

## Vegetation-Related Transmission Outage Report Third Quarter 2008

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

Vegetation-related transmission outages that occurred in the third 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 third quarter by voltage class and category.

**Table 1: Third 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		2	3			5
Category 2 — Fall-ins						
Category 3 — Fall-ins	2	4				6
<b>Total</b>	<b>2</b>	<b>6</b>	<b>3</b>			<b>11</b>

In comparison, during the third quarter of 2007 the following 14 vegetation-related transmission outages were reported:

- Eleven (11) Category 1
  - 7–230 kV, 3–345 kV and 1–500 kV
- Three (3) Category 3
  - 3–230 kV

## Category 1 — Grow-ins

Outages caused by vegetation growing into lines from inside/outside the right-of-way

### **Northeast Power Coordinating Council**

Reported two 230 kV outages and one 345 kV outage from inside the right-of-way:

1. The transmission owner reported a 345 kV vegetation-related outage occurred on July 11, 2008 with duration of 4 hours and 51 minutes. The line loading percentage at the time of the outage was 75.3 percent of normal rating. The transmission owner reported that the energized conductor on "A" phase sagged into a white spruce tree. While the line was de-energized, field personnel visually estimated that the conductor was 10-12 feet above the tree that caused the line to trip out of service. The transmission owner responded by dispatching two line crews and a construction supervisor to the area where the problem was suspected to have occurred. Once line clearance permission was received to work, the crews proceeded to cut down 2 to 3 trees and reduced the height of 4 to 5 more. Tree removal continued during the week of July 14.
2. The transmission owner reported a 230 kV vegetation-related outage occurred on July 17, 2008 with duration of 5 hours and 1 minute. The line loading percentage at the time of the outage was 87 percent of normal rating. The transmission owner reported that the line to ground faults were caused by branches under the line. The need for pruning was identified earlier at a span where a distribution line crosses underneath, but it was delayed to coordinate with the distribution crew. After helicopter and ground inspection, no evidence of electric arc was found but trees close to conductors at a particular span were pruned on July 18<sup>th</sup>.
3. The transmission owner reported a 230 kV vegetation-related outage occurred on July 21, 2008 with the duration 11 hours and 15 minutes. It should be noted that this is the same transmission facility that experienced an outage on July 17<sup>th</sup>. The line loading percentage at the time of the outage was 88 percent of normal rating. The transmission owner reported that the line to ground faults were caused by branches under the line. Helicopter and ground patrols determined that a pile of rocks and dirt was pushed beside a farming field without permission of the transmission owner. The presence of low vegetation on that pile was enough to reduce considerably the clearing between the ground and the conductor. The vegetation was cut and the line placed back in service. In addition, preventive pruning work was completed. All lines scheduled in the 2009 vegetation control plan and all interconnection lines are being inspected by helicopter.

### **Texas Regional Entity**

Reported two 345 kV outages from inside the right-of-way:

- The transmission owner reported two 345 kV vegetation-related outages on the same transmission facility; the first one occurring on August 1, 2008 with duration of 5 hours and 59 minutes. The transmission owner attempted to locate the cause of the phase-ground trip but was not initially successful. After a second event occurred on August 3, 2008 with duration of 1 hour and 45 minutes, a tree was identified and promptly removed. The line loading percentage at the time of the outages was 55 percent of normal rating. Further analysis led to the discovery of a design issue that resulted in a clearance deficiency. This was addressed by adding a new pole to raise the line.

## Category 3 — Fall-ins

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

### **ReliabilityFirst Corporation**

Reported one 230 kV vegetation-related transmission outage from outside the right-of-way:

- The transmission owner reported a 230 kV vegetation-related transmission outage occurred on September 7, 2008, with a duration of 3 hours and 30 minutes. The transmission owner reported that the cause of the outage was a result of a tree falling into the conductor from outside the line right of way during a storm. The tree was approximately 60 feet from the nearest conductor, and approximately 24 feet outside of the right of way. The tree was immediately removed from the right of way and the line was returned to service.

### **SERC Reliability Corporation**

Reported three 230 kV outages from outside the right-of-way:

1. The transmission owner reported a 230 kV outage occurred on July 21, 2008 with duration of 9 hours and 27 minutes. The outage was caused by a live tree located 15 feet off of the ROW in a wet area. The tree was uprooted during a thunderstorm, and leaned against the outer phase of the line. The tree was removed and the line was restored.
2. The transmission owner reported a 230 kV outage occurred on August 12, 2008 with duration of 11 hours and 41 minutes. The outage was caused by an 85 foot tall pine tree located 30 feet off the ROW and 50 feet from the ROW center line. The single falling tree locked out both circuits of a double circuit pole-line (see below). The tree was removed and the line was restored.
3. The transmission owner reported a 230 kV outage occurred on August 12, 2008 with duration of 11 hours and 59 minutes. The outage was caused by an 85 foot tall pine tree located 30 feet off the ROW and 50 feet from the ROW center line. The single falling tree locked out both circuits of a double circuit pole-line (see above). The tree was removed and the line was restored.

### **Western Electricity Coordinating Council, Inc.**

Reported two 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 August 19, 2008 with duration of 153 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 September 22, 2008 with duration of 188 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. It should be noted that this is the same transmission facility that experienced an outage on August 19. (see above)

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

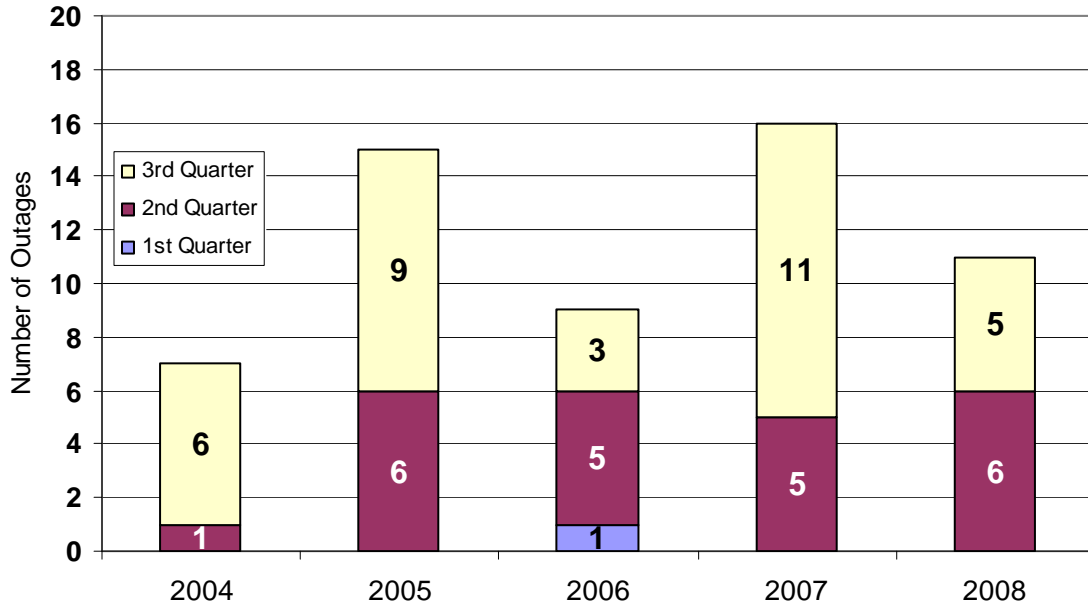
Figure 1 illustrates the number of outages caused by vegetation growing into transmission lines from within the right-of-way that have been reported since 2004. Figure 2 provides this information by voltage class for each year.

**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						3-230 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					2-230 kV		7-<200 kV 9-230 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					7-230 kV 3-345 kV 1-500 kV		7-<200 kV 18-230 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-ins from within the Right-of-Way**



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

