

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p align="center">Standard FAC-003-1 NERC Board Approved</p>	<p align="center">Comment</p>	<p align="center">Proposed Standard FAC-003-2</p>
<p>1. Title: Transmission Vegetation Management Program</p>	<p>1. Title: No Change (N/C)</p>	<p>1. Title: Transmission Vegetation Management Program</p>
<p>2. Number: FAC-003-1</p>	<p>2. Number: Update to latest Revision</p>	<p>2. Number: FAC-003-2</p>
<p>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 (RRO) and the North American Electric Reliability Council (NERC).</p>	<p>3. Purpose: Changed electric transmission systems to Bulk Electric System. Changed to a shorter more concise purpose statement. The various explanatory objectives are now addressed within the standard’s requirements.</p>	<p>3. Purpose: To improve the reliability of the Bulk Electric System by preventing vegetation related outages that could lead to widespread cascading failures.</p>
<p>4. Applicability:</p> <p>4.1. Transmission Owner 4.2. Regional Reliability Organization</p> <p>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.</p>	<p>4. Applicability: Separated applicability between functional entities and facilities for clarity</p> <p>4.1 now is 4.4.1 No change 4.2 Removed Regional Reliability Organization and added 4.1.2 Reliability Coordinator</p> <p>4.3 Clarified facility applicability in 4.2, 4.2.1, 4.2.2 and 4.2.3 as stated below</p> <p>4.2.1. Added term “applicable lines” for format efficiency in the standard verbiage. Ensures that all lines are covered by the standard regardless of the owner of the over which they cross.</p>	<p>4. Applicability</p> <p>4.1 Functional Entities:</p> <p>4.1.1 Transmission Owner 4.1.2 Reliability Coordinator</p> <p>4.2 Facilities:</p> <p>4.2.1 Transmission lines (“applicable lines”) operated at 200kV or higher, and transmission lines operated below 200kV designated by the Reliability Coordinator as being subject to this standard including but not limited to those that cross lands owned by federal, state, provincial, public, private, or</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

Standard FAC-003-1 NERC Board Approved	Comment	Proposed Standard FAC-003-2
<p>Effective Dates: 5.1 One calendar year from the date of adoption by the NERC Board of Trustees for Requirement 1 and 2. 5.2 Sixty calendar days from the date of adoption by the NERC Board of Trustees for the Requirements 3 and 4.</p>	<p>4.2.2 Added to identify the time frame allowed to bring sub 200kV lines into compliance with the standard after the Reliability Coordinator has determined that they are subject to the standard.</p> <p>4.2.3. Added to specify the time frame allowed, for a newly acquired above 200kV line, which was not previously subject to the standard, to become subject to the standard.</p> <p>Effective Dates: Reworded both 5.1 and 5.2 as one statement for consistency with standards process for a standard revision.</p>	<p>tribal entities.</p> <p>4.2.2 Transmission lines operated below 200kV designated by the Reliability Coordinator as being subject to this standard become subject to this standard 12 months after the date the Reliability Coordinator initially designates the transmission line as being subject to this standard.</p> <p>4.2.3 Existing transmission line(s) operated at 200kV or higher that are newly acquired by a Transmission Owner and were not previously subject to this standard, become subject to this standard 12 months after the acquisition date of the transmission line(s).</p> <p>5. Effective Dates: In those jurisdictions where regulatory approval is required, the first calendar day of the first calendar quarter one year after applicable regulatory authority approval for all requirements; or, in those jurisdictions where no regulatory approval is required, the first calendar day of the first calendar quarter one year following Board of Trustees adoption.</p>
<p>R1. The Transmission Owner shall prepare, and keep current, a formal transmission vegetation management program (TVMP). The TVMP shall include the Transmission Owner’s objectives, practices, approved procedures, and work specifications.</p>	<p>R1. Replaced “prepare, and keep current” with “have” and removed the longer series of terms with one term “designed to control vegetation”. Clarified that this applies on the Active Transmission Line Right of Way.</p> <p>R1.1 New language replaced the longer series that was</p>	<p>R1. Each Transmission Owner shall have a documented transmission vegetation management program designed to control vegetation on its Active Transmission Lines’ Rights of Way. The transmission vegetation management program shall:</p> <p>R1.1. Specify the methodologies that the Transmission</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p align="center">Standard FAC-003-1 NERC Board Approved</p>	<p align="center">Comment</p>	<p align="center">Proposed Standard FAC-003-2</p>
<p>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 Transmission Owner’s transmission lines.</p> <p>R2. The Transmission 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 Transmission 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.</p>	<p>previously implied by R1 in version 1.</p> <p>R1.1 replaced by R1.2. Changed inspection schedule to inspection frequency and specified the frequency to be at least once per calendar year. Note also that R3 has been added to clarify that the conduction of inspections is a separate requirement from specifying the frequency that inspections will occur.</p> <p>R2 replaced by R1.3 and R8. R1.3 is the explanation of the TVMP documentation requirements changes only. See the associated remarks below under R8 for the changes with respect to implementation of the annual plan.</p>	<p>Owner uses to control vegetation.</p> <p>R1.2. Specify a vegetation inspection frequency of at least once per calendar year that takes into account local¹ and environmental factors.</p> <p>R1.3. Require an annual plan that identifies the applicable lines to be maintained and associated work to be performed during the year. It shall be flexible to adjust to changing conditions and to findings from vegetation inspections. Adjustments to the plan within the year are permissible. The plan shall take into consideration permitting and scheduling requirements from landowners or regulatory authorities. It shall support the objectives of the transmission vegetation management program and use the methodologies outlined in the transmission vegetation management program.</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p align="center">Standard FAC-003-1 NERC Board Approved</p>	<p align="center">Comment</p>	<p align="center">Proposed Standard FAC-003-2</p>
<p>R1.5. Each Transmission 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.</p> <p>R1.4. Each Transmission 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 is restricted from attaining the clearances specified in Requirement 1.2.1.</p>	<p>R1.5 replaced by R1.4 which requires a documented process to respond with examples of actions including immediate communications and other actions that may be taken to relieve the threat.</p> <p>R1.4 replaced by R1.5 – Now referred to as interim corrective action process to address situations where vegetation maintenance activities cannot be performed as planned. The term corrective action plan is used in lieu of mitigation plan to avoid confusion with other uses in NERC of “mitigation plan”</p> <p>New R2 added to ensure that implementation of the imminent threat procedure as a stand-alone requirement.</p> <p>R3. Has been added to separate this conduct of inspections from R1.2 documentation which specifies the frequency for inspections.</p> <p>The old R1.2. Has been changed by elimination of Clearance 1 and the replacement of Clearance 2 with the Critical Clearance Zone. See R2 and R4</p>	<p>R1.4. Require a process or procedure for response to imminent threats of a vegetation related Sustained Outage. The process or procedure shall specify actions which shall include immediate communication of the threat to the Transmission Operator, and may include actions such as a temporary reduction in line rating, switching lines out of service, or other actions.</p> <p>R1.5. Specify the general interim corrective action process for use when the Transmission Owner is constrained from performing vegetation maintenance as planned.</p> <p>R2. Each Transmission Owner shall implement its imminent threat procedure when the Transmission Owner has knowledge, obtained through normal operating practices or notification from others, that the Critical Clearance Zone is approached by vegetation to prevent an encroachment of the Critical Clearance Zone.</p> <p>R3.Each Transmission Owner shall conduct inspections of all applicable lines in accordance with the frequency specified in its transmission vegetation management program.</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p>Standard FAC-003-1 NERC Board Approved</p>	<p>Comment</p>	<p>Proposed Standard FAC-003-2</p>
<p>R1.2. The Transmission Owner, in the TVMP, shall identify and document clearances between vegetation and any overhead, ungrounded supply conductors, taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading and the effects of wind velocities on conductor sway. Specifically, the Transmission 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.</p> <p>R1.2.1. Clearance 1 — The Transmission 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 Transmission Owner plans to return for future vegetation management work. Local conditions include, but are not limited to: operating voltage, appropriate vegetation management techniques, fire risk, reasonably anticipated tree and conductor movement, species type 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 under all rated electrical operating conditions.</p>	<p>R1.2.1 - Clearance 1 requirement eliminated:</p> <p>R1.2.2 replaced by R4 - Clearance 2 has been replaced by Critical Clearance Zone. the old R1.1.2 was a documentation requirement within the TVMP whereas R4 specifies encroachments as violations. Under the Levels of Non-Compliance in FAC-003-1, Level 3: 2.3.2 covered failure to “maintain...Clearance 2”. Note that encroachment reporting will be addressed later in a VSL for R4</p>	<p>R4 Each Transmission Owner shall prevent encroachment within the Critical Clearance Zone of</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p align="center">Standard FAC-003-1 NERC Board Approved</p>	<p align="center">Comment</p>	<p align="center">Proposed Standard FAC-003-2</p>
<p>R1.2.2. Clearance 2 — The Transmission 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 Transmission 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 (<i>Guide for Maintenance Methods on Energized Power Lines</i>) and as specified in its Section 4.2.2.3, Minimum Air Insulation Distances without Tools in the Air Gap.</p> <p>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.</p> <p>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</p> <p>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, to perform their duties.</p>	<p>R1.3 – Personnel qualifications has been removed.</p>	<p>its applicable lines with the following exceptions:</p> <ol style="list-style-type: none"> 1. Encroachments of the Critical Clearance Zone that result from natural disasters. 2. Encroachments of the Critical Clearance Zone that result from human or animal activity.
<p>R3. The Transmission Owner shall report quarterly to</p>	<p>R3 Outage reporting is now covered in R5-R7 and</p>	<p>R5 Each Transmission Owner shall prevent Sustained</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

Standard FAC-003-1 NERC Board Approved	Comment	Proposed Standard FAC-003-2
<p>its RRO, or the RRO’s designee, sustained transmission line outages determined by the Transmission Owner to have been caused by vegetation.</p> <p>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.</p> <p>R3.2. The Transmission Owner is not required to report to the RRO, or the RRO’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 Transmission 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).</p> <p>R3.3. The outage information provided by the Transmission Owner to the RRO, or the RRO’s designee, shall include at a minimum: the name</p>	<p>M5-M7 and the associated Compliance VSLs for R5-R7.</p> <p>Requirements R5, R6, and R7 specify three types of Sustained Outages which shall be prevented. Exceptions have been further defined</p> <p>Outages in FAC-003-1 R3 were reporting requirements and were not violations per se. In that version of the standard the Levels of Non-Compliance 2.2.3, 2.3.1, and 2.4.1 the Sustained Outages were assigned a level of non-compliance.</p>	<p>Outages of applicable lines due to vegetation growing into a conductor operating between no-load and rated conditions with the following exceptions:</p> <ol style="list-style-type: none"> 1. Sustained Outages of applicable lines that result from natural disasters. 2. Sustained Outages of applicable lines that result from human or animal activity. <p>R6 Each Transmission Owner shall prevent Sustained Outages of applicable lines due to the blowing together of vegetation and a conductor within an Active Transmission Line Right of Way (operating within design blow out conditions) with the following exception:</p> <ol style="list-style-type: none"> 1. Sustained Outages of transmission lines that result from sustained winds or gusts due to natural disasters. <p>R7 Each Transmission Owner shall prevent Sustained Outages of applicable lines due to vegetation falling into a conductor from within an Active Transmission Line Right of Way with the following exceptions:</p> <ol style="list-style-type: none"> 1. Sustained Outages of applicable lines that result from natural disasters. 2. Sustained Outages of applicable lines that result from human or animal activity.

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

<p>Standard FAC-003-1 NERC Board Approved</p>	<p>Comment</p>	<p>Proposed Standard FAC-003-2</p>
<p>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 Transmission 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.</p>	<p>Category 3 – fall-in outages are no longer reportable.</p> <p>R8 Is a new requirement which separates the implementation of the annual plan from the creation of the annual plan. See FAC-003-2, 1.3 above.</p>	<p>R8 Each Transmission Owner shall implement its annual work plan for vegetation management to accomplish the purpose of this standard within the extent of its easement and/or legal rights.</p>
<p>R4. The RRO shall report the outage information provided to it by Transmission Owner’s, as required by Requirement 3, quarterly to NERC, as well as any actions taken by the RRO as a result of any of the reported outages.</p>	<p>R4 Eliminated. The RRO, which is now the RE, is not subject to standards.</p>	
	<p>R9 This new requirement addresses the</p>	<p>R9 Each Reliability Coordinator in consultation</p>

FAC-003-1 Mapping to Revised NERC Reliability Standard FAC-003-2

Standard FAC-003-1 NERC Board Approved	Comment	Proposed Standard FAC-003-2
	identification of sub-200kV lines.	with their Transmission Owner(s) and neighboring Reliability Coordinator(s) shall jointly prepare and keep current, a list of designated applicable lines that are operated below 200kV, if any, which are subject to this standard.
		<p>R10 Each Reliability Coordinator shall document its method for assessing the reliability significance of sub-200kV lines considering all of the following:</p> <p>R10.1 Transmission lines whose loss would result in the exceedance of an Interconnection Reliability Operating Limit (IROL)</p> <p>R10.2 Transmission lines whose loss would place the grid at an unacceptable risk of instability, separation, or cascading failures.</p>
	Footnotes have been added to reference the EPact 2005 and to define the active transmission line ROW	Footnotes on Page 2
	Footnote added to define local factors	Footnotes on Page 3
	Footnotes added to cover exceptions which were in FAC-003-1 imbedded within the standard	Footnotes on Page 4