NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Vegetation-Related Transmission Outage Report
Fourth Quarter 2008

The NERC Board of Trustees Compliance Committee has reviewed and accepted this Vegetation-Related Transmission Outage Fourth Quarter 2008 Report.

Vegetation-related transmission outages that occurred in the fourth quarter of 2008 are being reported in accordance with standard FAC-003-1.

The standard 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 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.

All Category 1 and 2 outages are considered to be violations of NERC standard FAC-003-1, with corresponding levels of noncompliance defined in the standard. The reporting of these violations is handled separately as part of the NERC performance reporting process. Category 3 outages are not considered to be violations of NERC standard FAC-003-1. Table 1 is a summary of the vegetation outages that occurred in the fourth quarter by voltage class and category.

Table 1: Fourth Quarter 2008 Summary of Vegetation-Outages by Voltage Class and Outage Category

Category	RE Designated Critical Lines <200 kV	230 kV	345 kV	500 kV	765 kV	Total
Category 1 — Grow-ins						**0**
Category 2 — Fall-ins						**0**
Category 3 — Fall-ins	4	5	1			**10**
Total	**4**	**5**	**1**	**0**	**0**	**10**

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In comparison, during the fourth quarter of 2007 the following six vegetation-related transmission outages were reported:

- One (1) Category 2
  - 1–230 kV
- Five (5) Category 3
  - 3–230 kV; 2–<200 kV

Category 3 — Fall-ins

Outages caused by vegetation falling into lines from outside the right-of-way

Northeast Power Coordinating Council, Inc.
Reported one 345 kV vegetation-related transmission outage from outside the right-of-way:

- The transmission owner reported a 345 kV vegetation-related transmission outage occurred on November 16, 2008, with a duration of 11 hours and 41 minutes. The outage was caused when high winds broke a tree 8 feet above ground that fell onto the line. Investigation showed that the tree had internal decay not readily visible or identified during previous inspection. The transmission line was last inspected by Vegetation Management personnel during June 2008.

Western Electricity Coordinating Council, Inc.
Reported five 230 kV vegetation-related transmission outages from outside the right-of-way:

1. The transmission owner reported one 230 kV vegetation-related transmission outage from outside the right of way on October 4, 2008 with duration of 41 hours and 47 minutes. The outage occurred when a tree located 50 feet to the south of the right of way uprooted and fell into the line. High winds and wet soils were the cause in addition to leaf load adding to the sail factor for the tree.
2. The transmission owner reported one 230 kV vegetation-related transmission outage from outside the right of way on December 13, 2008 with duration of 42 minutes. The outage occurred when the main stem of a tree snapped at 15–20 feet above ground due to snow and high winds.
3. The transmission owner reported one 230 kV vegetation-related transmission outage from outside the right of way on December 21, 2008 with duration of 27 hours and 4 minutes. The outage occurred when a tree located 50 feet off the right of way uprooted under high wind and snow load. No other threats were observed.
4. The transmission owner reported one 230 kV vegetation-related transmission outage from outside the right of way on December 22, 2008 with duration of 17 days, 23 hours, and 10 minutes. The outage occurred when a Douglas fir tree uprooted during heavy snowfall and landed on a conductor. The uprooted tree showed evidence of poor root development. Snow weight on the few branches in the very upper portion of the tree, coupled with poor root development and the high wind gusts, caused the roots to fail allowing the tree to uproot onto the conductor. Extreme weather conditions and limited

access to sections of the transmission line prevented finding the cause, as well as the fault location, and subsequent removal of the tree until January 10, 2009.

5. The transmission owner reported one 230 kV vegetation-related transmission outage from outside the right of way on December 24, 2008 with duration of 12 hours. The outage occurred when two trees fell into the line due to heavy snow. The transmission owner will complete a follow-up inspection once the snow has melted to determine if there are other threats in the area.

WECC also reported four RE designated critical line <200 kV outages from outside the right-of-way:

1. The transmission owner reported one RE designated critical line <200 kV outage from outside the right of way on October 14, 2008 with duration of approximately 6 hours. The outage occurred when a tree fell into the line. The transmission owner reports that vegetation analysis and management on this line is ongoing.
2. The transmission owner reported one RE designated critical line <200 kV outage from outside the right of way on November 12, 2008 with duration of 23 hours and 28 minutes. The outage occurred when a tree fell into the line. The transmission owner reports that vegetation analysis and management on this line is ongoing.
3. The transmission owner reported one RE designated critical line <200 kV outage from outside the right of way on November 12, 2008 with duration of approximately 19 hours. The outage occurred when a tree fell into the line. The transmission owner reports that vegetation analysis and management on this line is ongoing.
4. The transmission owner reported one RE designated critical line <200 kV outage from outside the right of way on November 21, 2008 with duration of 8 hours and 33 minutes. The outage occurred when a tree fell into the line. The transmission owner reports that vegetation analysis and management on this line is ongoing.

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

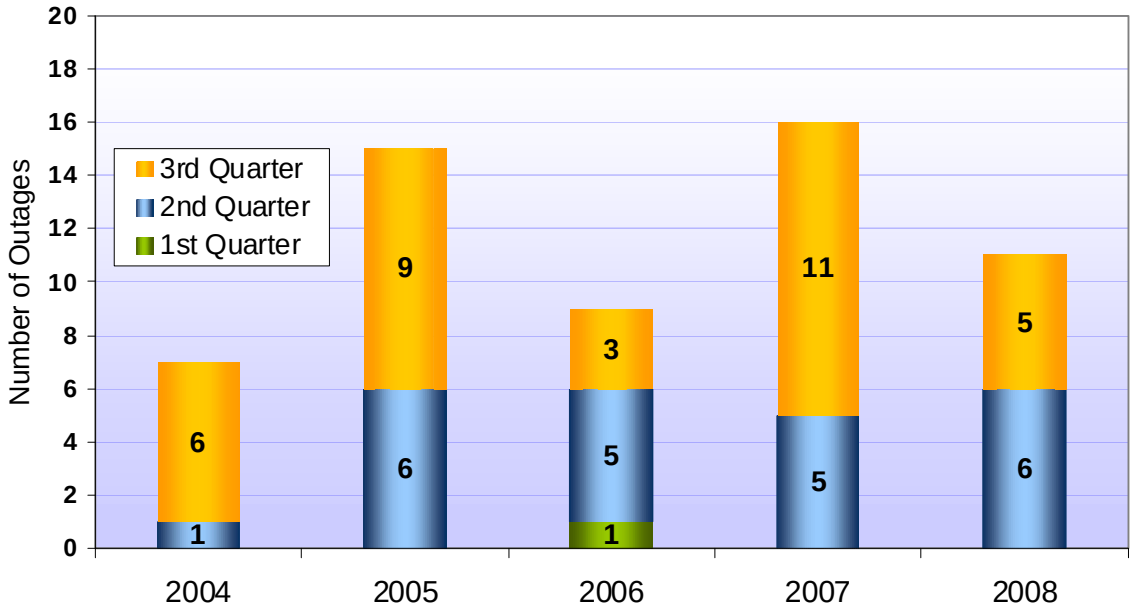
Figure 1 illustrates the number of outages caused by vegetation growing into transmission lines from within the right-of-way that have been reported since 2004. Figure 2 provides this information by voltage class for each year.

Table 2: Summary of Vegetation-Related Transmission Outages* by Region and by Outage Category for Each Quarter in 2008

Region	First Quarter			Second Quarter			Third Quarter			Fourth Quarter			TOTAL		
	Category 1 GROW-INS (inside/ outside ROW)	*Category 2* FALL-INS (inside ROW)	*Category 3* FALL-INS (outside ROW)	*Category 1* GROW-INS (inside/ outside ROW)	*Category 2* FALL-INS (inside ROW)	*Category 3* FALL-INS (outside ROW)	*Category 1* GROW-INS (inside/ outside ROW)	*Category 2* FALL-INS (inside ROW)	*Category 3* FALL-INS (outside ROW)	*Category 1* GROW-INS (inside/ outside ROW)	*Category 2* FALL-INS (inside ROW)	*Category 3* FALL-INS (outside ROW)	***Category 1*** **GROW-INS (inside/ outside ROW)**	***Category 2*** **FALL-INS (inside ROW)**	***Category 3*** **FALL-INS (outside ROW)**
FRCC			**1–230 kV**	**1–230 kV**									**1–230 kV**		**1–230 kV**
MRO															
NPCC				**1–230 kV**			**1-345 kV** **2-230 kV**					**1–345 kV**	**3–230 kV** **1-345 kV**		**1–345 kV**
RFC									**1-230 kV**						**1-230 kV**
SERC			**1–230 kV**	**1– 230 kV** **1–500 kV**		**3–230 kV**			**3-230 kV**				**1– 230 kV** **1–500 kV**		**7–230 kV**
SPP															
TRE							**2–345 kV**						**2-345 kV**		
WECC			**4–<200 kV** **8–230 kV**	**2–230 kV**		**1–230 kV** **1–<200 kV**			**2-<200 kV**			**5–230 kV** **4–<200 kV**	**2–230 kV**		**14–230 kV** **11–<200 kV**
TOTAL			**4–<200 kV** **10–230 kV**	**5–230 kV** **1–500 kV**		**4–230 kV** **1–<200 kV**	**3-345 kV** **2-230 kV**		**4-230 kV** **2-<200kV**			**1–345 kV** **5–230 kV** **4–<200 kV**	**7–230 kV** **3-345 kV** **1–500 kV**		**1–345 kV** **23–230 kV** **11–<200 kV**

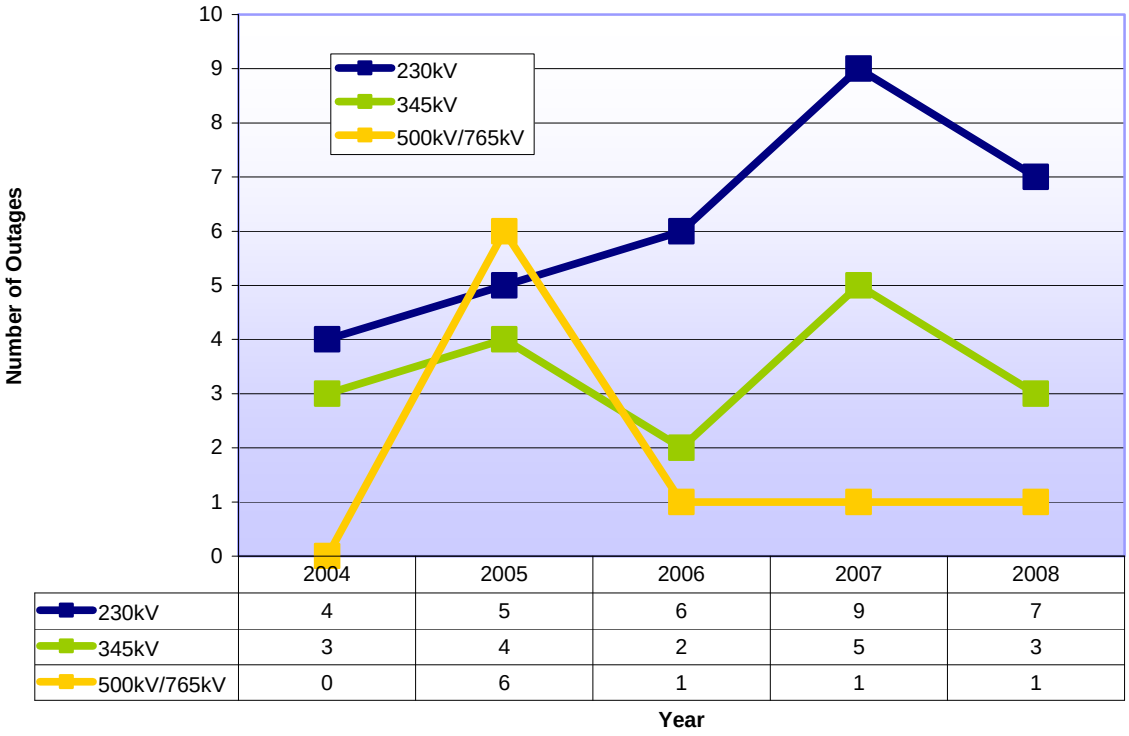
* Contains only sustained outages of transmission lines and does not include violations resulting from momentary outages or encroachments into the clearance zone as described in standard FAC-003.

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



[‡] Includes one 2007 Category 1 outage caused by vegetation growing into a RRO-designated critical line <200 kV.

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



	2004	2005	2006	2007	2008
230kV	4	5	6	9	7
345kV	3	4	2	5	3
500kV/765kV	0	6	1	1	1