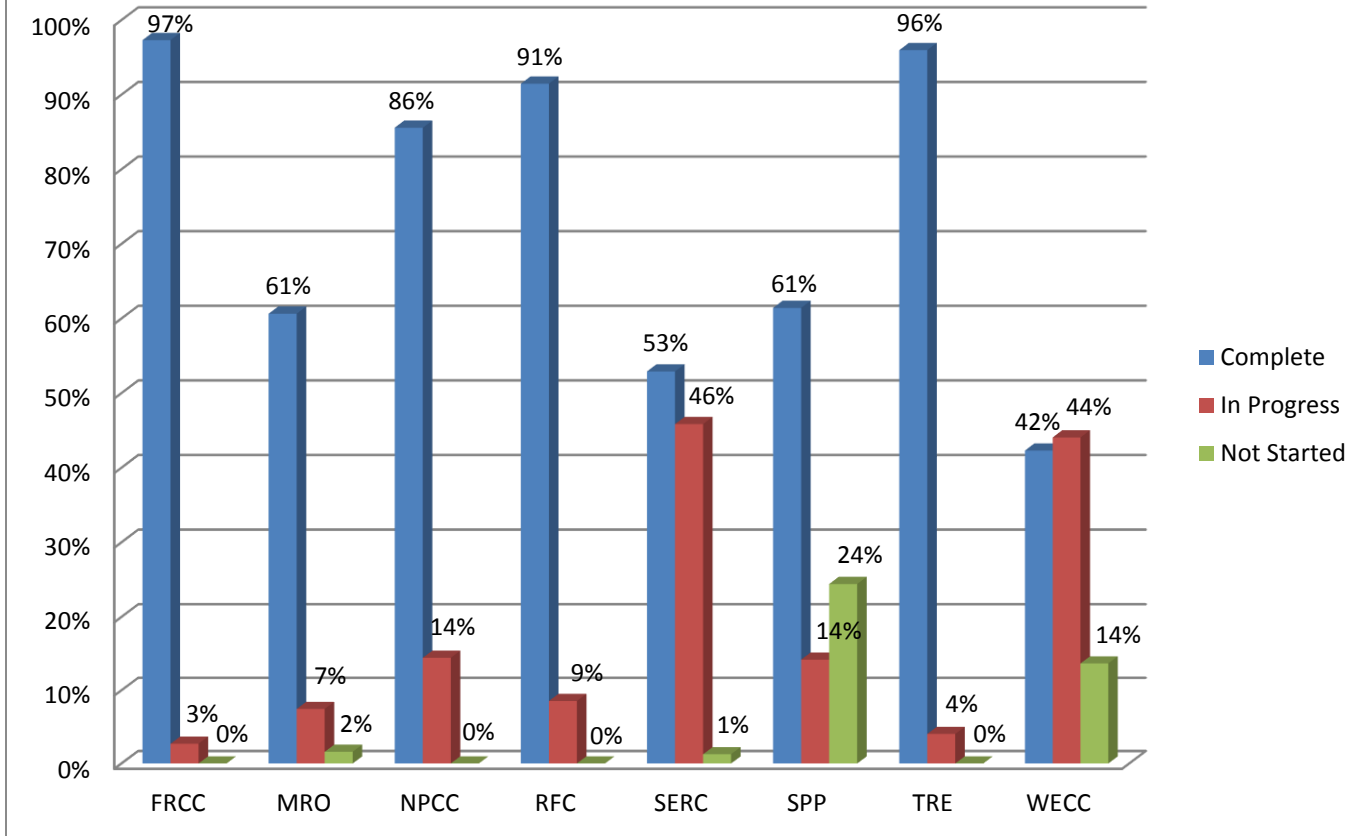
As of the date of this report, Transmission Facility Owners have completed assessments on all 6,515 medium-priority transmission facilities. This is an increase of 87 facilities identified added to the medium priority classification since the last report. The responses indicated that 2,268 (35 percent) of the assessed facilities contained a total of 21,612 discrepancies. Of the 2,268 medium-priority transmission lines with discrepancies, 1,524 lines (67 percent) have been fully remediated. Given that 4,229 medium-priority facilities have been assessed without any discrepancies during the course of the Facility Ratings Alert project, 88.3 percent of the medium-priority transmission lines have as-built field conditions consistent with their design.

Analysis of the medium-priority assessment and mitigation information provided by Transmission Facility Owners has been complicated by variability in reporting styles. Accurately aggregating these reports for presentation of Regional and NERC-wide metrics has required a significant amount of manual reconciliation. While follow-on analysis efforts may still update the precise aggregate totals of some of the current and previously reported metrics, the overall conclusions drawn from the analysis are not expected to change meaningfully.

Medium-Priority Facilities Remediation Status
(Based on Circuits Assessed with a Discrepancy)



Medium-Priority: Remediation Status by Region (Based on Percent of Circuits Assessed with a Discrepancy)



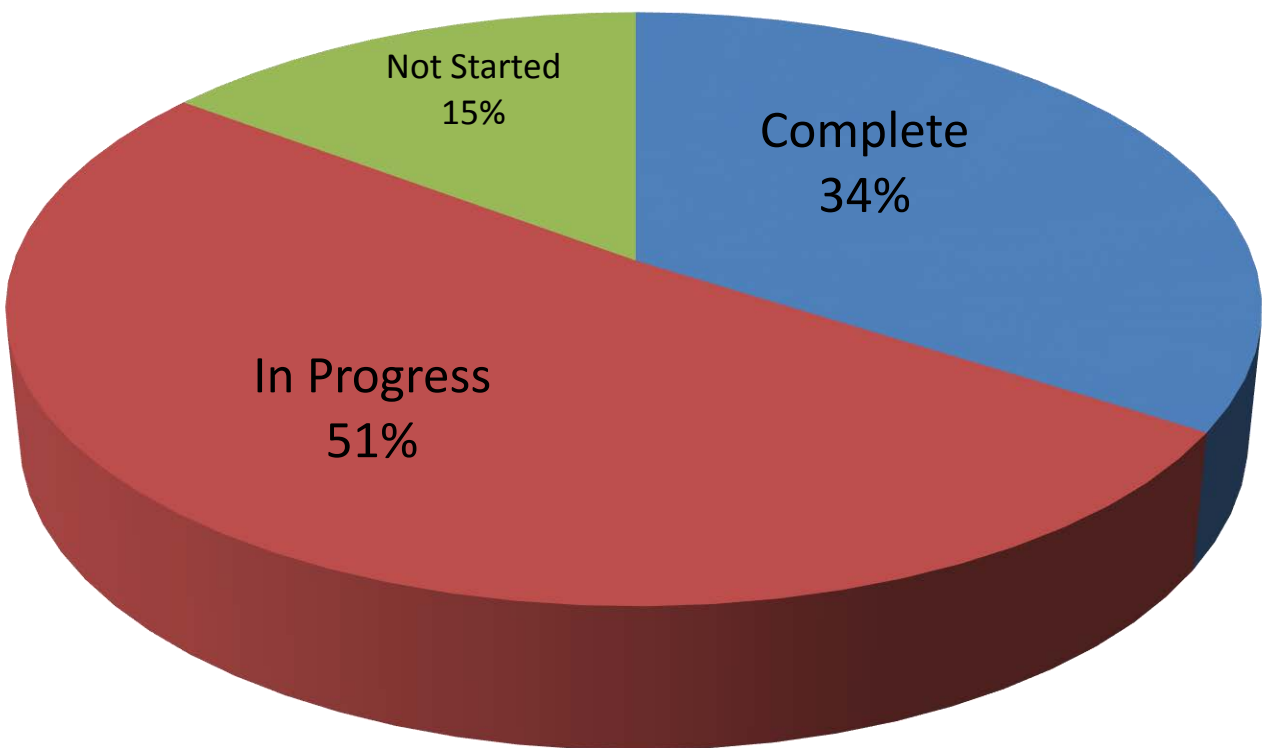
Region	FRCC	MRO	NPCC	RFC	SERC	SPP	TRE	WECC	Totals
Total Circuits	673	409	322	1064	1309	349	839	1550	6515
Circuits Assessed	673	409	322	1064	1309	349	839	1550	6515
Circuits with Discrepancy	297	188	97	375	397	127	124	681	2286
Discrepancies	2017	1567	1026	3269	1559	1963	291	9920	21612
Circuits Mitigated	289	114	83	343	210	78	119	288	1524

3. Low-Priority Transmission Lines

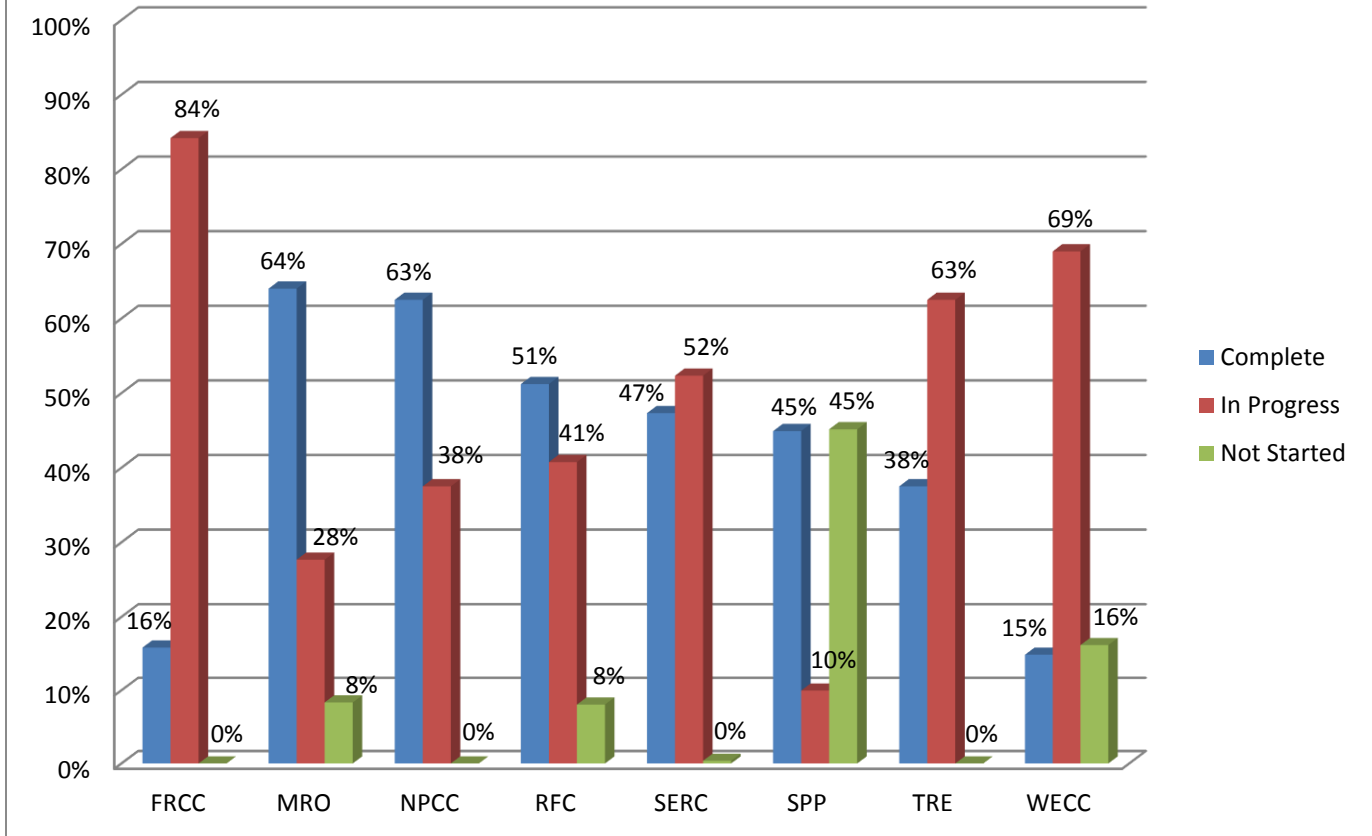
As of the date of this report, Transmission Facility Owners have completed assessments on 10,812 of 11,182 low-priority transmission facilities, or 97 percent of the total population. The responses indicated that 2,728 (24 percent) of the assessed facilities contained a total of 21,249 discrepancies. Of the 2,728 low-priority transmission lines with discrepancies, 931 lines (34 percent) have been fully remediated. Given that 8,084 low-priority facilities have been assessed without any discrepancies during the course of the Facility Ratings Alert project, 80.6 percent of the low-priority transmission lines have as-built field conditions consistent with their design.

Similar to the medium-priority facilities, variability in reporting styles for low-priority facilities has complicated the analysis. Accurately aggregating these reports for presentation of Regional and NERC-wide metrics has required a significant amount of manual reconciliation. While follow-on analysis efforts may still update the precise aggregate totals of some of the current and previously reported metrics, the overall conclusions drawn from the analysis are not expected to change significantly.

Low-Priority Facilities Remediation Status
(Based on Circuits Assessed with a Discrepancy)



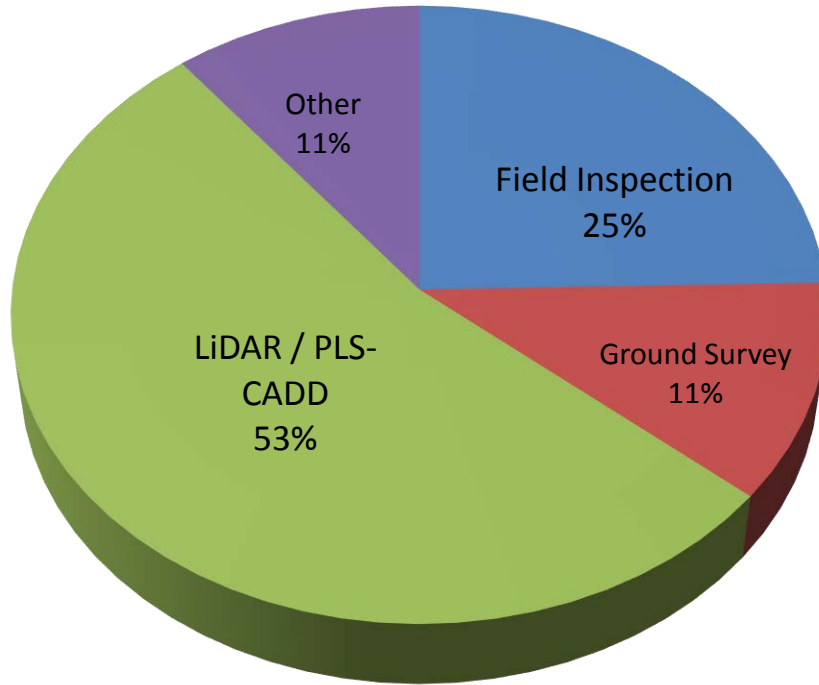
Low-Priority: Remediation Status by Region (Based on Percent of Circuits Assessed with a Discrepancy)



Region	FRCC	MRO	NPCC	RFC	SERC	SPP	TRE	WECC	Totals
Total Circuits	611	1073	72	2365	2879	1099	976	2107	11182
Circuits Assessed	611	1073	72	2193	2879	1099	778	2107	10812
Circuits with Discrepancy	278	300	16	373	279	412	80	990	2728
Discrepancies	2467	2365	91	2869	1066	3576	603	8212	21249
Circuits Mitigated	44	192	10	191	132	185	30	147	931

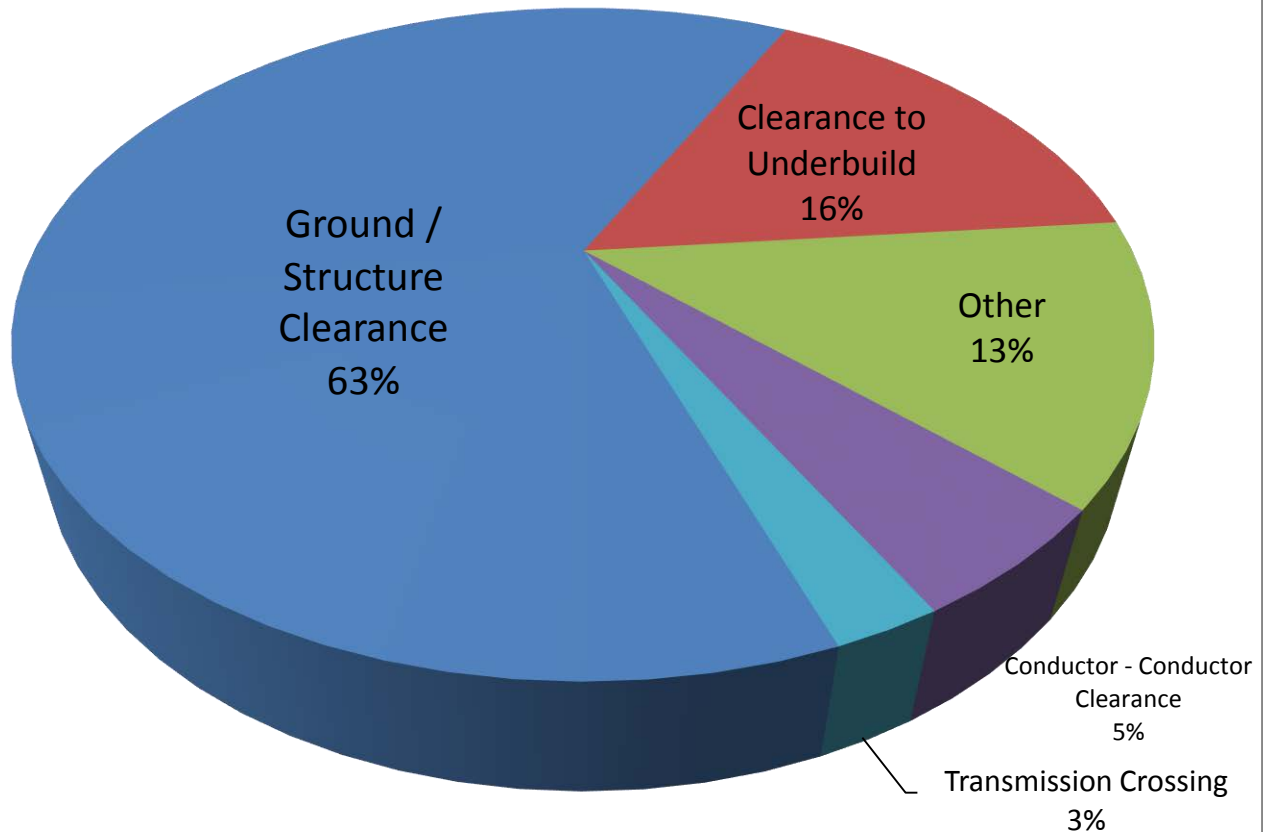
The following graphs provide collective information on the progress of low-priority assessments and remediation plans to date.

Low-Priority Facilities: Inspection Methods



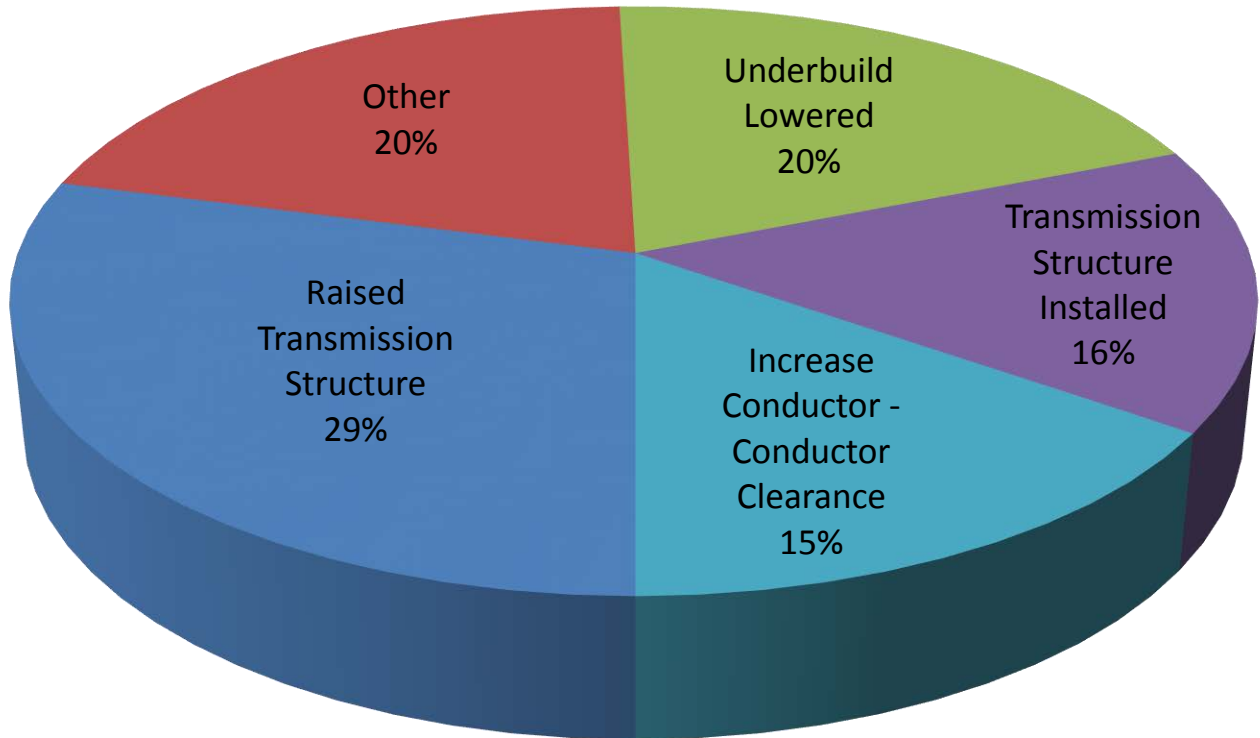
Consistent with the high- and medium-priority facility assessments, LiDAR/PLS-CADD technology has been the most common assessment method for low-priority facilities.

Low-Priority Facilities: Top 5 Discrepancy Categories



Nearly two thirds of all low-priority facility discrepancies reported were due to less than as-designed clearance between transmission line conductors and the ground or other structures. This category includes the earth, parts of the transmission structure supporting the conductors and other non-utility structures such as buildings or billboards. Clearance to underbuilt facilities was the second most common discrepancy at 31 percent. Other types of discrepancies were less common.

Low-Priority Facilities: Top 5 Remediation Categories

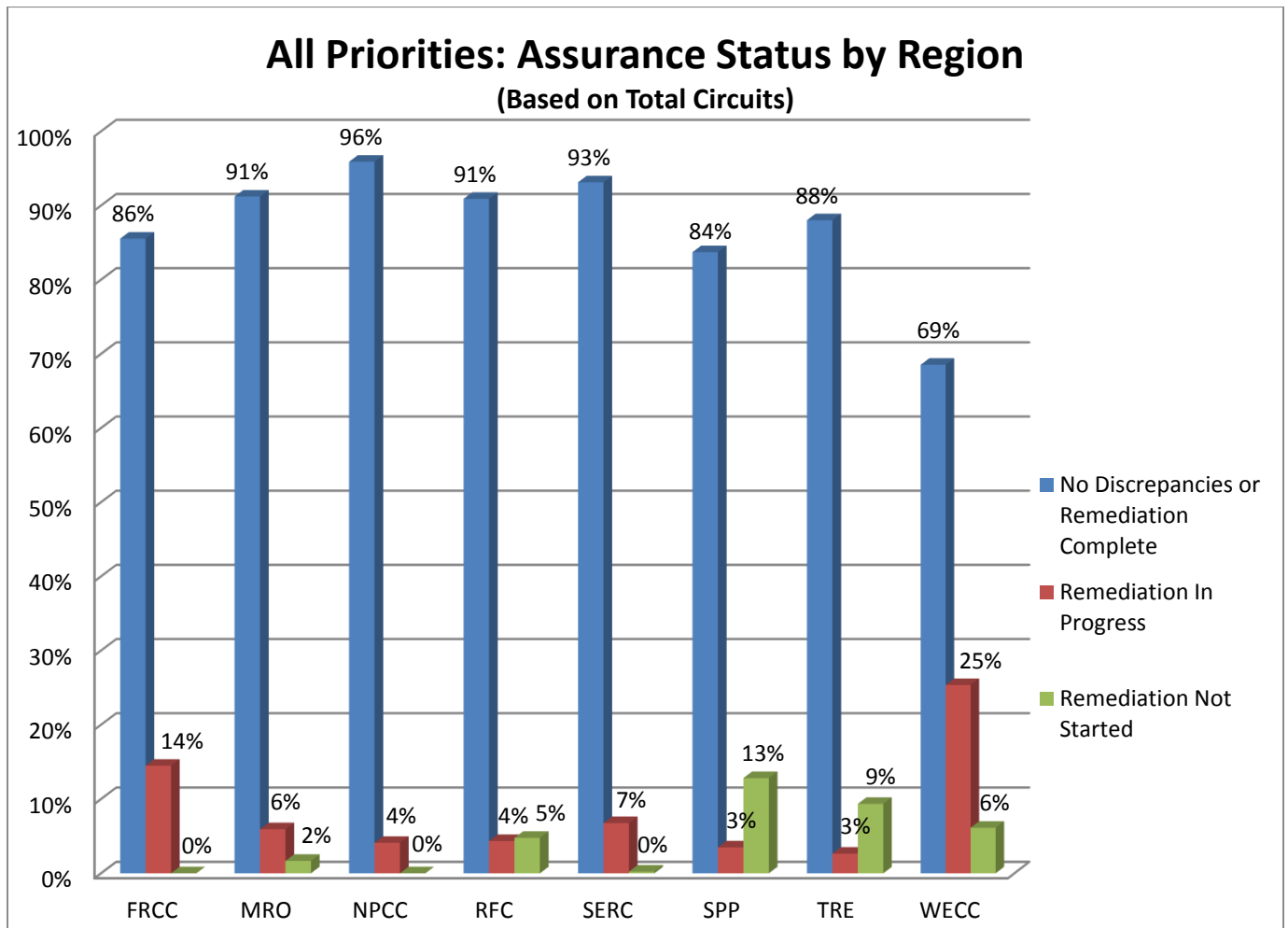


For low-priority facilities, the choice of remediation technique was well divided.

Conclusion

As of January 15, 2014, 96.8 percent of the transmission facilities classified as high-priority by their owners have as-built field conditions consistent with their design. To date, 828 circuits have been fully remediated, and 113 high-priority facilities still have outstanding discrepancies. For medium-priority facilities, 88.3 percent have as-built field conditions consistent with their design. 1,524 circuits have been fully remediated, and 705 circuits have outstanding discrepancies. Low-priority facility assessment is largely complete following the second of two reporting periods including low-priority facility assessments, with 10,812 of 11,182 (97 percent) of low priority facilities completed. Responses indicated that 2,728 (24 percent) of the assessed facilities contained a total of 21,249 discrepancies. For those low-priority facilities assessed to have discrepancies, 931 (34 percent) of the circuits have already been fully remediated, with another 1,395 (51 percent) of the circuits having remediation efforts in progress.

Taking into account all priority levels, 85.8 percent of all facilities within the scope of the Recommendation were, as of January 15, 2014, known to have as-built field conditions consistent with their design.



While this is our final summary report following the data collection periods specified in the Recommendation, NERC plans to conduct an informational webinar later this year. The webinar will provide a comprehensive review of the data, analysis and insights gained from this initiative. We look forward to supporting the Regional Entities as they work with Transmission Facility Owners to continue monitoring the completion of remediation activities consistent with the ongoing risk assessment. If you have additional questions, please do not hesitate to contact me at (404) 446-9706 or via email at sam.chanoski@nerc.net.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'S. Chanoski', is positioned above the printed name.

Samuel D. Chanoski
Associate Director, Bulk Power System Awareness

Recommendation to Industry Consideration of Actual Field Conditions in Determination of Facility Ratings

Initial Distribution: October 7, 2010

NERC and the Regional Entities have become aware of discrepancies between the design and actual field conditions of transmission facilities, including transmission conductors. These discrepancies may be both significant and widespread, with the potential to result in discrepancies in line ratings. The terms “transmission facilities” and “transmission lines” as used herein include generator tie lines, radial lines and interconnection facilities.

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Status: Receipt Acknowledgement Required by October 20, 2010
Reporting Required by December 15, 2010



PUBLIC: No Restrictions
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Instructions: This NERC Recommendation is not the same as a Reliability Standard, and a failure to implement this Recommendation will not constitute the sole basis for an enforcement action. However, pursuant to Rule 810 of NERC's Rules of Procedure, you are required to report to NERC on the status of your activities in relation to this Recommendation. For U.S. entities, NERC will compile the responses and report them to the Federal Energy Regulatory Commission (FERC). NERC will use the responses from Canadian entities for its own purposes but will not include those responses in the compilation it sends to FERC.

Issuance of this Recommendation does not lower or otherwise alter the requirements of any approved Reliability Standard, or excuse the prior failure to follow the practices discussed in the Recommendation if such failure constitutes a violation of a Reliability Standard.

Distribution: **Primary Distribution: Primary Compliance Contacts for Transmission Owners and Operators, Generator Owners and Operators, Reliability Coordinators, Transmission Planners, and Planning Authorities.**

[Who else will get this alert? >>](#)
[What are my responsibilities? >>](#)

Primary Interest Groups: Transmission Planning Engineers, Transmission Maintenance Engineers, and Transmission Planners

Recommendation: All recipients of this Recommendation should review the current Facility Ratings Methodology for their solely and jointly owned transmission lines to verify that the methodology used to determine facility ratings is based on actual field conditions. Line ratings depend on many limiting factors, including transmission facility placement, tower height, topographical profiles, and maintaining adequate conductor clearances (*i.e.*, conductor-to-ground, conductor-to-conductor) under a variety of ambient and loading conditions.

- Entities should determine if their Facility Ratings Methodology will produce appropriate ratings, even when considering differences between design and actual field conditions.

- Entities should review their transmission facility ratings to confirm that any differences observed between design and actual field conditions are within the design tolerances as defined by the Registered Entity's Facility Ratings Methodology.

If the entity has not previously verified that the facility design, installation, and field conditions are within design tolerances when the facilities are loaded at their rating, the entity should describe its plans to complete an assessment of its facilities to verify whether the actual field conditions conform to the entity's design tolerances in accordance with its Facility Ratings Methodology. The description of the plan for how and when all transmission lines will be assessed should be submitted to NERC by **December 15, 2010**. NERC recommends that the entity perform its assessment using methods or technology with adequate precision to show whether the actual field conditions support the entity's facility ratings. The entity should also explain how these measurements and assessment will be accomplished and the estimated length of time to complete the activity for all applicable facilities.

During conduct of the assessment, if the entity determines that the actual conductor clearances are not within the entity's design tolerances under existing or design conditions, the entity should coordinate their findings of the assessment with their respective Reliability Coordinator and Transmission Operator. This coordination should include establishing interim mitigation plans to address the assessment findings and any actions required to maintain bulk electric system stability and reliability. Although such plans may include derating of facilities consistent with actual field conditions, consideration should be given to optimizing the overall robustness and reliability of the bulk power system during the remediation period. Additionally, the entity is encouraged to coordinate its findings and interim mitigation plans with the Regional Entity, including the timeline and prioritization to promptly reconcile the conditions (e.g., modify construction, re-grade, de-energize, de-rate the line, etc.). The entity should also notify its Transmission Planner and Planning Authority of any limitation in the facility ratings due to the interim mitigation plan and update all operating instructions, procedures, SOLs, IROLs, study models and databases used to assess the system during the remediation period.

In the situations described, NERC considers actions to maintain the reliability and integrity of the bulk power system to be of paramount importance. NERC recognizes that assessment of existing conditions and any necessary remedial actions require careful planning, coordination, and sequencing to avoid introducing unintended new risks. Therefore, Transmission Owners, Transmission Operators, Generation Owners, and Generation Operators with solely or jointly owned transmission facilities (including generator tie lines, radial lines and interconnection facilities) are to take the following actions:

1. The registered entity must respond to this Recommendation by December 15, 2010 with a plan to conduct an assessment and any necessary remediation of the issues discussed in this Recommendation;
2. Within six months of the date of this Recommendation (April 7, 2011), the registered entity must identify and report to the applicable Reliability Coordinators and Regional Entities all transmission facilities (including generator tie lines, radial lines, and interconnection facilities) meeting the following conditions:
 - a. The existing or as-built conditions are different from the design conditions for the facilities; and
 - b. Those differences between actual and design

conditions result in incorrect ratings for the facilities.

3. The registered entity must correct the issues identified in its assessment as expeditiously as possible, but no later than 24 months following the date of this Recommendation, or October 7, 2012. No remediation plan may extend beyond 24 months without prior NERC approval, based on a clear demonstration by the registered entity of the need for such an extension based on scheduling constraints or other constraints beyond the control of the registered entity.

Reporting Instructions:

Primary Compliance Contacts at Registered Entities in receipt of this notice are required to acknowledge their receipt of this notice no later than 5:00 PM EDT on **October 20, 2010**. Registered Entities in receipt of this notice are required to report plans to address this Recommendation, including assessment methods to be used, and a timeline and priorities for any necessary remediation, via the online acknowledgement tool by filling out the attached questionnaire no later than 5:00 PM EDT on **December 15, 2010**. Access to this tool has been provided to Primary Compliance Contacts.

Respondents will need the following information to complete the questionnaire: NERC Compliance Registry ID Number, Registered Entity Name, and Primary Compliance Contact Information. Respondents will also need to respond whether or not their organization has appropriately addressed this Recommendation. An officer or other authorized representative of the recipient must certify the completeness and accuracy of the response.

Webinar:

NERC will host a Webinar to provide an overview of the issues and to answer questions regarding the alert and its associated response. The details for the Webinar are as follows:

Date: October 28, 2010
Time: 1:00 – 3:00 PM Eastern

Registration Link: <https://cc.readytalk.com/r/dd8amgsvog>

This conference will be using a broadcast audio function that allows audio and video streaming directly through the participant's computer (a conference number is also available for those that don't have Web access).

Specific access information will be provided to those who register at the link above. Registration is complimentary, but limited.

Background:

A Transmission Owner experienced a conductor-to-ground fault caused by a vegetation contact with a bulk power system line that resulted in a lockout of that transmission line. Although vegetation caused the fault, the subsequent evaluation indicated that the conductor-to-ground clearance was less than expected. This was due to substantial inconsistencies between the actual topography within the easement of the transmission line and the design of the line. Additional evaluation determined that the root cause of the outage was due to insufficient clearances and other errors that occurred when the transmission line was originally designed and constructed.

As a direct result of the outage, the Transmission Owner contracted with a company that utilizes Light Detection and Ranging (LiDAR) and Power Line Systems – Computer Aided Design and Drafting (PLS-CADD) technologies to survey its 230 kV and 345 kV systems. The data was used to determine conductor-to-vegetation and conductor-to-ground clearances.

Using these advanced technologies, the Transmission Owner identified over 100 conductor-to-ground clearance issues that had gone previously undetected. This information was used to adjust the facility ratings for many of the lines where clearance issues were observed until modifications to the transmission line configuration or changes to the topography could be made. Other examples of inaccurate historical information included, but are not limited to, misplaced structures or supports, inadequate tower height, and ground profile inaccuracies.

NERC and the Regional Entities are concerned that Transmission Owners and Generator Owners have, in some instances, not considered existing field conditions when establishing facility ratings for transmission facilities, including transmission conductors. Transmission Owners should strive to achieve a heightened awareness of the actual operating conditions of their respective transmission conductors and take prompt corrective action as necessary.

Contact: Gerry Adamski
Director, Situation
Awareness and Training
609-452-8060
Gerry.adamski@nerc.net

R-2010-10-07-01

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