

**Reliability Standard Audit Worksheet[[1]](#footnote-2)**

# FAC-003-4 – Transmission Vegetation Management

This section must be completed by the Compliance Enforcement Authority.

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| **Compliance Enforcement Authority:** |  |
| **Registered Entity Name:** |  |
| **NCR Number:** |  |
| **Applicable Function(s):** | Applicable only for TO and GO |
| **Compliance Assessment Date:** |  |
| **Compliance Monitoring Method:** |  |
| **RSAW Version:** | RSAW\_FAC-003-4\_2016\_v2 |
| **Revision Date:** | July 22, 2016 |
| **Names of Auditors:** |  |

# Subject Matter Experts

Identify Subject Matter Expert(s) responsible for this Reliability Standard. (Insert additional rows if necessary)

**Registered Entity Response (Required):**

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| **SME Name** | **Title** | **Organization** | **Requirement(s)** |
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# R1 Supporting Evidence and Documentation

## Requirement

**R1.** Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the Minimum Vegetation Clearance Distance (MVCD) of its applicable line(s) which are either an element of an IROL, or an element of a Major WECC Transfer Path; operating within their Rating and all Rated Electrical Operating Conditions of the types shown below[[2]](#footnote-3):

* 1. An encroachment into the MVCD as shown in FAC-003-Table 2, observed in Real-time, absent a Sustained Outage,[[3]](#footnote-4)
  2. An encroachment due to a fall-in from inside the ROW that caused a vegetation-related Sustained Outage,[[4]](#footnote-5)
  3. An encroachment due to the blowing together of applicable lines and vegetation located inside the ROW that caused a vegetation-related Sustained Outage,4
  4. An encroachment due to vegetation growth into the MVCD that caused a vegetation-related Sustained Outage.4

## Measure

**M1.**  Each applicable Transmission Owner and applicable Generator Owner has evidence that it managed vegetation to prevent encroachment into the MVCD as described in R1. Examples of acceptable forms of evidence may include dated attestations, dated reports containing no Sustained Outages associated with encroachment types 2 through 4 above, or records confirming no Real-time observations of any MVCD encroachments.

## Questions for Registered Entity

**Question:**  Does the applicable Generator Owner own overhead transmission lines that (1) extend greater than one mile or 1.609 kilometers beyond the fenced area of the generating station switchyard to the point of interconnection with a Transmission Owner’s Facility or (2) do not have a clear line of sight from the generating station switchyard fence to the point of interconnection with a Transmission Owner’s Facility? 🞏 Yes 🞏 No

**If Yes,** provide evidence of the applicable transmission lines and respond to the following Questions.

[Note: A spreadsheet or other document may be used. If so, provide a document reference below.]

**Registered Entity Response** to Question **(Required)**:

**Question:**  Does the applicable Transmission Owner or Generator Owner own overhead transmission lines that are either an element of an IROL or an element of a Major WECC Transfer Path? 🞏 Yes 🞏 No

**If Yes,** provide evidence of the applicable transmission lines and respond to the next Question

[Note: A spreadsheet or other document may be used. If so, provide a document reference below.]

**Registered Entity Response** to Question **(Required)**:

**Question:**  Did the applicable Transmission Owner or Generator Owner have any encroachment (Types 1.1-1.4) into the MVCD of its applicable line(s) in the audit period? 🞏 Yes 🞏 No

**If Yes,** describe the encroachment(s).

**Registered Entity Response** to Question **(Required)**:

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

This section must be completed by the Compliance Enforcement Authority

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## Compliance Assessment Approach Specific to FAC-003-4, R1

This section must be completed by the Compliance Enforcement Authority

Review the evidence to verify the Registered Entity has performed the following:

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|  | Responded to the Questions and provided evidence of compliance if it owns applicable line(s). |
|  | Managed vegetation to prevent encroachments into the Minimum Vegetation Clearance Distance (MVCD) as follows: |
|  | * No Real-time observations of any MVCD encroachments absent a Sustained Outage (type 1.1) or; |
|  | * No Sustained Outages associated with encroachment types 1.2 through 1.4 or; |
|  | If applicable, provided documentation of circumstances resulting in an encroachment that are beyond the control of an applicable Transmission Owner or applicable Generator Owner subject to compliance with this reliability standard including natural disasters, or human or animal activity, as detailed in footnote 5. |
| **Note to Auditor:** Information on the definition of ROW and purpose, applicability, and effective dates of this standard is included in the Additional Information section of this RSAW. Auditor should consider verifying the entity’s list of overhead lines that were identified as an element of an IROL or an element of a Major WECC Transfer Path are the same as the applicable Planning Coordinator’s list. Review the guidance provided in footnotes 2-4 as well as example evidence in the requirement measure**.** Auditor should review the Quarterly Vegetation-Related Transmission Outage Reports to verify entity response for the applicable audit period. Consider Requirement 1 on page 18 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R2 Supporting Evidence and Documentation

## Requirement

**R2**. Each applicable Transmission Owner and applicable Generator Owner shall manage vegetation to prevent encroachments into the MVCD of its applicable line(s) which are not either an element of an IROL, or an element of a Major WECC Transfer Path; operating within its Rating and all Rated Electrical Operating Conditions of the types shown below5:

* 1. An encroachment into the MVCD, observed in Real-time, absent a Sustained Outage,6
  2. An encroachment due to a fall-in from inside the ROW that caused a vegetation-related Sustained Outage,7
  3. An encroachment due to blowing together of applicable lines and vegetation located inside the ROW that caused a vegetation-related Sustained Outage,7
  4. An encroachment due to vegetation growth into the line MVCD that caused a vegetation-related Sustained Outage7

## Measure

**M2.** Each applicable Transmission Owner and applicable Generator Owner has evidence that it managed vegetation to prevent encroachment into the MVCD as described in R2. Examples of acceptable forms of evidence may include dated attestations, dated reports containing no Sustained Outages associated with encroachment types 2 through 4 above, or records confirming no Real-time observations of any MVCD encroachments.

## Questions for Registered Entity

**Question:**  Does the applicable Generator Owner own overhead transmission lines that (1) extend greater than one mile or 1.609 kilometers beyond the fenced area of the generating station switchyard to the point of interconnection with a Transmission Owner’s Facility or (2) do not have a clear line of sight4 from the generating station switchyard fence to the point of interconnection with a Transmission Owner’s Facility? 🞏 Yes 🞏 No

**If Yes,** provide evidence of the applicable transmission lines and respond to the following Questions.

[Note: A spreadsheet or other document may be used. If so, provide a document reference below.]

**Registered Entity Response** to Question **(Required)**:

**Question:**  Does the applicable Transmission Owner or Generator Owner own overhead transmission lines operated at 200kV or above that are not either an element of an IROL or an element of a Major WECC Transfer Path that are operating within its Rating? 🞏 Yes 🞏 No

**If Yes,** provide evidence of the applicable transmission lines.

[Note: A spreadsheet or other document may be used. If so, provide a document reference below.]

**Registered Entity Response** to Question **(Required)**:

**Question:**  Did the applicable Transmission Owner or Generator Owner have any encroachment (Types 2.1-2.4) into the MVCD of its applicable line(s) in the audit period? 🞏 Yes 🞏 No. **If Yes,** describe the encroachment(s).

**Registered Entity Response** to Question **(Required)**:

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary): File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R2

***This section must be completed by the Compliance Enforcement Authority***

Review the evidence to verify the Registered Entity has performed the following:

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|  | Responded to the Questions and provided evidence of compliance if it owns applicable line(s). |
|  | Managed vegetation to prevent encroachments into the Minimum Vegetation Clearance Distance (MVCD) as follows: |
|  | * No Real-time observations of any MVCD encroachments absent a Sustained Outage (type 2.1) or; |
|  | * No Sustained Outages associated with encroachment types 2.2 through 2.4 or; |
|  | If applicable, provided documentation of circumstances resulting in an encroachment that are beyond the control of an applicable Transmission Owner or applicable Generator Owner subject to compliance with this reliability standard including natural disasters, or human or animal activity, as detailed in footnote 5. |
| **Note to Auditor:** Information on the definition of ROW and purpose, applicability, and effective dates of this standard is included in the Additional Information section of this RSAW. Review the guidance provided in footnotes 2-4 as well as example evidence in the requirement measure.Auditor should review the Quarterly Vegetation-Related Transmission Outage Reports to verify entity response for the applicable audit period.  Consider Requirement 2 on page 18 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R3 Supporting Evidence and Documentation

## Requirement

**R3.** Each applicable Transmission Owner and applicable Generator Owner shall have documented maintenance strategies or procedures or processes or specifications it uses to prevent the encroachment of vegetation into the MVCD of its applicable lines that accounts for the following:

3.1 Movement of applicable line conductors under their Rating and all Rated Electrical Operating Conditions;

3.2 Inter-relationships between vegetation growth rates, vegetation control methods, and inspection frequency.

## Measure

**M3.** The maintenance strategies or procedures or processes or specifications provided demonstrate that the applicable Transmission Owner and applicable Generator Owner can prevent encroachment into the MVCD considering the factors identified in the requirement.

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R3

This section must be completed by the Compliance Enforcement Authority

Review the evidence to verify the Registered Entity has provided the following:

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|  | Documented maintenance strategies or procedures or processes or specifications it uses to prevent the encroachment of vegetation into the MVCD of its applicable lines that accounts for the following: |
|  | (Part 3.1) Consideration of movement of applicable line conductors under their Rating and all Rated Electrical Operating Conditions; |
|  | (Part 3.2) Consideration of Inter-relationships between the following: |
|  | * + Vegetation growth rates |
|  | * + Vegetation control methods |
|  | * + Inspection frequency |
| **Note to Auditor:** Consider Requirement 3 on pages 19-20 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R4 Supporting Evidence and Documentation

## Requirement

**R4.** Each applicable Transmission Owner and applicable Generator Owner, without any intentional time delay, shall notify the control center holding switching authority for the associated applicable line when the applicable Transmission Owner and applicable Generator Owner has confirmed the existence of a vegetation condition that is likely to cause a Fault at any moment.

## Measure

**M4.** Each applicable Transmission Owner and applicable Generator Owner that has a confirmed vegetation condition likely to cause a Fault at any moment will have evidence that it notified the control center holding switching authority for the associated transmission line without any intentional time delay. Examples of evidence may include control center logs, voice recordings, switching orders, clearance orders and subsequent work orders.

## Questions for Registered Entity

**Question:**  Did the applicable Transmission Owner or applicable Generator Owner have confirmed existence of any vegetation conditions likely to cause a Fault at any moment in the audit period? 🞏 Yes 🞏 No

**If Yes,** explain the event and provide evidence of notification of the control center without any intentional time delay.

**Registered Entity Response** to Question **(Required)**:

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R4

This section must be completed by the Compliance Enforcement Authority

Review the evidence to verify the Registered Entity has performed the following:

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|  | Responded to the Question and provided evidence of compliance. |
|  | Notified the control center holding switching authority for the associated transmission line without any intentional time delay when: |
|  | * The applicable Transmission Owner or applicable Generator Owner has confirmed the existence of a vegetation condition that is likely to cause a Fault at any moment and; |
|  | * That this notification was made without any intentional time delay |
| **Note to Auditor:** Consider Requirement 4 on pages 20-21 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R5 Supporting Evidence and Documentation

## Requirement

**R5.** When an applicable Transmission Owner and applicable Generator Owner are constrained from performing vegetation work on an applicable line operating within its Rating and all Rated Electrical Operating Conditions, and the constraint may lead to a vegetation encroachment into the MVCD prior to the implementation of the next annual work plan, then the applicable Transmission Owner or applicable Generator Owner shall take corrective action to ensure continued vegetation management to prevent encroachments.

## Measure

**M5.** Each applicable Transmission Owner and applicable Generator Owner has evidence of the corrective action taken for each constraint where an applicable transmission line was put at potential risk. Examples of acceptable forms of evidence may include initially-planned work orders, documentation of constraints from landowners, court orders, inspection records of increased monitoring, documentation of the de-rating of lines, revised work orders, invoices, or evidence that the line was de-energized.

## Questions for Registered Entity

**Question:**  Was the applicable Transmission Owner or applicable Generator Owner constrained during the audit period from performing vegetation work on applicable line(s) operating within its Rating and all Rated Electrical Operating Conditions? 🞏 Yes 🞏 No

**If Yes,** could the constraint have led to a vegetation encroachment into the MVCD prior to the implementation of the next annual work plan? 🞏 Yes 🞏 No

**If Yes,** did the applicable Transmission Owner or applicable Generator Owner take corrective action to ensure continued vegetation management to prevent encroachments? 🞏 Yes 🞏 No

**If Yes,** to any of the questions, provide a description of the constraint(s) and the corrective action taken to prevent encroachments.

**Registered Entity Response** to Question **(Required)**:

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R5

This section must be completed by the Compliance Enforcement Authority

Review the evidence to verify the Registered Entity has performed the following:

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|  | Responded to the Question and provided evidence of compliance. |
|  | Provided evidence of being constrained from performing vegetation work on applicable line(s) operating within its Rating and all Rated Electrical Operating Conditions, and; |
|  | * The constraint may lead to a vegetation encroachment into the MVCD prior to the implementation of the next annual work plan and; |
|  | * The applicable Transmission Owner or applicable Generator Owner took corrective action to ensure continued vegetation management to prevent encroachments |
| **Note to Auditor:** In situations where transmission line reliability is potentially at risk due to a constraint, the applicable Transmission Owner is required to take an interim corrective action to mitigate the potential risk to the transmission line. Consider Requirement 5 on pages 21-22 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R6 Supporting Evidence and Documentation

## Requirement

**R6.** Each applicable Transmission Owner and applicable Generator Owner shall perform a Vegetation Inspection of 100% of its applicable transmission lines (measured in units of choice - circuit, pole line, line miles or kilometers, etc.) at least once per calendar year and with no more than 18 calendar months between inspections on the same ROW[[5]](#footnote-6)

## Measure

**M6.** Each applicable Transmission Owner and applicable Generator Owner has evidence that it conducted Vegetation Inspections of the transmission line ROW for all applicable lines at least once per calendar year but with no more than 18 calendar months between inspections on the same ROW. Examples of acceptable forms of evidence may include completed and dated work orders, dated invoices, or dated inspection records.

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R6

This section must be completed by the Compliance Enforcement Authority

Review the evidence to verify the Registered Entity has performed the following:

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|  | A Vegetation Inspection of 100% of its applicable transmission lines at least once per calendar year and with no more than 18 calendar months between inspections on the same ROW or; |
|  | Provided evidence of any necessary Vegetation Inspection timeframe extensions due to a natural disaster per footnote 8. |
| **Note to Auditor:** Information on the definition of ROW and purpose, applicability, and effective dates of this standard is included in the Additional Information section of this RSAW. Verify that 100% of the applicable transmission lines were inspected within the intervals established in the applicable entity’s “documented maintenance strategies” established in Requirement 3. Initially, entities are required to inspect 100% of their applicable transmission lines in the calendar year 2014, regardless of their previous inspection cycle. An entity performing inspections between 1/1/14 and 6/30/14 would satisfy this requirement. For calendar year 2015, such an entity would be required to perform subsequent inspections within 18 months of the prior inspection date. For entities performing their calendar year 2014 inspections after 7/1/14, they would have until 12/31/15 to perform the calendar year 2015 inspections. Consider Requirement 6 page 22 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information. | |

**Auditor Notes:**

# R7 Supporting Evidence and Documentation

## Requirement

**R7.** Each applicable Transmission Owner or applicable Generator Owner shall complete 100% of its annual vegetation work plan of applicable lines to ensure no vegetation encroachments occur within the MVCD. Modifications to the work plan in response to changing conditions or to findings from vegetation inspections may be made (provided they do not allow encroachment of vegetation into the MVCD) and must be documented. The percent completed calculation is based on the number of units actually completed divided by the number of units in the final amended plan (measured in units of choice - circuit, pole line, line miles or kilometers, etc.) Examples of reasons for modification to annual plan may include:

* 1. Change in expected growth rate/ environmental factors
  2. Circumstances that are beyond the control of a applicable Transmission Owner or applicable Generator Owner[[6]](#footnote-7)
  3. Rescheduling work between growing seasons
  4. Crew or contractor availability/ Mutual assistance agreements
  5. Identified unanticipated high priority work
  6. Weather conditions/Accessibility
  7. Permitting delays
  8. Land ownership changes/Change in land use by the landowner
  9. Emerging technologies

## Measure

**M7.** Each applicable Transmission Owner or applicable Generator Owner has evidence that it completed its annual vegetation work plan for its applicable lines. Examples of acceptable forms of evidence may include a copy of the completed annual work plan (as finally modified), dated work orders, dated invoices, or dated inspection records.

## Registered Entity Response (Required):

Describe, in narrative form, how you meet compliance with this Requirement.

## Registered Entity Evidence Listing (Required):

Provide the following for all evidence submitted (Insert additional rows if necessary):

File Name, File Extension, Document Title, Revision, Date, Page(s), Section(s), Section Title(s), Description

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## Audit Team Evidence Reviewed

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## Compliance Assessment Approach Specific to FAC-003-4, R7

***This section must be completed by the Compliance Enforcement Authority***

Review the evidence to verify the Registered Entity has performed the following:

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|  | Completed 100% of its annual vegetation work plan of applicable lines or; |
|  | Provided documentation of reasons for modification of its annual plan |
|  | Provided documentation that the percent completed calculation is based on the number of units actually completed divided by the number of units in the final amended plan |
| **Note to Auditor**: This requirement sets the expectation that the work identified in the annual work plan will be completed as planned. Deferrals or relevant changes to the annual plan shall be documented. Auditor should rely on professional judgment to accurately identify and select a sample of transmission lines ROWs that traverse the major biomes within the applicable entities footprint. Auditors should consider biome conditions such as climate, geography, elevation, botany, population density, and land uses when selecting the sample transmission lines for R7.  Consider Requirement 7 on pages 23-24 of the [Guidelines and Technical Basis](#_Additional_Information:) in the attached FAC-003-4 Standard for more information | |

**Auditor Notes:**

# Compliance Finding Summary

This section must be completed by the Compliance Enforcement Authority

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| **Req.** | **NF** | **PV** | **OEA** | **NA** | **Statement** |
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# Additional Information

Effective July 1, 2014, the definition of right-of-way (ROW) is: “The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established by engineering or construction standards as documented in either construction documents, pre-2007 vegetation maintenance records, or by the blowout standard in effect when the line was built. The ROW width in no case exceeds the applicable Transmission Owner’s or applicable Generator Owner’s legal rights but may be less based on the aforementioned criteria.” NERC Glossary of Terms, available at [www.nerc.com/files/glossary\_of\_terms.pdf](http://www.nerc.com/files/glossary_of_terms.pdf).

The following information comes directly from the standard FAC-003-4.

### Title: Transmission Vegetation Management

### Number: FAC-003-4

### Purpose: To maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages that could lead to Cascading.

1. **Applicability**
   1. **Functional Entities:** 
      1. Applicable Transmission Owners

**4.1.1.1** Transmission Owners that own Transmission Facilities defined in 4.2.

**4.1.2** Applicable Generator Owners

**4.1.2.1** Generator Owners that own generation Facilities defined in 4.3

* 1. **Transmission Facilities:** Defined below (referred to as “applicable lines”), including but not limited to those that cross lands owned by federal[[7]](#footnote-8), state, provincial, public, private, or tribal entities:

**4.2. 1** Each overhead transmission line operated at 200kV or higher.

**4.2.2** Each overhead transmission line operated below 200kV identified as an element of an IROL under NERC Standard FAC-014 by the Planning Coordinator.

**4.2.3** Each overhead transmission line operated below 200 kV identified as an element of a Major WECC Transfer Path in the Bulk Electric System by WECC.

**4.2.4** Each overhead transmission line identified above (4.2.1 through 4.2.3) located outside the fenced area of the switchyard, station or substation and any portion of the span of the transmission line that is crossing the substation fence.

* 1. **Generation Facilities:** Defined below (referred to as “applicable lines”), including but not limited to those that cross lands owned by federal[[8]](#footnote-9), state, provincial, public, private, or tribal entities:

**4.3.1** Overhead transmission lines that (1) extend greater than one mile or 1.609 kilometers beyond the fenced area of the generating station switchyard to the point of interconnection with a Transmission Owner’s Facility or (2) do not have a clear line of sight[[9]](#footnote-10) from the generating station switchyard fence to the point of interconnection with a Transmission Owner’s Facility and are:

**4.3.1.1** Operated at 200kV or higher; or

**4.3.1.2** Operated below 200kV identified as an element of an IROL under NERC Standard FAC-014 by the Planning Coordinator; or

**4.3.1.3** Operated below 200 kV identified as an element of a Major WECC Transfer Path in the Bulk Electric System by WECC.

**Effective Dates**

There are two effective dates associated with this standard.

The first effective date allows Generator Owners time to develop documented maintenance strategies or procedures or processes or specifications as outlined in Requirement R3.

In those jurisdictions where regulatory approval is required, Requirement R3 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 or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.

The second effective date allows entities time to comply with Requirements R1, R2, R4, R5, R6, and R7.

In those jurisdictions where regulatory approval is required, Requirements R1, R2, R4, R5, R6, and R7 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 all requirements is required. In those jurisdictions where no regulatory approval is required, Requirements R1, R2, R4, R5, R6, and R7 become effective on the first day of the first calendar quarter two years following Board of Trustees’ adoption or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.

**Effective dates for individual lines when they undergo specific transition cases:**

1. A line operated below 200kV, designated by the Planning Coordinator as an element of an Interconnection Reliability Operating Limit (IROL) or designated by the Western Electricity Coordinating Council (WECC) as an element of a Major WECC Transfer Path, becomes subject to this standard the latter of: 1) 12 months after the date the Planning Coordinator or WECC initially designates the line as being an element of an IROL or an element of a Major WECC Transfer Path, or 2) January 1 of the planning year when the line is forecast to become an element of an IROL or an element of a Major WECC Transfer Path.
2. A line operated below 200 kV currently subject to this standard as a designated element of an IROL or a Major WECC Transfer Path which has a specified date for the removal of such designation will no longer be subject to this standard effective on that specified date.
3. A line operated at 200 kV or above, currently subject to this standard which is a designated element of an IROL or a Major WECC Transfer Path and which has a specified date for the removal of such designation will be subject to Requirement R2 and no longer be subject to Requirement R1 effective on that specified date.
4. An existing transmission line operated at 200kV or higher which is newly acquired by an asset owner and which was not previously subject to this standard becomes subject to this standard 12 months after the acquisition date.
5. An existing transmission line operated below 200kV which is newly acquired by an asset owner and which was not previously subject to this standard becomes subject to this standard 12 months after the acquisition date of the line if at the time of acquisition the line is designated by the Planning Coordinator as an element of an IROL or by WECC as an element of a Major WECC Transfer Path.



## Sampling Methodology

Sampling is essential for auditing compliance with NERC Reliability Standards since it is not always possible

or practical to test 100% of either the equipment, documentation, or both, associated with the full suite of enforceable standards. The [Sampling Methodology Guidelines and Criteria](http://www.nerc.com/files/Sampling%20Methodology%20Guidelines%20and%20Criteria_PDF.pdf), or sample guidelines, provided by the Electric Reliability Organization help to establish a minimum sample set for monitoring and enforcement uses in audits of NERC Reliability Standards.

There are two approaches to sampling: statistical and non-statistical, and choosing which to use depends on the objectives for sampling. (When the population sample to be reviewed is documentation, a statistical approach using [RAT‐STATS](http://oig.hhs.gov/compliance/rat-stats/index.asp) is expected.) Both are represented in the sample guideline in line with standard practices for their use. The Audit Team Lead may determine if the scope of the audit samples should be reduced to levels below those established in the sample guideline. In doing so, the audit team will document the rationale for reducing the scope of the of sample population in the RSAW or audit report.

Additionally, separate from the audit, the registered entity may use this methodology to determine the sample population to test in order to provide themselves reasonable assurance that management’s expectations are being met by the organization.

Auditor should rely on professional judgment to accurately identify and select a sample of transmission lines ROWs that traverse the major biomes within the applicable entities footprint. Auditors should consider biome conditions such as climate, geography, elevation, botany, population density and land uses when selecting the sample transmission lines for R7.

## Regulatory Language

On April 26, 2016, the Commission approved the proposed Reliability Standard FAC-003-4 (Transmission Vegetation Management).[[10]](#footnote-11) Reliability Standard FAC-003-4 reflects revisions to the current Minimum Vegetation Clearance Distances (MVCDs) in Reliability Standard FAC-003-3 based on additional testing regarding the appropriate gap factor to be used to calculate clearance distances for vegetation. NERC responded to the Commission’s directive as part of its approval of an earlier version of the Reliability Standard, FAC-003-2.[[11]](#footnote-12) In order to fulfill the Commission’s directive, NERC contracted with the Electric Power Research Institute (EPRI) to conduct this testing. In approved Reliability Standard FAC-003-2, the Commission stated that “it is important

that NERC develop empirical evidence that either confirms assumptions used in calculating the MVCD values based on the Gallet equation, or gives reason to revisit the Reliability Standard.”[[12]](#footnote-13)

Preliminary testing conducted by EPRI indicated that the gap factor used to calculate MVCDs should be adjusted from 1.3 to 1.0, which would result in MVCD values higher than those in Reliability Standard FAC-003-3. NERC and EPRI worked to finalize the gap factor verification, submitting a final report to the Commission in August 2015.

The EPRI tests supported the conclusion that MVCD values under Reliability Standard FAC-003-3 were low and “demonstrated that the Gallet equation should apply a more conservative, lower gap factor of 1.0 to calculate MVCD values.”[[13]](#footnote-14) Further, Reliability Standard FAC-003-4 includes a higher and more conservative MVCD values and, therefore, these revisions “enhance reliability and provide additional confidence by applying a more conservative approach to determining the vegetation clearing distances.”[[14]](#footnote-15)

Finally, the revised clearances in Table 2 of FAC-003-3 were moved into the text of the FAC-003-4 and that MVCD values were added for elevations up to 15,000 feet, but that no other substantive changes were made to the Reliability Standard FAC-003-3.

# Revision History

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| --- | --- | --- | --- |
| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | 7/7/2016 | RSAW Task Force | New Document |
| 2 | 7/22/2016 | RSAW Task Force | Errata change. Updated references to FAC-003-4. |
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|  |  |  |  |

1. NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

   The NERC RSAW language contained within this document provides a non‑exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail. [↑](#footnote-ref-2)
2. This requirement does not apply to circumstances that are beyond the control of a applicable Transmission Owner or applicable Generator Owner subject to this reliability standard, including natural disasters such as earthquakes, fires, tornados, hurricanes, landslides, wind shear, fresh gale, major storms as defined either by the applicable Transmission Owner or applicable Generator Owner or an applicable regulatory body, ice storms, and floods; human or animal activity such as logging, animal severing tree, vehicle contact with tree, or installation, removal, or digging of vegetation. Nothing in this footnote should be construed to limit the Transmission Owner’s or applicable Generator Owner’s right to exercise its full legal rights on the ROW. [↑](#footnote-ref-3)
3. If a later confirmation of a Fault by the applicable Transmission Owner or applicable Generator Owner shows that a vegetation encroachment within the MVCD has occurred from vegetation within the ROW, this shall be considered the equivalent of a Real-time observation. [↑](#footnote-ref-4)
4. 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. [↑](#footnote-ref-5)
5. When the applicable Transmission Owner or applicable Generator Owner is prevented from performing a Vegetation Inspection within the timeframe in R6 due to a natural disaster, the TO or GO is granted a time extension that is equivalent to the duration of the time the TO or GO was prevented from performing the Vegetation Inspection. [↑](#footnote-ref-6)
6. Circumstances that are beyond the control of an applicable Transmission Owner or applicable Generator Owner include but are not limited to natural disasters such as earthquakes, fires, tornados, hurricanes, landslides, ice storms, floods, or major storms as defined either by the TO or GO or an applicable regulatory body. [↑](#footnote-ref-7)
7. EPAct 2005 section 1211c: “Access approvals by Federal agencies.” [↑](#footnote-ref-8)
8. Id. [↑](#footnote-ref-9)
9. “Clear line of sight” means the distance that can be seen by the average person without special instrumentation (e.g., binoculars, telescope, spyglasses, etc.) on a clear day. [↑](#footnote-ref-10)
10. *Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard FAC-003-4*, Docket No. RD16-4-000 (NERC Petition) (2016). [↑](#footnote-ref-11)
11. *Revisions to the Reliability Standard for Transmission Vegetation Management*, 142 FERC ¶ 61, 2018 (Order No. 777) (2013) P 3. [↑](#footnote-ref-12)
12. Order No. 777142 FERC ¶ 61, 2018 at P 3. [↑](#footnote-ref-13)
13. NERC Petition at 3. [↑](#footnote-ref-14)
14. *Id.*  [↑](#footnote-ref-15)