

# Vegetation-Related Transmission Outage

2014 Annual Report

May 5, 2015

**RELIABILITY | ACCOUNTABILITY**



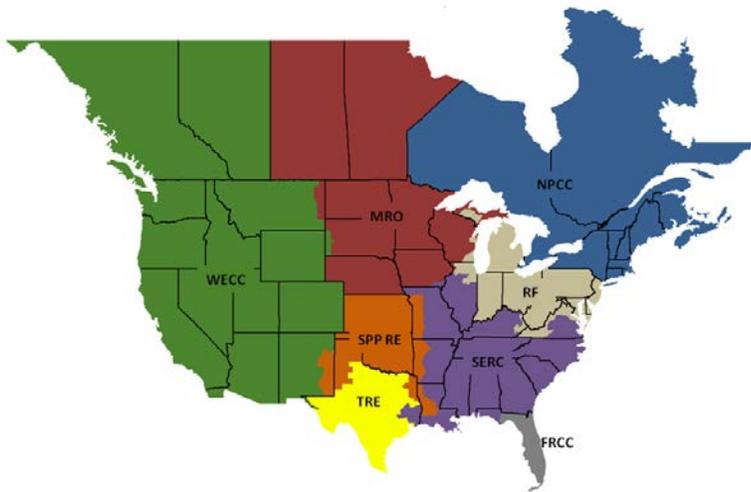
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# Preface

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The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure 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.



|               |  |
|---------------|--|
| <b>FRCC</b>   | Florida Reliability Coordinating Council |
| <b>MRO</b>    | Midwest Reliability Organization         |
| <b>NPCC</b>   | Northeast Power Coordinating Council     |
| <b>RF</b>     | ReliabilityFirst                         |
| <b>SERC</b>   | SERC Reliability Corporation             |
| <b>SPP RE</b> | Southwest Power Pool Regional Entity     |
| <b>TRE</b>    | Texas Reliability Entity                 |
| <b>WECC</b>   | Western Electricity Coordinating Council |

## Executive Summary

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This report provides a summary of 2014 vegetation-related reportable transmission outages. Generally, Reliability Standard FAC-003-3 requires that, as applicable, each Transmission Owner submit a quarterly report to its Regional Entity identifying all Sustained Outages determined by the Transmission Owner to have been caused by vegetation. The Regional Entity in turn reports this outage information to NERC. Applicable Generator Owners are required to begin FAC-003 quarterly reporting in January 2016. The quarterly vegetation management outage reports are available at <http://www.nerc.com/pa/comp/CE/Pages/vegetation-management-reports.aspx>.

The Regional Entities reported 19 vegetation-related outages to NERC in 2014. NERC staff reviewed the information submitted regarding these outages and found that the outages appear to be isolated events resulting from weather activities in the applicable region, the corrective and preventive actions reported appear appropriate, and none of the reported outages indicated an elevated risk to the BPS.

## Background

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Ineffective vegetation management was identified as a major cause of the August 14, 2003, blackout and was also cited as a major causal factor in other large-scale North American outages.<sup>1</sup> In response, NERC developed the FAC-003 vegetation management standard, which formalized transmission vegetation management program and reporting requirements.

Standard FAC-003-3<sup>2</sup> helps to enhance reliability of the BPS by:

- Ensuring there are no reliability gaps related to vegetation management practices at applicable generation facilities;
- Expanding the applicable transmission facilities to those facilities which are an element of an Interconnected Reliability Operating Limit, or an element of a Major WECC Transfer Path; and
- Providing greater flexibility to registered entities to address local vegetation management conditions.

Applicable Transmission Owners are required to report all vegetation-related sustained outages to their Regional Entities, and then the Regional Entities report them to NERC. Applicable Generator Owners are required to begin FAC-003 quarterly reporting in January 2016.

The FAC-003-3 Standard requires each reportable outage to be categorized as one of the following:

- Category 1A — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, that are identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW.<sup>3</sup>
- Category 1B — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW.
- Category 2A — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, from within the ROW.
- Category 2B — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, from within the ROW.
- Category 3 — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines from outside the ROW.
- Category 4A\* — Blowing together: Sustained Outages caused by vegetation and applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW.
- Category 4B\* — Blowing together: Sustained Outages caused by vegetation and applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW.

\* Outage categories 4A and 4B, related to vegetation and applicable transmission lines “blowing together” from within the ROW, were not included in previous versions of the Standard.

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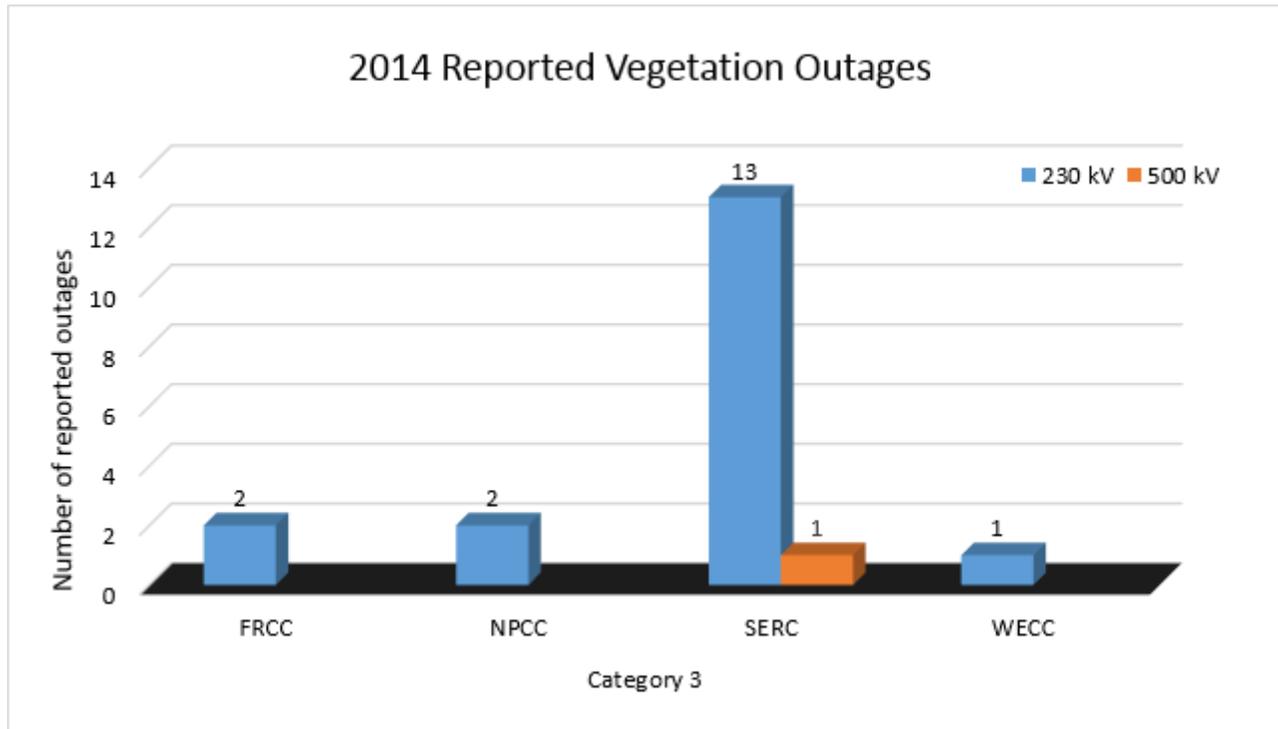
<sup>1</sup> U.S.-Canada Power System Outage Task Force, August 14, 2003 Blackout: Causes and Recommendations (Apr. 2004), available at <http://energy.gov/sites/prod/files/oeprod/DocumentsandMedia/BlackoutFinal-Web.pdf>.

<sup>2</sup> *General Requirements at the Transmission Interface*, Order No. 785, 144 FERC ¶61,221 (2013).

<sup>3</sup> Per the NERC Glossary of Terms Used in NERC Reliability Standards (NERC Glossary), as of July 1, 2014, Right-of-Way (ROW) is defined as “the corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the applicable Transmission Owner’s or applicable Generator Owner’s legal rights but may be less based on the aforementioned criteria.” NERC Glossary at p. 81, available at: [http://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary\\_of\\_Terms.pdf](http://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf).

## 2014 Reported Outages

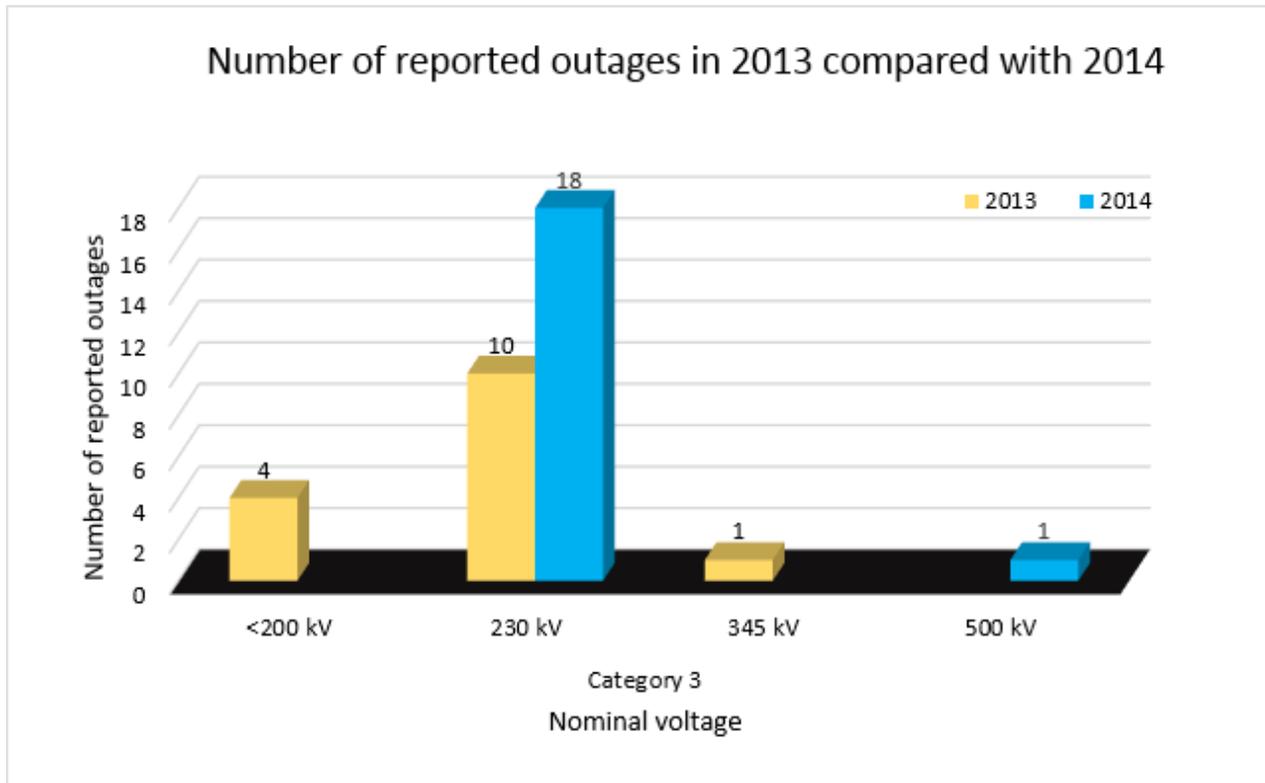
Registered Entities reported a total of 19 outages in 2014. As shown in Figure 1, all reported outages fell within Category 3. Eighteen of the outages occurred on 230 kV transmission lines. The other outage was on a 500 kV transmission line. All outages occurred during severe weather conditions. NERC staff's review indicated that the outages were isolated weather-related events that did not present a trend or pose a significant risk to the reliability of BPS.<sup>4</sup>



**Figure 1: Vegetation-Related Outages by Regional Entity, Voltage Class, and Outage Category in 2014**

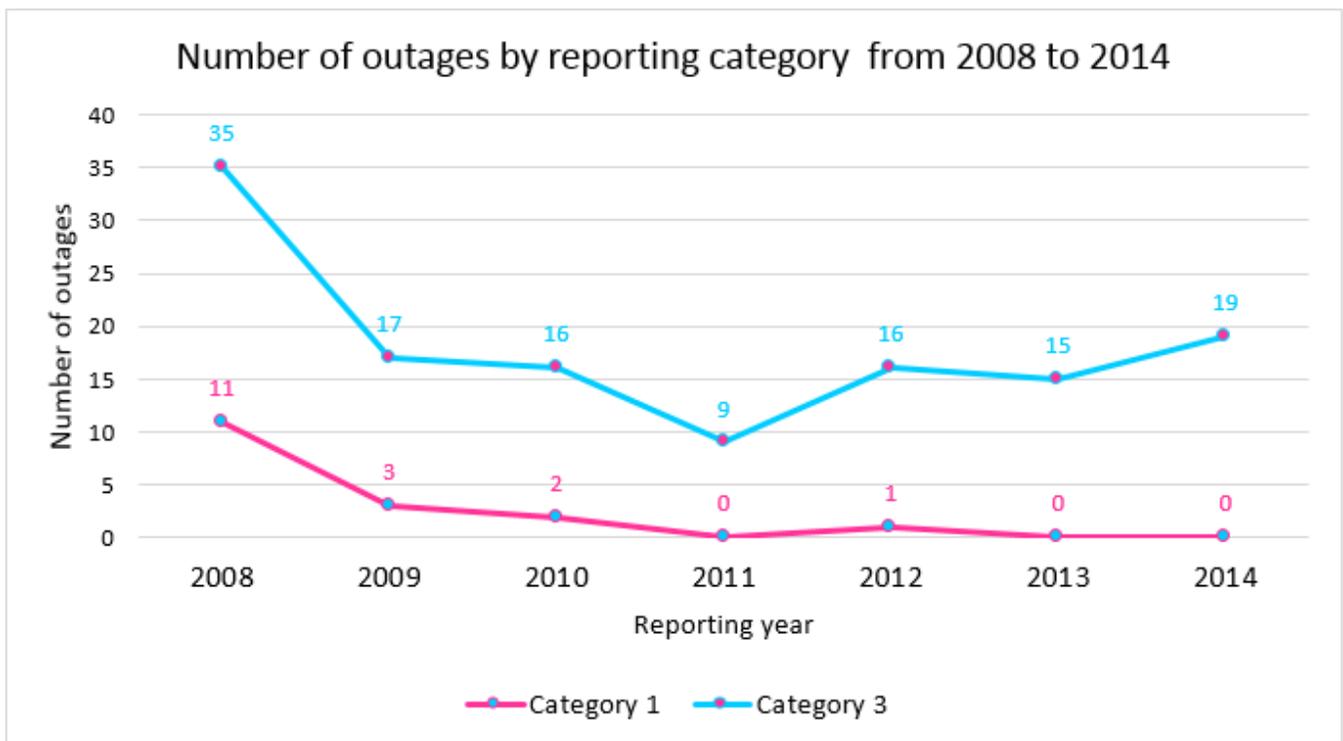
In comparison, in 2013, there were 15 Category 3 vegetation-related transmission outages (see Figure 2).

<sup>4</sup> More detail about specific reported outages in Q3 and Q4 of 2014, is available at [http://www.nerc.com/pa/comp/CE/layouts/xlviewer.aspx?id=/pa/comp/CE/ReportsDL/4Q2014\\_Vegetation\\_Report\\_20150324.xlsx&Source=http%3A%2F%2Fwww%2Energ%2Ecom%2Fpa%2Fcomp%2FCE%2FPages%2Fvegetation-management-reports%2Easpx&DefaultItemOpen=1](http://www.nerc.com/pa/comp/CE/layouts/xlviewer.aspx?id=/pa/comp/CE/ReportsDL/4Q2014_Vegetation_Report_20150324.xlsx&Source=http%3A%2F%2Fwww%2Energ%2Ecom%2Fpa%2Fcomp%2FCE%2FPages%2Fvegetation-management-reports%2Easpx&DefaultItemOpen=1); more detail about specific reported outages in Q2 of 2014, is available at [http://www.nerc.com/pa/comp/CE/ReportsDL/2Q2014\\_Vegetation%20Report\\_20140826.pdf](http://www.nerc.com/pa/comp/CE/ReportsDL/2Q2014_Vegetation%20Report_20140826.pdf); and more detail about specific reported outages in Q1 of 2014, is available at [http://www.nerc.com/pa/comp/CE/ReportsDL/1Q2014\\_Vegetation%20Report\\_20140609.pdf](http://www.nerc.com/pa/comp/CE/ReportsDL/1Q2014_Vegetation%20Report_20140609.pdf).



**Figure 2: Vegetation-Related Outages by Voltage Class and Outage Category in 2013 compared with 2014**

As the graph below indicates, the number of Category 1 outages (outages due to vegetation growing into the line from inside of outside of ROW) has been reduced over the last six years.



**Figure 3: Vegetation-Related Outages by Outage Category from 2008 to 2014**

## Conclusion

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ERO Enterprise staff continue to monitor reportable outages and noncompliance related to FAC-003-3 and identify possible trends that impact BPS reliability.