Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary. When this standard has received ballot approval, the text boxes will be moved to the Guideline and Technical Basis Section.

Right-of-Way (ROW)

A corridor of land on which electric lines may be located. The applicable Transmission Owner or applicable Generator Owner may own the land in fee, own an easement, or have certain franchise, prescription, or license rights to construct and maintain lines.

The current glossary definition of this NERC term wais modified to allow both maintenance inspections and vegetation inspections to be performed concurrently.include applicable Generator Owners.

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FAC-003-2 is currently under development under Project 2007-07. The project is nearing its final stages, but the Project 2010-07 drafting team does not want to assume that the project will be approved by NERC's Board or Trustees (BOT) or FERC. Thus, the Project 2010-07 drafting team has develop two sets of proposed changes: one to this version, FAC-003-1, the current FERC-approved version of the standard, and one to FAC-003-2, the latest draft of Version 2 as proposed by the Project 2007-07 team

If FAC-003-2 is approved by NERC's BOT, the Project 2010-07 drafting team will likely proceed with the modifications it has proposed in the redline to that version of the standard. These changes would be submitted for stakeholder approval and balloted as FAC-003-3. FAC-003-2 would be retired once FAC-003-03 was approved.

If, however, FAC-003-2 remains under development, the Project 2010-07 drafting team will proceed with the changes to FAC-003-1 seen below to avoid further delay of its project goals. Changes to FAC-003-1 would address the addition of Generator Owners to the applicability section, modifications to the NERC defined terms Right-of-Way to include Generator Owners, and some formatting changes to bring the standard up to date. These changes would not be comprehensive; rather, they would aim to include the generator interconnection Facility in the standard with as few other changes as possible.

A. Introduction

1. Title: **Transmission Vegetation Management Program**

2. Number: FAC-003-X1

3. Purpose: To improve the reliability of the electric transmission systems by preventing outages from vegetation located on transmission rights-of-way (ROW) and minimizing outages from vegetation located adjacent to ROW, maintaining clearances between transmission lines and vegetation on and along transmission ROW, and reporting vegetation-related outages of the transmission systems to the respective Regional ~~Reliability Organizations~~ Entity (~~RRO~~RE) and the North American Electric Reliability Council (NERC).

Within the text of NERC Reliability Standard FAC-003-X, "transmission line(s)" and "applicable line(s)" can also refer to the generation Facilities as referenced in 4.4 and its subsections.

4. Applicability:

4.1. Regional Entity.

4.2. Applicable Transmission Owner

4.2.1. Transmission Owner that owns overhead transmission lines operated at 200 kV and above and to any lower voltage lines designated by the RE as critical to the reliability of the electric system in the region.

4.3. Applicable Generator Owner

4.3.1. Generator Owner that owns an overhead Facility that extends greater than one half mile beyond the fenced area of the switchyard, generating station or generating substation up to the point of interconnection with the Transmission system and is operated at 200 kV and above and any lower voltage lines designated by the RE as critical to the reliability of the electric system in the region.

~~**4.1.** Transmission Owner.~~

~~**4.2.** Regional Reliability Organization.~~

~~**4.3.** This standard shall apply to all transmission lines operated at 200 kV and above and to any lower voltage lines~~

designated by the RRO as critical to the reliability of the electric system in the region.

5. Effective Dates:

There are three effective dates associated with this implementation plan:

The first effective date applies to Transmission Owners.

In those jurisdictions where regulatory approval is required, all requirements applied to the Transmission Owner become effective upon approval. In those jurisdictions where no regulatory approval is required, all requirements applied to the Transmission Owner become effective upon Board of Trustees' adoption.

The second effective date allows Generator Owners time to prepare a formal transmission vegetation management program as outlined in Requirement R1.

In those jurisdictions where regulatory approval is required, Requirement R1 applied to the Generator Owner becomes effective on the first calendar day of the first calendar quarter one year after the date of the order approving the standard from applicable regulatory authorities where such explicit approval for all requirements is required. In those jurisdictions where no regulatory approval is required, Requirement R3 becomes effective on the first day of the first calendar quarter one year following Board of Trustees adoption.

The third effective date allows entities time to comply with Requirements R2, R3, and R4.

In those jurisdictions where regulatory approval is required, Requirements R2, R3, and R4 applied to the Generator Owner become effective on the first calendar day of the first calendar quarter two years after the date of the order approving the standard from applicable regulatory authorities where such explicit approval for is required. In those jurisdictions where no regulatory approval is required, Requirements R2, R3, and R4 become effective on the first day of the first calendar quarter two years following Board of Trustees adoption.

~~5.1. One calendar year from the date of adoption by the NERC Board of Trustees for Requirements 1 and 2.~~

~~5.2. Sixty calendar days from the date of adoption by the NERC Board of Trustees for Requirements 3 and 4.~~

B. Requirements

R1. ~~The~~ Each applicable Transmission Owner or applicable Generator Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the applicable Transmission Owner's or applicable Generator Owner's objectives, practices, approved procedures, and work specifications[1].

R1.1. The TVMP shall define a schedule for and the type (aerial, ground) of ROW vegetation inspections. This schedule should be flexible enough to adjust for changing conditions. The inspection schedule shall be based on the anticipated growth of vegetation and any other environmental or operational factors that could impact the relationship of vegetation to the applicable Transmission Owner's or applicable Generator Owner's transmission lines.

R1.2. Each applicable~~The~~ Transmission Owner or applicable Generator Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the

[1] ANSI A300, Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices, while not a requirement of this standard, is considered to be an industry best practice.

effects of ambient temperature on conductor sag under maximum design loading, and the effects of wind velocities on conductor sway. Specifically, the applicable Transmission Owner or applicable Generator Owner shall establish clearances to be achieved at the time of vegetation management work identified herein as Clearance 1, and shall also establish and maintain a set of clearances identified herein as Clearance 2 to prevent flashover between vegetation and overhead ungrounded supply conductors.

R1.2.1. Clearance 1 — The applicable Transmission Owner or applicable Generator Owner shall determine and document appropriate clearance distances to be achieved at the time of transmission vegetation management work based upon local conditions and the expected time frame in which the applicable Transmission Owner or applicable Generator Owner plans to return for future vegetation management work. Local conditions may include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species types and growth rates, species failure characteristics, local climate and rainfall patterns, line terrain and elevation, location of the vegetation within the span, and worker approach distance requirements. Clearance 1 distances shall be greater than those defined by Clearance 2 below.

R1.2.2. Clearance 2 — The applicable Transmission Owner or applicable Generator Owner shall determine and document specific radial clearances to be maintained between vegetation and conductors under all rated electrical operating conditions. These minimum clearance distances are necessary to prevent flashover between vegetation and conductors and will vary due to such factors as altitude and operating voltage. These applicable Transmission Owner-specific or applicable Generator Owner-specific minimum clearance distances shall be no less than those set forth in the Institute of Electrical and Electronics Engineers (IEEE) Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.

R1.2.2.1 Where transmission system transient overvoltage factors are not known, clearances shall be derived from Table 5, IEEE 516-2003, phase-to-ground distances, with appropriate altitude correction factors applied.

R1.2.2.2 Where transmission system transient overvoltage factors are known, clearances shall be derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.

R1.3. All personnel directly involved in the design and implementation of the TVMP shall hold appropriate qualifications and training, as defined by the Transmission Owner or Generator Owner, to perform their duties.

R1.4. Each applicable~~Each~~ Transmission Owner or applicable Generator Owner shall develop mitigation measures to achieve sufficient clearances for the protection of the transmission facilities when it identifies locations on the ROW where the Transmission Owner or applicable Generator Owner is restricted from attaining the clearances specified in Requirement 1.2.1.

R1.5. Each Transmission Owner or applicable Generator Owner shall establish and document a process for the immediate communication of vegetation conditions that present an imminent threat of a transmission line outage. This is so that action

(temporary reduction in line rating, switching line out of service, etc.) may be taken until the threat is relieved.

[VRF – High]

R2. Each applicable The Transmission Owner or applicable Generator Owner shall create and implement an annual plan for vegetation management work to ensure the reliability of the system. The plan shall describe the methods used, such as manual clearing, mechanical clearing, herbicide treatment, or other actions. The plan should be flexible enough to adjust to changing conditions, taking into consideration anticipated growth of vegetation and all other environmental factors that may have an impact on the reliability of the transmission systems. Adjustments to the plan shall be documented as they occur. The plan should take into consideration the time required to obtain permissions or permits from landowners or regulatory authorities. Each applicable Transmission Owner or applicable Generator Owner shall have systems and procedures for documenting and tracking the planned vegetation management work and ensuring that the vegetation management work was completed according to work specifications.

[VRF – High]

R3. Each applicableThe Transmission Owner or applicable Generator Owner shall report quarterly to its RERRO, or the RERRO's designee, sustained transmission line outages determined by the applicable Transmission Owner or applicable Generator Owner to have been caused by vegetation.

R3.1. Multiple sustained outages on an individual line, if caused by the same vegetation, shall be reported as one outage regardless of the actual number of outages within a 24-hour period.

R3.2. The applicable Transmission Owner or applicable Generator Owner is not required to report to the RERRO, or the RERRO's designee, certain sustained transmission line outages caused by vegetation: (1) Vegetation-related outages that result from vegetation falling into lines from outside the ROW that result from natural disasters shall not be considered reportable (examples of disasters that could create non-reportable outages include, but are not limited to, earthquakes, fires, tornados, hurricanes, landslides, wind shear, major storms as defined either by the applicable Transmission Owner or applicable Generator Owner or an applicable regulatory body, ice storms, and floods), and (2) Vegetation-related outages due to human or animal activity shall not be considered reportable (examples of human or animal activity that could cause a non-reportable outage include, but are not limited to, logging, animal severing tree, vehicle contact with tree, arboricultural activities or horticultural or agricultural activities, or removal or digging of vegetation).

R3.3. The outage information provided by the applicable Transmission Owner or applicable Generator Owner to the RERRO, or the RERRO's designee, shall include at a minimum: the name of the circuit(s) outaged, the date, time and duration of the outage; a description of the cause of the outage; other pertinent comments; and any countermeasures taken by the applicable Transmission Owner or applicable Generator Owner.

R3.4. An outage shall be categorized as one of the following:

R3.4.1. Category 1 — Grow-ins: Outages caused by vegetation growing into lines from vegetation inside and/or outside of the ROW;

R3.4.2. Category 2 — Fall-ins: Outages caused by vegetation falling into lines from inside the ROW;

R3.4.3. Category 3 — Fall-ins: Outages caused by vegetation falling into lines from outside the ROW.

[VRF – Lower]

R4. The RE~~RRO~~ shall report the outage information provided to it by applicable Transmission Owners or applicable Generator Owners~~'s~~, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RE~~RRO~~ as a result of any of the reported outages.

~~**R4.***[VRF – Lower]*~~

C. Measures

M1. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has a documented TVMP, as identified in Requirement 1.

M1.1. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has documentation that the applicable Transmission Owner or applicable Generator Owner performed the vegetation inspections as identified in Requirement 1.1.

M1.2. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has documentation that describes the clearances identified in Requirement 1.2.

M1.3. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has documentation that the personnel directly involved in the design and implementation of the applicable Transmission Owner's or applicable Generator Owner TVMP hold the qualifications identified by the Transmission Owner or applicable Generator Owner as required in Requirement 1.3.

M1.4. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has documentation that it has identified any areas not meeting the applicable Transmission Owner's or applicable Generator Owner's standard for vegetation management and any mitigating measures the Transmission Owner or applicable Generator Owner has taken to address these deficiencies as identified in Requirement 1.4.

M1.5. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has a documented process for the immediate communication of imminent threats by vegetation as identified in Requirement 1.5.

M2. Each applicable ~~The~~ Transmission Owner or applicable Generator Owner has documentation that the Transmission Owner implemented the work plan identified in Requirement 2.

M3. Each applicable~~The~~ Transmission Owner or applicable Generator Owner has documentation that it has supplied quarterly outage reports to the RE~~RRO~~, or the RE~~RRO~~'s designee, as identified in Requirement 3.

M4. The RE~~RRO~~ has documentation that it provided quarterly outage reports to NERC as identified in Requirement 4.

D. Compliance

1. Compliance Monitoring Process

~~1.1.~~Compliance ~~Monitoring Responsibility~~Enforcement Authority

~~1.2.~~1.1.

~~**1.1.**~~Compliance Monitor:

~~**1.1.**~~• Regional Entity for the Transmission Owner and Generator Owner

- Electric Reliability Organization or another Regional Entity for the Regional Entity

1.1.

RRO

NERC

1.2.Compliance Monitoring Period and Reset

1.2. One calendar Yearand Enforcement Processes:

Compliance Audits

Self-Certifications

Spot Checking

Compliance Violation Investigations

Self-Reporting

Complaints

E. **Data Retention**

1.3.

The applicable Transmission Owner and applicable Generator Owner shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation:

- The applicable Transmission Owner and applicable Generator Owner shall retain evidence of Requirement 1, Measure 1, Requirement 2, Measure 2, and Requirement 3, Measure 3 from its last audit.

Five Years

1.1.1.4. Additional Compliance Information

1.4. None.

The Transmission Owner shall demonstrate compliance through self-certification submitted to the compliance monitor (RRO) annually that it meets the requirements of NERC Reliability Standard FAC-003-1. The compliance monitor shall conduct an on-site audit every five years or more frequently as deemed appropriate by the compliance monitor to review documentation related to Reliability Standard FAC-003-1. Field audits of ROW vegetation conditions may be conducted if determined to be necessary by the compliance monitor.

2. Violation Severity Levels

R #	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	The responsible entity did not include and keep current one of the four required	The responsible entity did not include and keep current two of the four required	The responsible entity did not include and keep current three of the four required	The responsible entity did not include and keep current all required elements of the

	elements of its TVMP, as directed by the requirement.	elements of its TVMP, as directed by the requirement.	elements of its TVMP, as directed by the requirement.	TVMP, as directed by the requirement.
R1.1	N/A	N/A	The applicable entity TVMP did not define a schedule, as directed by the requirement, or the type of ROW vegetation inspections, as directed by the requirement.	The applicable entity TVMP did not define a schedule, as directed by the requirement, nor the type of ROW vegetation inspections, as directed by the requirement.
R1.2	N/A	N/A	N/A	The responsible entity, in its TVMP, failed to identify and document clearances between vegetation and any overhead, ungrounded supply conductors. OR The responsible entity, in its TVMP, failed to take into consideration transmission line voltage, or the effects of ambient temperature on conductor sag under maximum design loading, or the effects of wind velocities on conductor sway. OR The responsible entity, in its TVMP, failed to establish Clearance 1 or

				Clearance 2 values.
R1.2.1	N/A	N/A	N/A	The responsible entity failed to determine and document an appropriate clearance distance to be achieved at the time of transmission vegetation management work taking into account local conditions and the expected time frame in which the responsible entity expects to return for future vegetation management work. OR The responsible entity documented a Clearance 1 value that was smaller than its Clearance 2 value.
R1.2.2	N/A	N/A	N/A	The responsible entity failed to determine and document Clearance 2 values taking into account local conditions and the expected time frame in which the responsible entity expects to return for future vegetation management work.
R1.2.2.1	N/A	N/A	N/A	Where transmission system transient overvoltage factors were known,

				clearances were not derived from Table 5, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.
R1.2.2.2	N/A	N/A	N/A	Where transmission system transient overvoltage factors are known, clearances were not derived from Table 7, IEEE 516-2003, phase-to-phase voltages, with appropriate altitude correction factors applied.
R1.3	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, one of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design and implementation of the TVMP, 5% or less of those persons did not hold appropriate qualifications and training to perform their duties.	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, two of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design and implementation of the TVMP, more than 5% up to (and including) 10%of those persons did not hold appropriate qualifications and training to perform their duties.	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, three of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design and implementation of the TVMP, more than 10% up to (and including) 15%of those persons did not hold appropriate qualifications and training to perform their duties.	For responsible entities directly involving fewer than 20 persons in the design and implementation of the TVMP, more than three of those persons did not hold appropriate qualifications and training to perform their duties. For responsible entities directly involving 20 or more persons in the design and implementation of the TVMP, more than 15% of those persons did not hold appropriate qualifications and training to perform their duties.
R1.4	N/A	N/A	N/A	The responsible entity's TVMP does not include mitigation

				measures to achieve sufficient clearances where restrictions to the ROW are in effect.
R1.5	N/A	N/A	N/A	The responsible entity did not establish or did not document a process for the immediate communication of vegetation conditions that present an imminent threat of line outage, as directed by the requirement.
R2	The responsible entity did not meet one of the three required elements (including in the annual plan a description of methods used for vegetation management, maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	The responsible entity did not meet two of the three required elements (including in the annual plan a description of methods used for vegetation management, maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	The responsible entity did not meet the three required elements (including in the annual plan a description of methods used for vegetation management, maintaining documentation of adjustments to the annual plan, or having systems and procedures for tracking work performed as part of the annual plan) specified in the requirement.	The responsible entity does not have an annual plan for vegetation management. OR The responsible entity has not implemented the annual plan for vegetation management.
R3	The responsible entity failed to provide a quarterly outage report, but did not experience any reportable outages. OR The responsible	The responsible entity provided a quarterly report, but failed to include information required by R3.3.	The responsible entity provided a quarterly outage report, but failed to include a reportable Category 3 outage as described in R3.4.3.	The responsible entity experienced reportable outages but failed to provide a quarterly report. OR The responsible entity provided a

	entity provided a quarterly report, but failed to report in the manner specified by one or more of the following subcomponents of Requirement R3: R3.1 or R3.2.			quarterly outage report, but failed to include a reportable Category 1 (as described in R3.4.1) or Category 2 outage (as described in R3.4.2).
R4	N/A	N/A	N/A	N/A

E.

2.Levels of Non-Compliance

2.1.Level 1:

2.1.1. The TVMP was incomplete in one of the requirements specified in any subpart of Requirement 1, or;

2.1.2. Documentation of the annual work plan, as specified in Requirement 2, was incomplete when presented to the Compliance Monitor during an on-site audit, or;

2.1.3. The RRO provided an outage report to NERC that was incomplete and did not contain the information required in Requirement 4.

2.2.Level 2:

2.2.1. The TVMP was incomplete in two of the requirements specified in any subpart of Requirement 1, or;

2.2.2. The Transmission Owner was unable to certify during its annual self-certification that it fully implemented its annual work plan, or documented deviations from, as specified in Requirement 2.

2.2.3. The Transmission Owner reported one Category 2 transmission vegetation-related outage in a calendar year.

2.3.Level 3:

2.3.1. The Transmission Owner reported one Category 1 or multiple Category 2 transmission vegetation-related outages in a calendar year, or;

2.3.2. The Transmission Owner did not maintain a set of clearances (Clearance 2), as defined in Requirement 1.2.2, to prevent flashover between vegetation and overhead ungrounded supply conductors, or;

2.3.3. The TVMP was incomplete in three of the requirements specified in any subpart of Requirement 1.

2.4.Level 4:

2.4.1. The Transmission Owner reported more than one Category 1 transmission vegetation-related outage in a calendar year, or;

~~2.4.2.~~The TVMP was incomplete in four or more of the requirements specified in any subpart of Requirement 1.

~~G.~~E. Regional Differences

None Identified.

Version History

Version	Date	Action	Change Tracking
1	TBA	1. Added "Standard Development Roadmap." 2. Changed "60" to "Sixty" in section A, 5.2. 3. Added "Proposed Effective Date: April 7, 2006" to footer. 4. Added "Draft 3: November 17, 2005" to footer.	01/20/06
X	May 16, 2011	Added requirements for Generator Owner and brought overall standard format up to date	Revision under Project 2010-07