

Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

Development Steps Completed

1. SC approved SAR for initial posting (January 11, 2007).
2. SAR posted for comment (January 15–February 14, 2007).
3. SAR posted for comment (April 10–May 9, 2007).
4. SC authorized moving the SAR forward to standard development (June 27, 2007).

Proposed Action Plan and Description of Current Draft

This is the first posting of the proposed revisions to the standard in accordance with Results-Based Criteria. The drafting team requests posting for a 30-day informal comment period.

Future Development Plan

| Anticipated Actions | Anticipated Date |
|---|------------------|
| Drafting team considers comments, makes conforming changes, posts for 30-day informal comment period. | April 2010 |
| Drafting team considers comments, makes conforming changes, and requests SC approval to proceed to formal comment and ballot. | June 2010 |
| Recirculation ballot of standards. | August 2010 |
| Receive BOT approval | September 2010 |

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.

Active Transmission Line Right-of-Way

A strip or corridor of land that is occupied by active transmission facilities. This corridor does not include the parts of the Right-of-Way that are unused or intended for other facilities.

Examples of active portions of corridors include:

The width of any Active Transmission Line Right-of-Way (ROW) is the portion of the ROW that has been cleared of vegetation to meet design clearance requirements such as National Electrical Safety Code or other design criteria, for the reliable operation of active facilities.

Examples of inactive portions of corridors include:

- 1) The portions of the ROW acquired to accommodate future Facilities. Power plant exits are examples where large ROWs are obtained for maximum corridor utilization and may currently have fewer circuits constructed.
- 2) The portion of the ROW where corridor edge zones are designated by regulatory bodies for vegetation to exist.
- 3) The portions of the ROW where double-circuit structures are installed but only one circuit is currently strung with conductors.

Vegetation Inspection

The systematic examination of vegetation conditions on an Active Transmission Line Right-of-Way which may be combined with a general line inspection.

The current glossary definition of this NERC term is modified to allow both maintenance inspections and vegetation inspections to be performed concurrently.

Current definition of Vegetation Inspection: The systematic examination of a transmission corridor to document vegetation conditions.

Effective Dates

| Requirement | Jurisdiction | | | | | | | | | |
|-------------|--------------|------------------|----------|---------------|--------------|-------------|---------|--------|--------------|-----|
| | Alberta | British Columbia | Manitoba | New Brunswick | Newfoundland | Nova Scotia | Ontario | Quebec | Saskatchewan | USA |
| R1 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R2 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R3 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R4 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R5 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R6 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |
| R7 | 1 | 1 | 1 | 3 | TBD | TBD | 2 | TBD | 1 | 1 |

1. First calendar day of the first calendar quarter one year after applicable regulatory authority approval for all requirements
2. First calendar day of the first calendar quarter one year following Board of Trustees adoption unless governmental authority withholds approval
3. First calendar day of the first calendar quarter that is at least one year following Board of Trustees adoption

Exceptions:

Lines operated below 200kV, designated by the Planning Coordinator as an element of an IROL or as a Major WECC transfer path, become subject to this standard 12 months after the date the Planning Coordinator or WECC initially designates the lines as being subject to this standard.

An existing transmission line operated at 200kV or higher that is newly acquired by an asset owner and was not previously subject to this standard, becomes subject to this standard 12 months after the acquisition date of the line(s).

Version History

| Version | Date | Action | Change Tracking |
|----------------|---------------|---|------------------------|
| 1 | TBA | <ol style="list-style-type: none"> 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 |
| 1 | April 4, 2007 | Regulatory Approval — Effective Date | New |
| 2 | | | |

Introduction

1. **Title:** Transmission Vegetation Management
2. **Number:** FAC-003-2
3. **Objectives:** To improve the reliability of the electric Transmission system by preventing those vegetation related outages that could lead to Cascading.

4. Applicability

4.1. Functional Entities:

4.1.1 Transmission Owners

- 4.2. **Facilities:** Defined below, including but not limited to those that cross lands owned by federal¹, state, provincial, public, private, or tribal entities:

- 4.2.1. Overhead transmission lines operated at 200kV or higher.
- 4.2.2. Overhead transmission lines operated below 200kV having been identified as elements of an Interconnection Reliability Operating Limit (IROL).
- 4.2.3. Overhead transmission lines operated below 200 kV having been identified as included in the definition of one of the *Major WECC Transfer Paths in the Bulk Electric System*.
- 4.2.4. This Standard does not apply to Facilities identified above (4.2.1 through 4.2.3) located in the fenced area of a switchyard, station or substation.

4.3. Other:

- 4.3.1. This Standard does not apply to any occurrence, non-occurrence, or other set of circumstances that are beyond the reasonable control of a Transmission Owner subject to this Reliability Standard, and are not caused by the fault or negligence of the Transmission Owner, including acts of God, flood, drought, earthquake, major storms, fire, hurricane, tornado, landslides, logging activities, animals severing trees, lightning, epidemic, strike, war, riot, civil disturbance, sabotage, vandalism, terrorism, wind shear, or fresh gales that restricts or prevents performance to comply with this reliability standard's requirements.

5. Background

This NERC Vegetation Management Standard (“Standard”) uses a defense-in-depth approach to improve the reliability of the electric Transmission System by preventing those vegetation related outages that could lead to Cascading. This Standard is not intended to address non-preventable outages such as those due to vegetation fall-ins from outside the Active Transmission Line Right-of-Way, vandalism, human errors

¹ EPAAct 2005 section 1211c: “Access approvals by Federal agencies”.

and acts of nature. Operating experience indicates that trees that have grown out of specification have contributed to Cascading, especially under heavy electrical loading conditions.

Major outages and operational problems have resulted from interference between overgrown vegetation and transmission lines located on many types of lands and ownership situations. Adherence to the Standard requirements for applicable lines on any kind of land or easement, whether they are Federal Lands, state or provincial lands, public or private lands, franchises, easements or lands owned in fee, will reduce and manage this risk. For the purpose of the Standard the term “public lands” includes municipal lands, village lands, city lands, and a host of other governmental entities.

This Standard addresses vegetation management along applicable overhead lines that serve to connect one electric station to another. However, this Standard does not apply to underground lines or to line sections inside an electric station boundary.

This Standard focuses on transmission lines to prevent those vegetation related outages that could lead to Cascading. It is not intended to prevent customer outages due to tree contact with lower voltage distribution system lines. For example, localized customer service might be disrupted if vegetation were to make contact with a 69kV transmission line supplying power to a 12kV distribution station. However, this Standard is not written to address such isolated situations which have little impact on the overall Bulk Electric System.

Since vegetation growth is constant and always present, unmanaged vegetation poses an increased outage risk, especially when numerous transmission lines are operating at or near their Rating. This can present a significant risk of multiple line failures and Cascading. Conversely, most other outage causes (such as trees falling into lines, lightning, animals, motor vehicles, etc.) are statistically intermittent. These events are not any more likely to occur during heavy system loads than any other time. There is no cause-effect relationship which creates the probability of simultaneous occurrence of other such events. Therefore these types of events are highly unlikely to cause large-scale grid failures. Thus, this Standard’s emphasis is on vegetation grow-ins.

Requirements and Measures

R1. Each Transmission Owner shall prevent vegetation from encroaching within the Minimum Vegetation Clearance Distance (MVCD) of each line conductor that is identified as an element of an Interconnection Reliability Operating Limit (IROL) or Major Western Electricity Coordinating Council (WECC) transfer path (operating within Rating and Rated Electrical Operating Conditions) to avoid a Sustained Outage.

Rationale

The MVCD is a calculated minimum distance stated in feet (meters) to prevent spark-over between conductors and vegetation, for various altitudes and operating voltages. The distances in Table 2 were derived using a proven transmission design method.

M1. Evidence of violation of Requirement R1 is limited to:

- Real-time observation of encroachment into the MVCD, or
- A vegetation-related Sustained Outage due to a fall-in from inside the Active Transmission Line ROW, or
- A vegetation-related Sustained Outage due to blowing together of applicable lines and vegetation located inside the Active Transmission Line ROW, or
- A vegetation-related Sustained Outage due to a grow-in.

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

R2. Each Transmission Owner shall prevent vegetation from encroaching within the MVCD of each applicable line conductor, which are not elements of an IROL and are not a Major WECC transfer path, (operating within Rating and Rated Electrical Operating Conditions) to avoid a Sustained Outage.

Rationale

The MVCD is a calculated minimum distance stated in feet (meters) to prevent spark-over between conductors and vegetation, for various altitudes and operating voltages. The distances in Table 2 were derived using a proven Transmission design method.

M2. Evidence of violation of Requirement R2 is limited to:

- Real-time observation of encroachment into the MVCD, or
- A vegetation-related Sustained Outage due to a fall-in from inside the Active Transmission Line ROW, or
- A vegetation-related Sustained Outage due to blowing together of applicable lines and vegetation located inside the Active Transmission Line ROW, or
- A vegetation-related Sustained Outage due to a grow-in.

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

R3. Each Transmission Owner shall have a documented transmission vegetation management program that describes how it conducts work on its Active Transmission Line ROWs to avoid Sustained Outages due to vegetation, considering all possible locations the conductor may occupy assuming operation within Rating and Rated Electrical Operating Conditions.

M3. Each Transmission Owner has a documented transmission vegetation management program that describes how it conducts work on its Active Transmission Line ROW to avoid Sustained Outages due to vegetation, considering all possible locations the conductor may occupy assuming operation within Rating and Rated Electrical Operating Conditions.

R4. Each Transmission Owner shall notify the responsible control center when it has verified knowledge of a vegetation imminent threat condition. A vegetation imminent threat condition is one which is likely to cause a Sustained Outage at any moment.

M4. Each Transmission Owner that has experienced a verified vegetation imminent threat will have evidence that it notified the responsible control center.

Rationale

Provide a basis for evaluation on the intent and competency of the Transmission Owner in maintaining vegetation. There may be many acceptable approaches to maintain clearances. However, the Transmission Owner should be able to state what its approach is and how it conducts work to maintain clearances. See Figure 1 for an illustration of possible conductor locations.

Rationale

To ensure rapid notification of the correct personnel when an occurrence of a critical situation is observed. Verified knowledge includes observations by journeyman lineman, utility arborist, or other qualified personnel, or a report verified by these personnel.

R5. Each Transmission Owner shall take interim corrective action when it is temporarily constrained from performing planned vegetation work, where a transmission line is put at potential risk due to the constraint.

M5. Each Transmission Owner has evidence of the interim corrective action taken for each temporary constraint where a transmission line was put at potential risk. Examples of acceptable forms of evidence may include work orders, invoices, or inspection records.

Rationale

Legal actions and other events may occur which result in constraints that prevent the Transmission Owner from performing planned vegetation maintenance work. When this event occurs and the work is essential to avoid risk to the transmission line the Transmission Owner must establish and act on a plan to prevent an imminent threat. This is not intended to address situations where a planned work methodology cannot be performed but an alternate work methodology can be used.

R6. Each Transmission Owner shall perform a Vegetation Inspection of all applicable transmission lines at least once per calendar year.

M6. Each Transmission Owner has evidence that it conducted Vegetation Inspections at least once per calendar year for applicable transmission lines. Examples of acceptable forms of evidence may include work orders, invoices, or inspection records.

Rationale

The requirement is for once per calendar year because that seems to be reasonable length of time for a majority of situations. Transmission Owners should consider local and environmental factors that could warrant more frequent inspections that may affect reliability.

R7. Each Transmission Owner shall execute a flexible annual vegetation work plan to ensure no vegetation encroachments occur within the MVCD.

M7. Each Transmission Owner has evidence that it executed a flexible annual vegetation work plan. Examples of acceptable forms of evidence may include work orders, invoices, or inspection records.

Rationale

This requirement sets the expectation that the work identified in the annual work plan will be completed as planned. A flexible annual vegetation work plan allows for work to be deferred into the following calendar year provided it does not have the potential to become an imminent threat.

Compliance

Compliance Enforcement Authority

- Regional Entity

Compliance Monitoring and Enforcement Processes:

- Compliance Audits
- Self-Certifications
- Spot Checking
- Compliance Violation Investigations
- Self-Reporting
- Complaints

Evidence Retention

The Transmission Owner retains data or evidence of Requirements R1 through R7, Measures M1 through M7 for three years to show compliance unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

If a Transmission Owner is found non-compliant, it shall keep information related to the non-compliance until found compliant.

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

Additional Compliance Information

(See Administrative Procedure)

Time Horizons, Violation Risk Factors, and Violation Severity Levels

| Table 1 | | | | | | |
|----------------|---------------------|------------|---|---|---|---|
| R# | Time Horizon | VRF | Violation Severity Level | | | |
| | | | Lower | Moderate | High | Severe |
| R1 | Real-time | High | The Transmission Owner failed to prevent vegetation from encroaching within the MVCD of a transmission line as described in R1. | The Transmission Owner incurred a Sustained Outage due to vegetation falling into a transmission line as described in R1 from within the Active Transmission Line ROW. | The Transmission Owner incurred a Sustained Outage due to the blowing together of vegetation and a transmission line as described in R1 from within the Active Transmission Line ROW. | The Transmission Owner incurred a Sustained Outage due to vegetation growing into a transmission line as described in R1. |
| R2 | Real-time | Medium | The Transmission Owner failed to prevent vegetation from encroaching within the MVCD of a transmission line as described in R2. | The Transmission Owner incurred a Sustained Outage due to vegetation falling into a transmission line as described in R2 from within the Active Transmission Line ROW. | The Transmission Owner incurred a Sustained Outage due to the blowing together of vegetation and a transmission line as described in R2 from within the Active Transmission Line ROW. | The Transmission Owner incurred a Sustained Outage due to vegetation growing into a transmission line as described in R2. |
| R3 | Long-Term Planning | Lower | | The Transmission Owner has a documented transmission vegetation management program, but the transmission vegetation management program does not describe how work is conducted on the Active Transmission Line ROWs to avoid Sustained Outages due to vegetation. | The Transmission Owner has a documented transmission vegetation management program, but the transmission vegetation management program does not consider all possible locations the conductor may occupy assuming operation within Rating and Rated Electrical Operating Conditions | The Transmission Owner does not have a documented transmission vegetation management program. |

| | | | | | | |
|----|---------------------|--------|--|---|---|--|
| R4 | Real-time | Medium | | | | The Transmission Owner had verified knowledge of a vegetation imminent threat condition and did not notify the responsible control center. |
| R5 | Operations Planning | Medium | | | | The Transmission Owner did not take interim corrective action when it was temporarily constrained from performing planned vegetation work where an applicable transmission line was put at potential risk. |
| R6 | Operations Planning | High | The Transmission Owner inspected greater than 95% but less than 100% of the ROW as measured by applicable-line miles (kilometers) (based on units of choice: circuit, pole line, ROW, etc.). | The Transmission Owner inspected greater than 90% but less than or equal to 95% of the ROW as measured by applicable-line miles (kilometers) (based on units of choice: circuit, pole line, ROW, etc.). | The Transmission Owner inspected greater than 85% but less than or equal to 90% of the ROW as measured by applicable-line miles (kilometers) (based on units of choice: circuit, pole line, ROW, etc.). | The Transmission Owner inspected less than or equal to 85% of the ROW as measured by applicable-line miles (kilometers) (based on units of choice: circuit, pole line, ROW, etc.). |
| R7 | Operations Planning | High | The Transmission Owner executed greater than 95% but less than 100% of its annual work plan as adjusted. | The Transmission Owner executed greater than 90% but less than or equal to 95% of its annual work plan as adjusted. | The Transmission Owner executed greater than 85% but less than or equal to 90% of its annual work plan as adjusted. | The Transmission Owner executed less than or equal to 85% of its annual work plan as adjusted. |

Administrative Procedure

The Transmission Owner will submit a quarterly report to its Regional Entity, or the Regional Entity's designee, identifying all Sustained Outages of transmission lines determined by the Transmission Owner to have been caused by vegetation that includes, as a minimum, the following:

- The name of the circuit(s), the date, time and duration of the outage; the voltage of the circuit; a description of the cause of the outage; the category associated with the Sustained Outage; other pertinent comments; and any countermeasures taken by the Transmission Owner.

A Sustained Outage is to be categorized as one of the following:

- Category 1A — Grow-ins: Sustained Outages caused by vegetation growing into applicable transmission lines, that are identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the Active Transmission Line ROW;
- Category 1B — Grow-ins: Sustained Outages caused by vegetation growing into applicable transmission lines, but are not identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the Active Transmission Line ROW;
- Category 2 — Fall-ins: Sustained Outages caused by vegetation falling into applicable transmission lines from within the Active Transmission Line ROW;
- Category² 4 — Blowing together: Sustained Outages caused by vegetation and applicable transmission lines blowing together from within the Active Transmission Line ROW.

The Regional Entity will report the outage information provided by Transmission Owners, as per the above, quarterly to NERC, as well as any actions taken by the Regional Entity as a result of any of the reported Sustained Outages.

Variations

None.

Interpretations

None.

² Category 3 reporting is eliminated.

in the MVCD Table. However, brief encroachments by falling vegetation are not considered to be a violation.

In addition, the Transmission Owner should maintain detailed records of the findings of its planned inspections. This documentation constitutes evidence that the Transmission Owner had no encroachments into the MVCD Table distances.

These requirements assume that transmission lines are operating within their Rating. If a line conductor is intentionally or inadvertently operated beyond its rating (potentially in violation of other standards), the occurrence of a clearance encroachment is not be a violation of this Standard. Conductor position, and the associated vegetation distance, that result from operation of a transmission line beyond its Rating (for example emergency actions taken by a TOP or RC to protect an Interconnection) is beyond the scope of this Standard.

Requirement R3:

An adequate transmission vegetation management program formally establishes the guidelines that are used by the Transmission Owner to plan and perform vegetation work that is necessary to prevent transmission outages and minimize risk to the Transmission System.

There may be many acceptable approaches to maintain clearances. However, the Transmission Owner should be able to state what its approach is and how it conducts work to maintain clearances. See Figure 1 for illustration of possible conductor locations.

Requirement R4:

The term “verified knowledge” implies reliable confirmation that an imminent threat actually exists due to vegetation. Verification could be that the initial call-in came from a trained employee able to identify such a threat or it could be verified by sending out such a trained person to confirm a call-in from a citizen.

Two key elements of an acceptable imminent threat procedure are outlined below:

- Specify the vegetation-related conditions that warrant a response:

Examples of these vegetation-related conditions include vegetation that is near or encroaching into the MVCD (growth issue) or vegetation that presents an imminent danger of falling into the transmission conductor (fall-in issue)

- Notify the appropriate operating authority:

The Transmission Owner has the responsibility to ensure the proper communication between field personnel and the operating authority to allow the operating authority to take the appropriate action until the threat is relieved. Appropriate actions may include a temporary reduction in the line loading or switching the line out of service.

The protocol for contacting the operating authority should be defined. Some Transmission Owners’ processes may require a call directly to the operating authority, while other Transmission Owners may require a call to a supervisor or field forester who will in turn notify the proper operating authority.

The term “responsible control center” refers to personnel with direct responsibility for operating the transmission lines, such as the Transmission Owner’s control center, an Independent System Operator, or other operating entity. In the case where the operating authority is not the Transmission Operator the communication between the Transmission Operator and the operating authority will occur by the normal policies that govern their relationship.

The imminent threat process should be implemented in terms of minutes or hours as opposed to a longer time frame for interim corrective action plans (see R5).

All serious growth or fall-in vegetation-related conditions are not necessarily considered imminent threats under this Standard. For example, some Transmission Owners may have a danger tree identification program that identifies for removal trees with the potential to fall near the line. These trees are not necessarily considered imminent threats under the Standard unless they pose an immediate fall-in threat.

There can be situations involving vegetation that are not considered vegetation-related imminent threats under this Standard. For example, a logging operation on or near the Active Transmission Line ROW can pose an immediate threat of a sustained outage and result in the initiation of an imminent threat process in the same manner as the presence of a nearby crane or the notification of a hot-spot on a conductor connector. Although the logging threat in this example tangentially involves vegetation, it is not considered a vegetation-related imminent threat under the Standard.

Requirement R5:

The intent of this requirement is to deal with situations that prevent the Transmission Owner from performing planned vegetation management work and, as a result, have the potential to put the transmission line at risk. Constraints to performing vegetation maintenance work as planned could result from legal injunctions filed by property owners, the discovery of easement stipulations which limit the Transmission Owner’s rights, or other circumstances.

This requirement is not intended to address situations where the transmission line is not at immediate risk and the work event can be rescheduled or re-planned using an alternate work methodology. For example, a land owner may prevent the planned use of chemicals on non-threatening, low growth vegetation but agree to the use of mechanical clearing. In this case the Transmission Owner is not under any immediate time constraint for achieving the management objective, can easily reschedule work using an alternate approach, and therefore does not need to take interim corrective action.

However, in situations where transmission line reliability is potentially at risk due to a constraint, the Transmission Owner is required to take an interim corrective action to mitigate the potential risk to the transmission line. A wide range of actions can be taken to address various situations. General considerations include:

- Identifying locations where the Transmission Owner is constrained from performing planned vegetation maintenance work which potentially leaves the transmission line at risk.
- Developing the specific action to immediately mitigate any potential risk associated with not performing the vegetation maintenance work as planned.
- Documenting and tracking the specific action taken for each location.

In developing the specific action to mitigate the potential risk to the transmission line the Transmission Owner could consider location specific measures such as modifying the inspection and/or maintenance intervals. Where a legal constraint would not allow any vegetation work, the interim corrective action could include limiting the loading on the transmission line. The Transmission Owner should document and track the specific corrective action taken at each location. This location may be indicated as one span, one tree or a combination of spans on one property where the constraint is considered to be temporary.

Requirement R6:

This requirement sets a minimum time period for the Vegetation Inspections. More frequent inspections may be needed to maintain reliability levels, depending upon such factors as anticipated growth rates of the local vegetation, length of the growing season for the geographical area, limited Active Transmission ROW width, and rainfall amounts. Therefore some lines may be designated with a higher frequency of inspections.

The VSL for Requirement R6 has VSL categories ranked by the percentage of the required ROW inspections completed. To calculate the percentage of inspection completion the Transmission Owner lines may choose units such as: line miles or kilometers, circuit miles or kilometers, pole line miles, ROW miles, etc.

If a Transmission Owner operates 2,000 miles of 230 kV transmission lines this Transmission Owner will be responsible for inspecting all 2,000 miles of 230 kV transmission at least once line during the calendar year. If one of the included lines was 100 miles long, and if it was not inspected during the year, then the amount inspected would be $1900/2000 = 0.95$ or 95%. The “Lower VSL” for R6 would apply in this example.

The standard allows Vegetation Inspections to be performed in conjunction with general line inspections as per the definition.

Requirement R7:

Documentation or other evidence of the work performed typically consists of signed-off work orders, signed contracts, printouts from work management systems, spreadsheets of planned versus completed work, timesheets, work inspection reports, or paid invoices. Other evidence may include photographs, work inspection reports and walk-through reports.

Documentation is required when the annual work plan is adjusted or not completely implemented as originally planned. The reasons for the deferrals or changes and the expected completion date of postponed work should be documented.

The flexibility to adjust the annual work plan must always ensure the reliability of the electric Transmission system. Flexibility is meant to address changing conditions of the vegetation on the Active Transmission Line ROW, emergencies, and other significant changing conditions.

This standard requires that the annual work plan be flexible to allow the Transmission Owner to change priorities during the year as conditions or situations dictate. For example, weather conditions (drought) could make herbicide application ineffective during the plan year. Another situational variance could be a major storm that redirects local resources away from planned maintenance. This situation may also include complying with mutual assistance agreements by moving resources off the Transmission Owner's system to work on another system. Examples of documented adjustments may include deferrals or additions to the annual work plan.

The work plan is not intended to be a "span-by-span" detailed description of all work to be performed. It is intended to require the Transmission Owner to annually plan and schedule vegetation work to prevent encroachment into the MVCD.

The Transmission Owner is required to implement the annual work plan for vegetation management to accomplish the purpose of this standard. This means that vegetation maintenance ought to be performed to the extent of the Transmission Owner's easement, fee simple and other legal rights. It is intended to address the importance of maintaining all locations on the Active Transmission Line ROWs for reliability purposes in lieu of making special exceptions.

- Property owners and other interested parties occasionally request special considerations to leave undesirable vegetation conditions. Such considerations must never be allowed to impact reliability.
- These undesirable vegetation conditions require more frequent work or inspections than other locations with similar vegetation threats and similar easement rights which are not subject to the special property owner requests.
- The Transmission Owner's vegetation maintenance work necessary to implement the annual work plan is most effective when performed to the maximum extent allowed by any easement, fee simple and other legal rights.
- The Transmission Owner should, therefore, endeavor to maintain its Active Transmission Line ROW to the full extent of its legal rights at all times and in all cases.

A comprehensive approach that exercises the full extent of legal rights is superior to incremental management in the long term because it reduces overall encroachments, and it ensures that future planned work and future planned inspection cycles are sufficient at all locations on the Active Transmission Line ROW .

When developing the annual work plan the Transmission Owner should allow time for procedural requirements to obtain permits to work on federal, state, provincial, public, tribal lands. In some cases the lead time for obtaining permits may necessitate preparing work plans more than a year prior to work start dates. Transmission Owners may also need to consider those special landowner requirements as documented in easement instruments.

The following conditions may result in adjustments to the annual work plan: abnormal weather such as drought, major storms, excessive rainfall, other environmental conditions such as infestation, disease, fire, etc. These conditions may be found as part of a special or scheduled

Vegetation Inspection. Examples of annual work plan adjustments that are permitted may include revising the work plan priorities, rescheduling work to another time or selecting alternate vegetation control methods. Changes in land usage made by a property owner, such as timber clearing, may be another condition that warrants an adjustment.

**FAC-003 — TABLE 2 — Minimum Vegetation Clearance Distances (MVCD)³
For Alternating Current Voltages**

| (AC) Nominal System Voltage (kV) | (AC) Maximum System Voltage (kV) | MVCD feet (meters) sea level | MVCD feet (meters) 3,000ft (914.4m) | MVCD feet (meters) 4,000ft (1219.2m) | MVCD feet (meters) 5,000ft (1524m) | MVCD feet (meters) 6,000ft (1828.8m) | MVCD feet (meters) 7,000ft (2133.6m) | MVCD feet (meters) 8,000ft (2438.4m) | MVCD feet (meters) 9,000ft (2743.2m) | MVCD feet (meters) 10,000ft (3048m) | MVCD feet (meters) 11,000ft (3352.8m) |
|--|--|---------------------------------------|---|--|--|--|--|--|--|---|---|
| 765 | 800 | 8.06ft (2.46m) | 8.89ft (2.71m) | 9.17ft (2.80m) | 9.45ft (2.88m) | 9.73ft (2.97m) | 10.01ft (3.05m) | 10.29ft (3.14m) | 10.57ft (3.22m) | 10.85ft (3.31m) | 11.13ft (3.39m) |
| 500 | 550 | 5.06ft (1.54m) | 5.66ft (1.73m) | 5.86ft (1.79m) | 6.07ft (1.85m) | 6.28ft (1.91m) | 6.49ft (1.98m) | 6.7ft (2.04m) | 6.92ft (2.11m) | 7.13ft (2.17m) | 7.35ft (2.24m) |
| 345 | 362 | 3.12ft (0.95m) | 3.53ft (1.08m) | 3.67ft (1.12m) | 3.82ft (1.16m) | 3.97ft (1.21m) | 4.12ft (1.26m) | 4.27ft (1.30m) | 4.43ft (1.35m) | 4.58ft (1.40m) | 4.74ft (1.44m) |
| 230 | 242 | 2.97ft (0.91m) | 3.36ft (1.02m) | 3.49ft (1.06m) | 3.63ft (1.11m) | 3.78ft (1.15m) | 3.92ft (1.19m) | 4.07ft (1.24m) | 4.22ft (1.29m) | 4.37ft (1.33m) | 4.53ft (1.38m) |
| 161* | 169 | 2ft (0.61m) | 2.28ft (0.69m) | 2.38ft (0.73m) | 2.48ft (0.76m) | 2.58ft (0.79m) | 2.69ft (0.82m) | 2.8ft (0.85m) | 2.91ft (0.89m) | 3.03ft (0.92m) | 3.14ft (0.96m) |
| 138* | 145 | 1.7ft (0.52m) | 1.94ft (0.59m) | 2.03ft (0.62m) | 2.12ft (0.65m) | 2.21ft (0.67m) | 2.3ft (0.70m) | 2.4ft (0.73m) | 2.49ft (0.76m) | 2.59ft (0.79m) | 2.7ft (0.82m) |
| 115* | 121 | 1.41ft (0.43m) | 1.61ft (0.49m) | 1.68ft (0.51m) | 1.75ft (0.53m) | 1.83ft (0.56m) | 1.91ft (0.58m) | 1.99ft (0.61m) | 2.07ft (0.63m) | 2.16ft (0.66m) | 2.25ft (0.69m) |
| 88* | 100 | 1.15ft (0.35m) | 1.32ft (0.40m) | 1.38ft (0.42m) | 1.44ft (0.44m) | 1.5ft (0.46m) | 1.57ft (0.48m) | 1.64ft (0.50m) | 1.71ft (0.52m) | 1.78ft (0.54m) | 1.86ft (0.57m) |
| 69* | 72 | 0.82ft (0.25m) | 0.94ft (0.29m) | 0.99ft (0.30m) | 1.03ft (0.31m) | 1.08ft (0.33m) | 1.13ft (0.34m) | 1.18ft (0.36m) | 1.23ft (0.37m) | 1.28ft (0.39m) | 1.34ft (0.41m) |

³ The distances in this Table are the minimums required to prevent flashover; however prudent vegetation maintenance practices dictate that substantially greater distances will be achieved at time of vegetation maintenance.

**Table 2 (cont.) — Minimum Vegetation Clearance Distances (MVCD)
For Direct Current Voltages**

| (DC) Nominal Pole to Ground Voltage (kV) | MVCD feet (meters) sea level | MVCD feet (meters) 3,000ft (914.4m) Alt. | MVCD feet (meters) 4,000ft (1219.2m) Alt. | MVCD feet (meters) 5,000ft (1524m) Alt. | MVCD feet (meters) 6,000ft (1828.8m) Alt. | MVCD feet (meters) 7,000ft (2133.6m) Alt. | MVCD feet (meters) 8,000ft (2438.4m) Alt. | MVCD feet (meters) 9,000ft (2743.2m) Alt. | MVCD feet (meters) 10,000ft (3048m) Alt. | MVCD feet (meters) 11,000ft (3352.8m) Alt. |
|--|------------------------------------|--|---|---|---|--|--|--|---|---|
| ±750 | 13.92ft (4.24m) | 15.07ft (4.59m) | 15.45ft (4.71m) | 15.82ft (4.82m) | 16.2ft (4.94m) | 16.55ft (5.04m) | 16.9ft (5.15m) | 17.27ft (5.26m) | 17.62ft (5.37m) | 17.97ft (5.48m) |
| ±600 | 10.07ft (3.07m) | 11.04ft (3.36m) | 11.35ft (3.46m) | 11.66ft (3.55m) | 11.98ft (3.65m) | 12.3ft (3.75m) | 12.62ft (3.85m) | 12.92ft (3.94m) | 13.24ft (4.04m) | (13.54ft 4.13m) |
| ±500 | 7.89ft (2.40m) | 8.71ft (2.65m) | 8.99ft (2.74m) | 9.25ft (2.82m) | 9.55ft (2.91m) | 9.82ft (2.99m) | 10.1ft (3.08m) | 10.38ft (3.16m) | 10.65ft (3.25m) | 10.92ft (3.33m) |
| ±400 | 4.78ft (1.46m) | 5.35ft (1.63m) | 5.55ft (1.69m) | 5.75ft (1.75m) | 5.95ft (1.81m) | 6.15ft (1.87m) | 6.36ft (1.94m) | 6.57ft (2.00m) | 6.77ft (2.06m) | 6.98ft (2.13m) |
| ±250 | 3.43ft (1.05m) | 4.02ft (1.23m) | 4.02ft (1.23m) | 4.18ft (1.27m) | 4.34ft (1.32m) | 4.5ft (1.37m) | 4.66ft (1.42m) | 4.83ft (1.47m) | 5ft (1.52m) | 5.17ft (1.58m) |