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Vegetation-Related Transmission Outages Third Quarter 2006

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The Board of Trustees adopted version 1 of standard FAC-003 — *Transmission Vegetation Management Program* on February 7, 2006. Since the effective date of the version 1 standard is April 7, 2006, NERC Compliance modified the 2006 Compliance Enforcement Program by replacing version 0 of this standard with the revised standard. As a result, the vegetation-related transmission outages that occurred in the second and third quarters of 2006 are being reported in accordance with standard FAC-003-1.

The revised 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 now 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.

During the third quarter of 2006, there were seven vegetation-related outages reported for 200 kV and higher transmission lines. There were two 230 kV and two 345 kV transmission outages caused by trees growing into lines from inside the right-of-way zone (Category 1). There were three 230 kV transmission outages caused by trees falling into lines from outside the right-of-way zone (Category 3). There were no transmission outages caused by trees falling into lines from inside the right-of-way zone (Category 2). The following is a brief description of each of these outages:

Category 1 — Outages Caused by Vegetation Growing Into Lines from Inside and/or Outside of the Right-Of-Way

Northeast Power Coordinating Council

Reported one 345 kV vegetation-related transmission outage from inside the right-of-way.

- The transmission owner reported a 345 kV vegetation-related outage occurred on August 3, 2006, with a duration of 13 minutes. The line was successfully energized from one terminal in a much shorter time. The line loading percentage of normal rating at the time

of the line trip was 86 percent. The transmission owner reported that the line sagged into a 2.5 inch DBH (diameter at breast height) chestnut sapling from resprout of tree stump cut in 2002. Regrowth of previously cut brush exceeded anticipated growth rates within the current 4-year mowing cycle and conductor heights above ground are at minimum design standards. The entire length of the line was patrolled and all identified problematic vegetation has been removed. In addition, all rights-of-way in the state where this outage occurred with facilities rated at 200 kV and above were moved onto a 3-year mowing cycle effective immediately. NPCC stated that no regional action was required.

ReliabilityFirst Corporation

Reported one 345 kV vegetation-related transmission outage from inside the right-of-way.

- The transmission owner reported a 345 kV vegetation-related outage occurred on July 15, 2006, with a duration of 11 hours, 9 minutes. The line loading percentage of normal summer rating at the time of the line trip was 26 percent. The transmission owner reported that an emergency aerial helicopter line patrol and subsequent ground patrol confirmed that the line outage was caused by conductor sag into trees. A freshly scorched tree was identified and residences near the tree reported hearing loud sounds. At the time of the outage, calm winds allowed for maximum conductor heating and sag. The tree that made contact was cut down while the line was de-energized. Other trees within the same general area were trimmed for at least 25 feet of aerial clearance or removed entirely. All locations identified during the annual aerial helicopter patrol, where tree trimming or removal was required to meet the current “no closer than distance” for vegetation/conductor clearance, were completed by vegetation management contractors between July 21, 2006 and July 31, 2006. Notice of violation is being processed and mitigation plan to prevent future violations will be required in accordance with ReliabilityFirst’s Compliance and Enforcement Program.

Western Electricity Coordinating Council

Reported two 230 kV vegetation-related transmission outage from inside the right-of-way.

- The transmission owner reported a 230 kV vegetation-related outage occurred on July 14, 2006, with a duration of 2 minutes. The line loading percentage of normal rating at the time of the line trip was 43 percent. The transmission owner reported that the conductor sagged and caused a flash over into a 30–35 foot tall willow tree inside the right-of-way. This tree was cleared back 20–25 feet from the conductor in late July 2004. Routine maintenance was completed in 1998, 2000, 2002, 2004, and is currently being done in 2006. The property owner refused removal/replacement offer in 2004.
- The transmission owner reported a 230 kV vegetation-related outage occurred on July 16, 2006, with a total duration of 7 minutes. The line loading percentage of normal rating at the time of the line trip was 42 percent. The transmission owner reported a conductor sagged and caused a flash over into a 20–25 foot tall, 6 inch DBH spruce inside the right-of-way. The current routine maintenance cycle has been in progress since 2005. Only selective removal of tall-growing trees was allowed by the forestry service in the previous maintenance cycle. If allowed by the forestry service, the removal of all tall-growing trees on the remaining portion of this line will be completed.

Category 3 — Outages Caused by Vegetation Falling Into Lines from Outside the Right-Of-Way

SERC Reliability Council

Reported two 230 kV vegetation-related transmission outage from outside the right-of-way.

- The transmission owner reported a 230 kV vegetation-related outage occurred on July 3, 2006, with a duration of 6 hours, 22 minutes. The transmission owner reported that during a severe thunderstorm with high winds a 16 inch DBH pine, approximately 100 feet (plus) tall, located 10 feet off the right-of-way, broke off about 6 feet above the ground. The tree fell into the 230 kV line. The top of the tree eventually contacted a 115 kV line. The tree was cut from the line. SERC stated that no regional action was required.
- The transmission owner reported a 230 kV vegetation-related outage occurred on September 23, 2006, with a duration of 10 hours, 7 minutes. The transmission owner reported that a rotten oak tree 100 feet off the right-of-way fell and hit an 80 foot tall poplar at the edge of the right-of-way, uprooting the poplar and dropping it on the line. Patrols on this line have been increased. SERC stated that no regional action was required.

Western Electricity Coordinating Council

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

- The transmission owner reported a 230 kV vegetation-related outage occurred on August 30, 2006, with a duration of 23 hours, 38 minutes. The transmission owner reported that the area was burned over by a wildfire. The outage was caused by a dead standing tree 75 feet off the right-of-way. Trees in this area were evaluated in FY06 and marked for removal in FY07, as part of the annual work plan. The tree was removed. Additional trees were evaluated and removed as a precaution.

In addition to the seven vegetation-related outages reported for 200 kV and higher transmission lines, WECC reported four vegetation-related transmission outages caused by vegetation falling into lines from outside the right-of-way for RRC designated critical lines < 200 kV.

Table 1 summarizes the number of transmission outages by voltage level and category.

Table 1 - 2006 Vegetation-Related Transmission Outages Reported

Region	First Quarter		Second Quarter			Third Quarter			Fourth Quarter		
	Category 1	Category 2	Category 1	Category 2	Category 3	Category 1	Category 2	Category 3	Category 1	Category 2	Category 3
	ALL (within ROW)	ALL (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)	GROW-INS (inside/outside ROW)	FALL-INS (inside ROW)	FALL-INS (outside ROW)
ERCOT	0	0	0	0	0	0	0	0			
FRCC	1-230 kV	0	0	0	0	0	0	0			
MRO	0	0	0	0	0	0	0	0			
NPCC	0	0	0	0	1-230 kV	1-345 kV	0	0			
RFC	0	0	0	0	0	1-345 kV	0	0			
SERC	0	1-230 kV	1-230 kV	0	1-230 kV	0	0	2-230 kV			
SPP	0	0	1-345 kV	0	0	0	0	0			
WECC	0	2<200 kV 9-230 kV 1-500 kV	2-230 kV 1-500 kV	0	0	2-230 kV	0	1-230 kV			
Subtotal	1-230 kV	2<200 kV 10-230 kV 1-500 kV	3-230 kV 1-345 kV 1-500 kV	0	2-230 kV	2-230 kV 2-345 kV	0	3-230 kV			