

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Vegetation–Related Transmission Outage Report

Third Quarter 2013

RELIABILITY | ACCOUNTABILITY



3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com

Executive Summary

The NERC Board of Trustees Compliance Committee has reviewed and accepted this Vegetation-Related Transmission Outage Third Quarter 2013 Report.

The reportable¹ vegetation-related transmission outages that occurred in the Third Quarter of 2013 are being reported in accordance with Requirement 4² of standard FAC-003-1.³

Specifically, Requirement 3.4 requires each outage to be categorized as one of the following:

- Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the Right-of-Way (ROW).
- Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW.
- Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

Table 1 is a summary of the vegetation outages that occurred in the Third Quarter of 2013 by voltage class and category.

Category	RE Designated Critical Lines <200 kV	230 kV	345 kV	500 kV	765 kV	Total
Category 1 — Grow-ins	0	0	0	0	0	0
Category 2 — Fall-ins	0	0	0	0	0	0
Category 3 — Fall-ins	1	4	0	0	0	5
Total	1	4	0	0	0	5

Table 1: Summary of Vegetation-Related Outages, by Voltage Class and Outage Category for Third Quarter 2013

The five vegetation-related transmission outages reported in the Third Quarter of 2013 were classified as Category 3. Four outages involved a 230 kV line and one outage involved a designated critical line under 200 kV. All five outage events were weather-related due to high wind, localized storm, or heavy rain conditions causing a tree outside the ROW to break off and fall into the line or damage part of the structure. Two outages were due to trees falling in a domino manner into one another; one outage was due to a significant number of trees blown over from well off the ROW.

¹ Per R3.2 of Reliability Standard FAC-003-1, the Transmission Owner is not required to report to the Regional Entity certain sustained transmission line outages caused by vegetation such as (1) vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters or (2) vegetation-related outages due to human or animal activity.

² The Regional Entity shall report the outage information provided to it by Transmission Owners, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the Regional Entity as a result of any of the reported outages.

³ FAC-003-2 was approved on March 21, 2013 by the Federal Energy Regulatory Commission (Commission). The Commission approved the related definitions, violation severity levels, implementation plan, and effective dates proposed by NERC. The Commission also approved the related violation risk factors, except that it directed a revision to the violation risk factor corresponding to one requirement. On September 19, 2013 the Commission issued Order No. 785 that approved version 3 of Standard FAC-003. As a result, version 2 will be superseded by version 3. The enforceability date of July 1, 2014 for Transmission Owners will remain the same. Version 3 also applies to Generation Owners with enforceability starting on January 1, 2015.

There was one Category 1 and four Category 3 vegetation-related transmission outages reported during the Third Quarter of 2012. These outages were on five 230 kV lines within two different Regional Entities' footprints. This was the first time since the third quarter of 2010 that a Category 1 outage (a transmission outage due to vegetation growing into a line) occurred. The Third Quarter of 2011 had zero outages, and the Third Quarter of 2010 had two Category 1 and three Category 3 outages. The events that occurred in the Third Quarter of 2013 do not cause a concern or pose a significant risk to the reliability of the bulk power system.

Reported Vegetation Outages for Q3 2013

The following vegetation-related transmission line trips were reported to NERC per R4 of FAC-003-1 for the Third Quarter of 2013.

Category 1 — Grow-ins

No outage caused by vegetation growing into lines from vegetation inside and/or outside of the ROW was reported during the Third Quarter 2013.

Category 2 — Fall-ins

No outage caused by vegetation falling into lines from inside the ROW was reported during the Third Quarter 2013.

Category 3 — Fall-ins

Five (5) outages caused by vegetation falling into lines from outside the right-of-way were reported during the Third Quarter 2013.

Northeast Power Coordinating Council (NPCC)

NPCC reported the following one 230 kV vegetation-related transmission outage from outside the ROW:

Outage on August 31, 2013: During a thunderstorm, an 88-foot black cherry tree located 11 feet outside of the ROW easement uprooted and fell on the transmission line, causing an outage of 26 hours and 46 minutes. The tree showed no outward signs of rot. Other trees in the area were inspected to ensure no additional trees needed to be removed.

ReliabilityFirst Corporation (RF)

RF reported the following one 230 kV vegetation-related transmission outage from outside the ROW:

Outage on July 2, 2013: A 98-foot red oak tree located 71 feet off the ROW uprooted and fell into a 120-foot tulip poplar (#1) located 37 feet off the ROW, which fell into another 100-foot tulip poplar (#2) located 16 feet off the ROW, causing an outage of 33 hours and 5 minutes. The base of tulip poplar tree #1 was within a natural pathway (historic watercourse) for the flow of water in times of heavy rain. This saturated the soil at the base of tulip poplar #1, and pressure from the uprooted red oak tree caused tulip poplar tree #1 to uproot into tulip poplar tree #2. Both tulip poplars, which were live, healthy trees, struck the transmission line, breaking two cross-arms and interrupting the line. Customers were momentarily interrupted (less than one minute) until the load transferred to an alternate feed. The Transmission Owner (TO) conducted an investigation and removed the other structurally damaged trees in the immediate area. The TO's investigation concluded that the nature of this outage was an anomaly due to the domino effect of trees uprooting into one another. The TO will continue its annual inspection that includes looking for off-corridor priority trees. No additional course of action was deemed necessary.

SERC Reliability Corporation (SERC)

SERC reported the following one 230 kV vegetation-related transmission outage from outside the ROW:

Outage on August 22, 2013: During a localized thunderstorm, a large red oak tree fell into a smaller maple tree, knocking the smaller tree into the conductors and causing an outage of 2 hours and 25 minutes. The first tree to fall was a 79-foot red oak located 59 feet from the ROW and 81 feet from the conductor. The second tree, which was knocked over by the red oak, was a 48-foot maple tree located 15 feet from the ROW and 38 feet from the

conductor. Neither tree showed any signs of disease, stress, rot, etc. The maple tree was removed from the line, and no other trees were considered a threat.

Western Electricity Coordinating Council (WECC)

WECC reported the following two vegetation-related transmission outages from outside the ROW for one Regional Entity designated critical line under 200 kV and one 230 kV line:

Outage on August 26, 2013: During a violent, localized storm with wind gusts of up to 50 mph, a healthy ponderosa pine tree growing outside the ROW was uprooted and fell into a <200 kV RE-designated critical transmission line, causing an outage of 37 hours and 54 minutes. Ongoing patrols for vegetation issues, including danger trees outside the ROW, will be conducted.

Outage on August 27, 2013: During an unusual microburst, there were three separate areas of blow-down, where trees were completely uprooted or had tops broken off at 40 and 50 feet in the air, causing an outage of 7 hours and 32 minutes. All of the uprooted trees were growing well off the ROW edge (approximately 40-50 feet). These trees were not on the TO's property and were well outside the area where normal pruning and removal could be expected. The trees were of varying size classes but were generally 80 to 100 feet tall. Approximately 80 trees were blown over or broken in these areas. It appeared that possibly only one tree was tall enough to have made contact with the 230 kV transmission line, which had some physical evidence of having made contact with a broken top. Because of the intense localized damage, it appears that the damage can be attributed to a microburst.

Second Quarter 2013 Supplementary Information

Category 3 – Additional Fall-ins during the second quarter 2013 reported by SERC

Outage on May 20, 2013: During a localized thunderstorm, a healthy 58-foot loblolly pine tree located 3.5 feet from the edge of the ROW fell onto the outside phase of the 230 kV line, causing an outage of 3 hours and 43 minutes. The tree was removed, and additional spans were checked on the line to ensure that no other trees in the area were affected by the local storm event. SERC notes that this outage was reported by the registered entity too late to include in the second quarter report and that SERC will investigate and address the cause of the late report with the registered entity.

Table 2 summarizes the number of transmission outages by voltage level, region, and category.

Region		FRCC	MRO	NPCC	RF	SERC	SPP	TRE	WECC	TOTAL
First Quarter	Category 1									
	Category 2									
	Category 3					2-230kV	1-345kV			2-230kV 1-345kV
Second Quarter	Category 1									
	Category 2									
	Category 3					2-230kV			2-<200kV	2-230kV 2-<200kV
Third Quarter	Category 1									
	Category 2									
	Category 3			1-230kV	1-230kV	1-230kV			1-<200kV 1-230kV	1-<200kV 4-230kV
Fourth Quarter	Category 1									
	Category 2									
	Category 3									
TOTAL for 2013	Category 1									
	Category 2									
	Category 3			1-230kV	1-230kV	5-230kV	1-345kV		3-<200kV 1-230kV	3-<200kV 8-230kV 1-345kV
Category 1: GROW-INS (inside/ outside ROW) Category 2: FALL-INS (inside ROW) Category 3: FALL-INS (outside ROW)										

Table 2: Summary of Vegetation-Related Transmission Outages⁴ by Region and by Outage Category for Each Quarter in 2013

⁴ Contains only sustained outages of transmission lines and does not include violations resulting from momentary outages or encroachments into the clearance zone as described in standard FAC-003.

Figure 1 illustrates the number of outages caused by vegetation growing into transmission lines from within the right-of-way that have been reported since 2004.

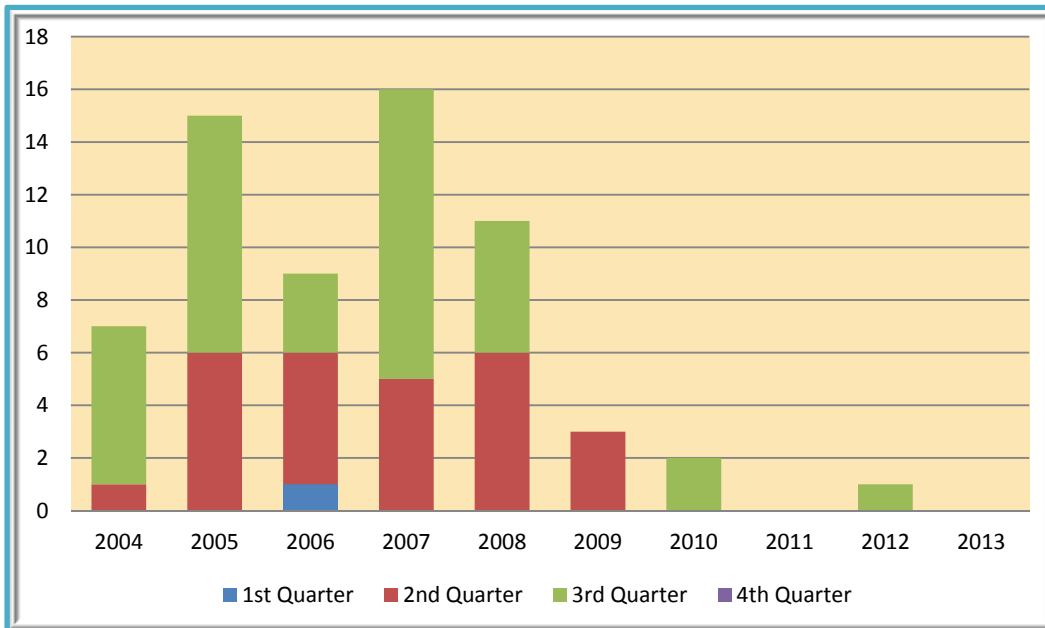


Figure 1: Category 1 — Grow-in Outages Caused by Vegetation Growing into Lines from Inside and/or Outside the ROW.⁵

Figure 2 provides this information by voltage class for each year.

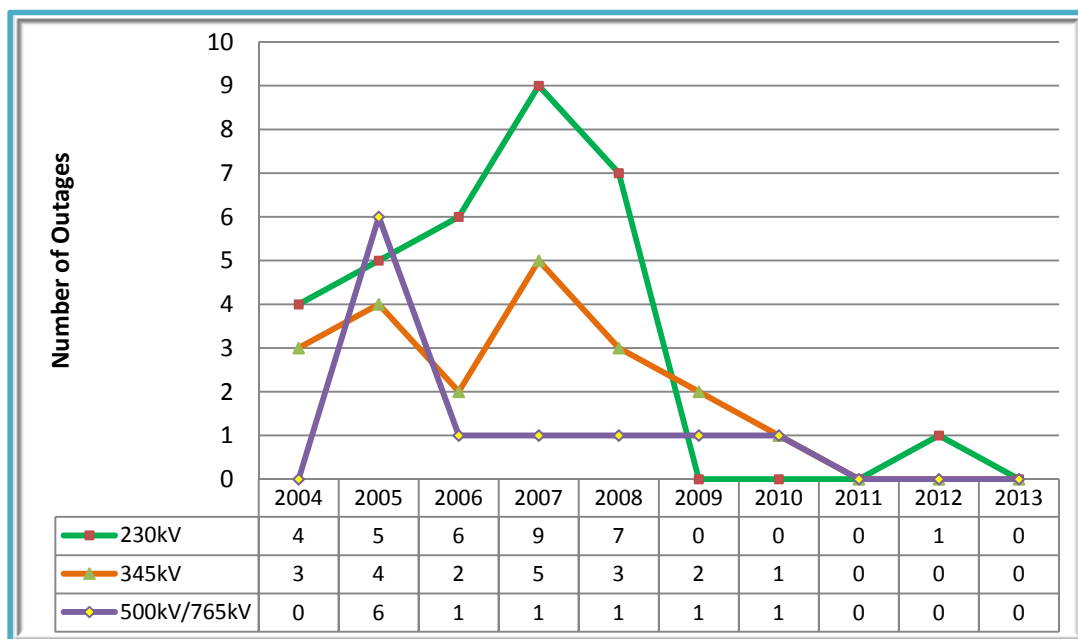


Figure 2: Category 1 —Grow-In Vegetation Related Outages of 230 kV and Higher

⁵ Includes one 2007 Category 1 outage caused by vegetation growing into an RE-designated critical line <200 kV.