Transmission & Distribution

UVM-02
Transmission Vegetation Management Plan (TVMP)

Table of Contents

1. INTRODUCTION

1.1 Purpose

Southern California Edison (SCE) maintains a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on and adjacent to transmission Rights-of-Way (ROW) in order to minimize the risk of encroachments into the specified clearance zones.

1.2 Objectives

The SCE Transmission Vegetation Management Plan (TVMP) is designed to comply with regulatory Compliance Requirements, such as the North American Electric Reliability Corp. (NERC) Reliability Standard FAC-003-4, California Public Utilities Commission (CPUC) General Order (GO) 95 requirements, Cal Fire Public Resource Codes (PRC), and Title 14, California Code of Regulations (CCR) while improving the reliability of SCE's transmission system by establishing maintenance and inspection procedures to:

- Manage vegetation to prevent vegetation encroachment into Clearance Zones stated in the following regulations, as applicable:
  - FAC-003-4
  - GO 95, Rule 35 (Case 13 and Case 14)
  - GO 95, Rule 37
  - PRC 4293
  - PRC 4292
  - Title 14 CCR Sections 1250-1258
- Document the maintenance strategies, procedures, processes and specifications used to manage vegetation to prevent the encroachment into the clearances described in the regulations noted above
- Include consideration of 1) conductor dynamics, 2) vegetation movement in high winds, and 3) the interrelationships between vegetation growth rates, control methods and inspection frequency
- Provide timely notification to the appropriate control center of vegetation conditions that could cause a flash-over or Fault at any moment
- Implement corrective actions to prevent the encroachment into the clearances described in the regulations noted above
- Inspect vegetation conditions annually
- Complete the annual work needed to prevent encroachments into the clearances described in the regulations noted above

2. APPLICABILITY

2.1 Operating Units

This document is applicable to the OUs impacted by the Energy Regulatory Compliance Program (ERCP) compliance requirements related to Vegetation Management, including but are not limited to:

- Transmission and Distribution
- Generation

2.2 Facilities

2.2.1 Transmission and Generation Facilities – NERC

The following language is from NERC Reliability Standard FAC-003-4: Transmission Facilities: Each overhead transmission line as defined below, 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 and including, but not limited to, those that cross lands owned by federal, state, provincial, public, private, or tribal entities:

- Each overhead transmission line operated at 200kV or higher.
- Each overhead transmission line operated below 200kV identified as an element of an IROL under NERC Reliability Standard FAC-014 by the Planning Coordinator.
- Each overhead transmission line operated below 200kV identified as an element of a Major WECC Transfer Path in the Bulk Electric System (BES) by WECC.

Generation Facilities: Those lines as defined below including, but not limited to, those that cross lands owned by federal, state, provincial, public, private, or tribal entities.

- 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[1] from the generating station switchyard fence to the point of interconnection with a Transmission Owner's Facility and are:

[1] "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.

- Operated at 200kV or higher; or
- Operated below 200kV and identified as an element of a Major WECC Transfer Path or an element of an IROL.

2.2.2 Transmission Facilities – CPUC

The following language is from CPUC General Order 95, Rules 35 and 37.

Where overhead conductors traverse trees and vegetation, certain vegetation management activities are to be performed in order to establish necessary and reasonable clearances. The minimum clearances are set forth in Cases 13 and 14 and measured between line conductors and vegetation under normal conditions.

Transmission lines operated at 115kV to 500kV located in:

- Non-fire areas where GO 95, Rule 35 (Case 13) applies
- Extreme and Very High fire areas where GO 95, Rule 35 (Case 14) applies

2.2.3 Transmission Facilities – Cal Fire

The following language is from Cal Fire PRC 4293 and Related CCRs

Any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances in all directions between all vegetation and all conductors which are carrying electric current.

Transmission lines operated at 115kV to 500kV located in:

- Fire areas where PRC 4293 applies

The following language is from Cal Fire PRC 4292 and Related CCRs

Any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or forest covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak

which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower.

Transmission lines operated at 115kV to 500kV located in:

- Fire areas where PRC 4292 applies

3. DEFINITIONS

Refer to the NERC Glossary of Terms, the E&C Shared Services Glossary of Terms (ECSS-02), and the UVM Glossary of Terms (UVM-20) for any capitalized terms used in this document.

4. DOCUMENT DETAIL

4.1 Encroachments

The language below is from the following Compliance Requirements:

- NERC Reliability Standard FAC-003-4 Requirements 1 and 2
- GO 95, Rule 35 and Rule 37
- PRC 4293

SCE or its approved contractor will manage vegetation to prevent encroachments into the Regulation Clearance Distance (RCD) of its applicable line(s), as described in Section 2, operating within their Rating and all Rated Electrical Operating Conditions of the types shown below[2].

1. An encroachment into the applicable RCD[3], observed in Real-time, absent a Sustained Outage[4]

[2] FAC-003-4 Requirements 1 and 2 do not apply to circumstances that are beyond the control of an applicable Transmission Owner or 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 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.

[3] See Table 1 and Table 2, Paragraph 4.

[4] If a later confirmation of a Fault by the applicable Transmission Owner or Generator Owner shows that a vegetation encroachment within the RCD has occurred from vegetation within the ROW, this shall be considered the equivalent of a Real-time observation.

2. An encroachment due to a fall-in from inside the ROW that caused a vegetation-related Sustained Outage[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. An encroachment due to vegetation growth into the RCD that caused a vegetation-related Sustained Outage

Measure

SCE will provide evidence to regulators upon request that it managed vegetation to prevent encroachments into the RCD as described above. 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 RCD encroachments.

Strategy and Supporting Documentation

In order to prevent an encroachment into the RCD, SCE or its approved contractor will inspect and manage all vegetation located within its ROWs or easements upon which the applicable lines are located. SCE will also manage all vegetation located outside the ROW or easement to prevent encroachment into the RCD. During the inspection and the completion of work, movement of the line conductors and vegetation growth will be taken into consideration[6].

Evidence that SCE or its approved contractor managed vegetation to prevent encroachments into the RCD will include:

- Attachment B: Utility Vegetation Management (UVM) Inspection Report
- Attachment C: UVM Post Work Verification Report

Transmission line vegetation maintenance shall be completed annually. SCE or its approved contractor will verify the completion of annual vegetation maintenance.

[5] 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.

[6] See Paragraph 1.2. Maintenance Procedures

Oversight of Maintenance work will be provided pursuant to the UVM Post Work Verification and UVM Program Oversight Procedure (see UVM-07) to provide reasonable assurance work is completed in accordance with the work specification.

4.2 Maintenance Procedures

The following language is from Requirements: NERC Reliability Standard FAC-003-4 Requirement 3; GO 95, Rule 35 and Rule 37; PRC 4293

SCE shall have documented maintenance strategies or procedures or processes or specifications it uses to prevent the encroachment of vegetation into the RCD that accounts for the following:

- Movement of line conductors (sag and sway) under their Rating and all Rated Electrical Operating Conditions (See Figure 2).
- Inter-relationships between vegetation growth rates, vegetation control methods, and inspection frequency.

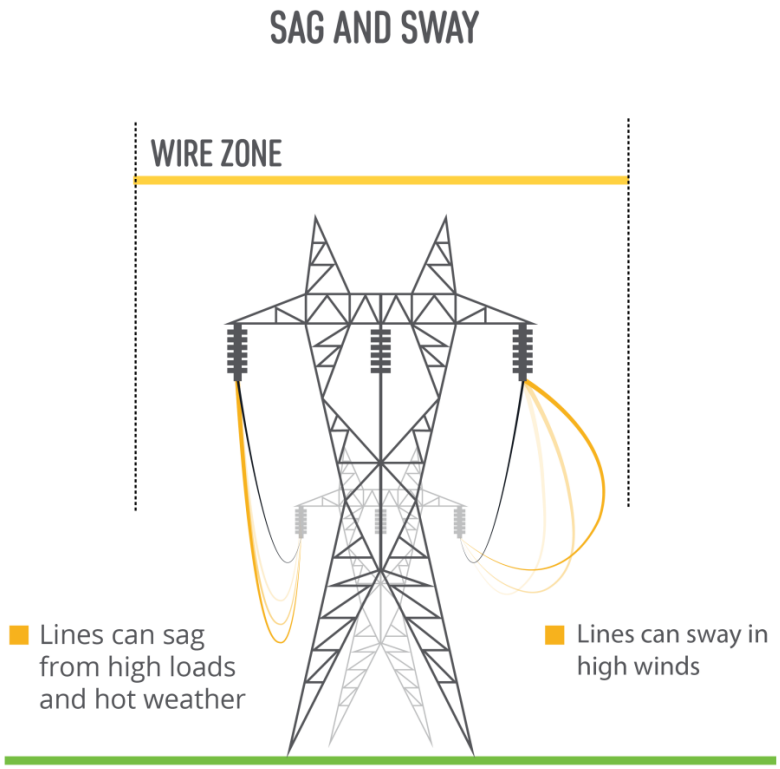


Figure 1: Sag and Sway

Measure

The maintenance strategies or procedures or processes or specifications provided demonstrate that SCE can prevent encroachment into the RCD considering the factors identified in the requirement.

Strategy and Supporting Documentation

In order to prevent an encroachment into the RCD, SCE or its approved contractor will manage vegetation on ROWs according to the following specifications:

ROW widths, Maximum Line Sag, and Maximum Line Sway for all lines subject to NERC Reliability Standard FAC-003-4 will be documented on a span by span basis and will be provided to internal personnel and/or contractors performing inspection work. ROW widths, Maximum Line Sag, and Maximum Line Sway for all subject lines will be included in the UVM Transmission Field Guide. This will allow field personnel to account for movement of the conductors under all Rated Electrical Operating Conditions when determining needed clearances or performing review.

The methodology used to define the ROW width is found in the Attachment D: ROW Width Table. Actual ROW width used for vegetation management may vary depending on site location, requirements, or restrictions. All lines subject to NERC Reliability Standard FAC-003-4 will meet ground clearance requirements, if possible, under all Rated Electrical Operating Conditions, as specified in General Order 95, Rule 37.

SCE performs a review of maintenance work as prescribed in the UVM Post Work Verification and UVM Oversight Procedure (UVM-07) to provide reasonable assurance work is completed according to the work prescription and required clearances.

SCE will document vegetation management elements related to its applicable lines as follows:

- Work methods (e.g., tree removal and pruning, herbicide application, brush removal, other vegetation management activities as described)
- Maintenance schedule
- Vegetation management inspection schedule (ground, aerial, LiDAR)
- Line inspection schedule (other than vegetation management inspections)
- Species specific growth rates, as applicable (may use fastest growing species on ROW as worst case growth rate)
- Clearances to be attained during vegetation management work are based on species specific growth rates or worst case species growth rate in a given span, as applicable (see Paragraph 4, Table 1 and Table 2)
- Clearances are to be maintained under all operating conditions and at all times, as applicable (see Paragraph 4, Table 1 and Table 2)

4.3 Notification of Vegetation Threat

The following language is from NERC Reliability Standard FAC-003-4 Requirement 4

SCE, without any intentional time delay, shall notify the switching center for the associated applicable line when SCE has confirmed the existence of a vegetation condition that is likely to cause a Fault at any moment.

When SCE has a confirmed vegetation condition likely to cause a Fault at any moment it will retain evidence that it notified the switching center for the associated transmission line without any intentional time delay.

Strategy and Supporting Documentation

The Vegetation Threat Procedure (UVM-08), establishes and documents the processes to follow when an imminent threat, emerging threat, or low threat condition exists.

4.4 Constraints

Requirements: FAC-003-4 Requirement 5; GO 95, Rule 35 and Rule 37; PRC 4293

When SCE is 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 RCD prior to the implementation of the next annual work plan, then SCE shall take corrective action to ensure continued vegetation management to prevent encroachments.

Measure

SCE shall retain evidence of the corrective action taken for each constraint where an applicable transmission line was put at potential risk.

Strategy and Supporting Documentation

In the event that a property owner or jurisdiction refuses to allow SCE or its authorized contractor to complete vegetation work within the defined ROW on an applicable line, and the constraint may lead to a vegetation encroachment into the RCD prior to the implementation of the next annual work plan, SCE or its contractor will complete the following steps.

Determine the vegetation condition, and follow the appropriate mitigation procedure for that vegetation condition. The criterion for setting work priority is found in UVM-08.

Imminent Threat Condition

In the event that any imminent threat condition is observed, Vegetation Management Operations (VM) personnel, or the Grid Control Center (GCC) will be contacted without any intentional time delay and the steps outlined in UVM-08 will be followed. The Abnormal

Field Conditions Form will be completed (Attachment G).

4.5 Inspections

Requirements: FAC-003-4 Requirement 6; GO 95, Rule 35 and Rule 37; PRC 4293

SCE shall perform 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[7].

Measure

SCE shall retain 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.

Strategy and Supporting Documentation

SCE or its approved contractor will inspect all vegetation located on and adjacent to the defined ROW of the applicable lines maintained by SCE as listed in the UVM Inspection Schedule at least once per calendar year and no longer than 18 calendar months between inspections.

Trees that may require additional maintenance throughout the year for any number of reasons (e.g., fast-growing species, thermal and physical loading) are identified as Exception Trees and may be inspected more frequently as needed.

4.6 Completion of Annual Work Plan

Requirements: FAC-003-4 Requirement 7; GO 95, Rule 35 and Rule 37; PRC 4293

[7] When the applicable Transmission Owner or 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.

SCE shall complete 100% of its annual vegetation work plan of applicable lines to ensure no vegetation encroachments occur within the RCD. 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 RCD) and must be documented. Examples of required modifications to the annual plan may include:

- Change in expected growth rate/environmental factors
- Force Majeure Events [8] that are beyond the control of a Transmission Owner or Generator Owner
- Rescheduling work between growing seasons
- Crew or contractor availability/mutual assistance agreements
- Identified unanticipated high priority work
- Weather conditions/accessibility
- Permitting delays
- Land ownership changes/change in land use by the landowner
- Emerging technologies

Measure

SCE retains evidence that it completed its annual vegetation work plan for applicable lines.

Strategy and Supporting Documentation

SCE or its approved contractor will complete its annual vegetation work plan on the applicable lines as listed in the UVM annual work plan on an annual basis.

The UVM annual work plan is created and approved by SCE management and communicated to internal employees and contractors prior to the start of each calendar year.

In addition to the documentation required above, the following information will also be retained related to the completion of the annual vegetation work plan, as applicable.

- Completed annual work plan (as finally modified)
- Annual work plan in its original form
- Explanation of all changes to the original annual work plan

[8] Circumstances that are beyond the control of an applicable Transmission Owner or 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.

5. CLEARANCE REQUIREMENTS

5.1 Transmission Lines

Based on the conditions described below, the subsequent processes are used to establish the clearance requirements in the Wire Zone and Border Zone:

5.1.1 Fire Areas (see Table 1)

Applicable regulations:

1. FAC-003-4
2. PRC 4293
3. GO 95, Rule 35, Case 14

Grid Resiliency Clearance Distances (GRCD) are established to mitigate fire risk and maintain compliance with FAC-003-4 requirements.

- GRCD-A and GRCD-B are to be established at time of maintenance work based on line voltage
- Trigger Clearance Distance[9] (TCD) for UVM work to be initiated based on line voltage
- Compliance Clearance Distance[10] (CCD) to be maintained at all times based on line voltage

5.1.2 Non-Fire Areas (see Table 2)

Applicable regulation:

1. FAC-003-4

GRCDs are established to maintain compliance with FAC-003-4 requirements.

- GRCD-A and GRCD-B are to be established at time of maintenance work based on line voltage
- TCD for UVM work to be initiated based on line voltage
- CCD to be maintained at all times based on voltage

5.1.3 Non-Fire Areas (see Table 3)

Applicable regulation:

1. GO 95, Rule 35, Case 13

[9] TCD = CCD + 3-feet

[10] CCD = RCD x 1.5 (Safety Margin) rounded up

GRCDs are established to maintain compliance with GO 95, Rule 35 requirements.

- GRCD-A and GRCD-B are to be established at time of maintenance work based on line voltage
- TCD for UVM work to be initiated based on line voltage
- CCD to be maintained at all times based on voltage

5.1.4 Restricted Areas

Conditions prevent UVM requirements described in 5.1.1, 5.1.2, or 5.1.3 from being implemented. Examples include crops, orchards, environmentally sensitive areas or lack of easement rights.

- GRCD-A or GRCD-B can be modified and documented to address the specific circumstances or restrictions at that location
- TCD for UVM work to be initiated based on line voltage
- CCD to be maintained at all times based on voltage

To prevent encroachments into the RCD, clearance at time of scheduled maintenance, clearance to be maintained, and trigger distance for UVM work will be as follows:

All Elevations in Fire Areas					
FAC-003-4, PRC 4293 and GO 95, Rule 35, Extreme and Very High Fire Areas (Case 14)					
Nominal Voltage[11]	**Wire Zone/Sag - Clearance Distance at Time of Maintenance GRCD-A[12] [13]**	**Border Zone/Sway - Clearance Distance at Time of Maintenance GRCD-B[14]**	**WZ / BZ Clearance Distance that Triggers Work TCD**	**WZ / BZ Clearance Distance to be Maintained for Compliance CCD**	**Regulation Clearance Distance RCD**
500kV	30'[15]	Clear to Defined ROW Boundaries	18'	15'	10.0'
230kV	30'[16]	Clear to Defined ROW Boundaries	18'	15'	10.0'
161kV	30'[17]	30'[18] [19]	18'	15'	10.0'
115kV	30'[20]	30'[21] [22]	18'	15'	10.0'
69kV	12'[23]	12'	9'	6'	4.0'

Table 1: Clearance Distance –Fire Areas, FAC-003-4, PRC 4293, Rule 35 Case 14

[11] 161kV, 115kV, and 69kV Major WECC Transfer Path or IROL only
[12] Value to be used when LiDAR data is not available for ROW. See UVM-06 LiDAR Usage Procedure for ROW where LiDAR is scheduled as part of the inspection
[13] GRCD-A is measured from conductor at maximum sag
[14] When ROW is defined by maximum sway the CCD must be added to the maximum sway to determine the GRCD-B
[15] GO 95 Rule 35 Appendix E recommended clearance
[16] GO 95 Rule 35 Appendix E recommended clearance
[17] GO 95 Rule 35 Appendix E recommended clearance
[18] Use this GRCD-B on lines where a defined ROW has been established.
[19] Use nominal 69kV GRCD-B on lines where a defined ROW has not been established
[20] GO 95 Rule 35 Appendix E recommended clearance
[21] Use this GRCD-B on lines where a defined ROW has been established
[22] Use nominal 69kV GRCD-B on lines where a defined ROW has not been established
[23] GO 95 Rule 35 Appendix E recommended clearance

Non-Fire Areas -Based on Elevations up to 8000' in FAC-003-4					
Nominal Voltage[24]	**Wire Zone/Sag - Clearance Distance at Time of Maintenance GRCD-A[25] [26]**	**Border Zone/Sway - Clearance Distance at Time of Maintenance GRCD-B**	**WZ / BZ Clearance Distance that Triggers Work TCD**	**WZ / BZ Clearance Distance to be Maintained for Compliance CCD**	**Regulation Clearance Distance RCD**
500kV	30'	Clear to Defined ROW Boundaries	18'	15'	9.6'[27]
230kV	30'	Clear to Defined ROW Boundaries[28]	10'	7'	4.7'
161kV	30'	15'	8'	5'	3.2'
115kV	30'	15'	7'	4'	2.2'
69kV	12'	10'	6'	3'	1.5'[29]

Table 2: Clearance Distances – Non-Fire Areas, FAC-003-4

[24] 161kV, 115kV, and 69kV Major WECC Transfer Path or IROL only
[25] Value to be used when LiDAR data is not available for ROW. See UVM-06 LiDAR Usage Procedure for ROW where LiDAR is scheduled as part of the inspection
[26] GRCD-A measured from lowest point of conductor at maximum sag
[27] Rule 35 Clearance
[28] When ROW is defined by maximum sway the CCD must be added to the maximum sway to determine the GRCD-B
[29] Rule 35 Clearance

Non-Fire Areas -All Elevations					
GO 95, Rule 35 (Case 13)					
Nominal Voltage	**Wire Zone/Sag - Clearance Distance at Time of Maintenance GRCD-A[30]**	**Border Zone/Sway - Clearance Distance at Time of Maintenance GRCD-B**	**WZ / BZ Clearance Distance that Triggers Work TCD**	**WZ / BZ Clearance Distance to be Maintained for Compliance CCD**	**Regulation Clearance Distance RCD**
161kV	12'	10'	8'	5'	3.2'
115kV	12'	10'	7'	4'	2.2'

Table 3: Clearance Distances – Non-Fire Areas, Rule 35 Case 13

The clearances in Tables 1, 2 and 3 must take into consideration maximum sag and sway under all Rated Electrical Operating Conditions and vegetation movement.

[30] Non-fire Area GRCD-A consistent with Fire Area GRCD-A (GO 95 Rule 35 Appendix E recommended clearance)

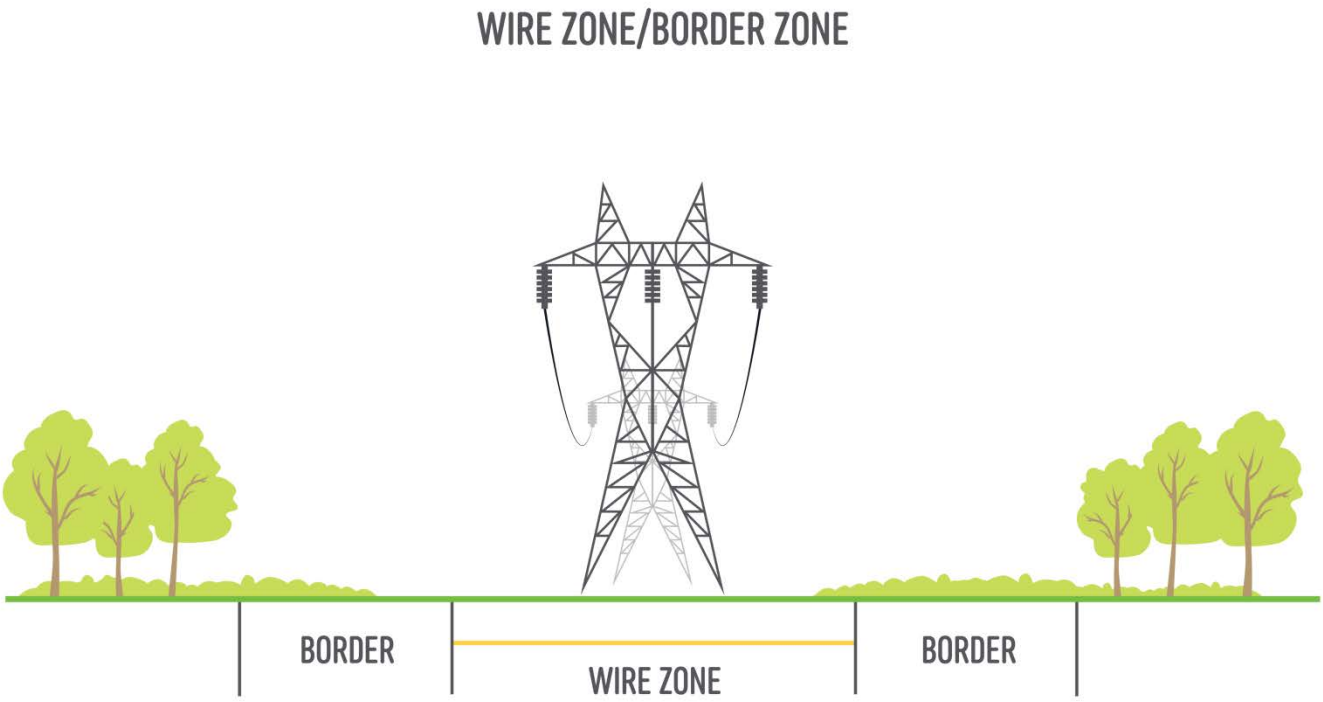


Figure 2: Wire Zone – Border Zone

- Vegetation in the Wire Zone must be cleared, and maintained per the clearances noted in the Clearance Distances (Tables 1, 2 and 3) as appropriate. All fast growing tree species are described in Attachment E: "Tree Species in SCE Service Territory." Fast Growing Tree Species that are located in the Wire Zone shall be removed as appropriate or where applicable. The Wire Zone in Tier 2 and Tier 3 fire areas will contain only low-growing trees, shrubs, and grasses.
- Vegetation in the Border Zone will be pruned or removed to prevent encroachment into a Clearance Zone under all Rated Electrical Operating Conditions as documented on the Attachment B: "UVM Inspection Report" and if applicable, on Attachment C: "UVM Post Work Verification Report" if corrective action is needed. In the event that the required Line Clearance for any given span is located outside the defined ROW, vegetation will be pruned to the edge of the defined ROW.

- Vegetation identified as a Hazard Tree will be mitigated in accordance with Procedure UVM-04, “UVM Hazard Tree Management Plan.”
- An Exclusion Zone is to be established and maintained under and around transmission towers. The Exclusion Zone is a clear area (bare ground) under the tower and measuring a minimum of 10’ out from the outside perimeter of the tower footings and a 20’ perimeter Exclusion Zone will be established where necessary for access and maintenance.
- When the stated clearances cannot be attained at the time of scheduled maintenance due to easements, other legal agreements, or regulations that restrict vegetation management practices, the maximum allowable amount of vegetation will be removed or otherwise controlled as appropriate. These Exception Tree(s) will be documented and re-inspected as necessary throughout the year.

5.2 Transmission Poles and Towers

The following clearances around transmission poles and towers are to be maintained as required in PRC 4292 and CCR 1254.

The 10 foot clearance for towers noted in Figure 3 may be increased to 20 feet when needed for vehicle access.

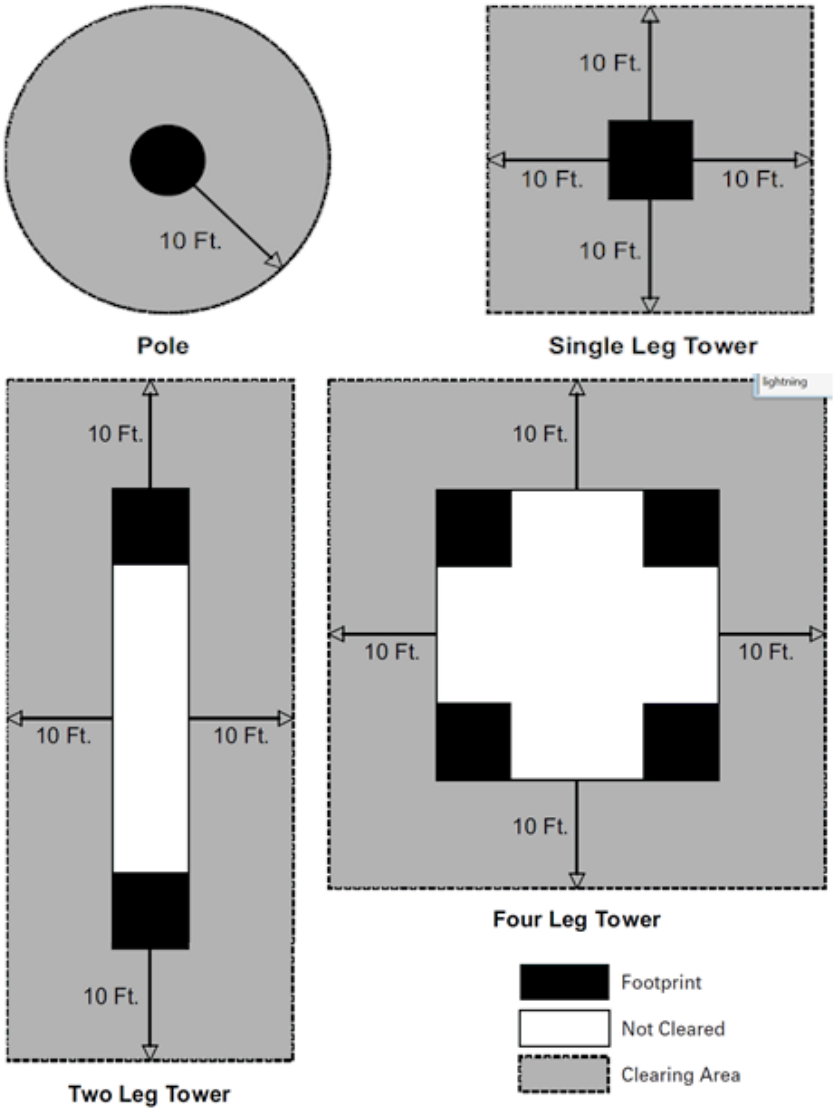


Figure 3: Clearances around Poles and Towers

6. OTHER PROGRAM ELEMENTS

6.1 Inspection Types

6.1.1 Pre-inspections

SCE conducts Pre-Inspections of applicable lines, to identify:

- Vegetation management work needed to maintain compliance with applicable regulations
- Potential CCD or RCD encroachments
- Hazard Trees (on-ROW and observable off-ROW trees)
- Exception Trees

6.1.2 Supplemental Inspections

Supplemental inspections are performed by qualified Transmission Operations personnel throughout the year. Identified conditions requiring vegetation related work are recorded and reported to VM personnel for scheduling of remediation, as applicable.

6.2 Inspection Methods

6.2.1 Ground Inspections

SCE performs inspections, for lines with identified vegetation, from vehicles or by foot from the source point to the end of line.

6.2.2 LiDAR Inspections

LiDAR should be used where lines cannot be readily accessed by ground or the clearances between vegetation and conductors cannot be obtained both vertically and horizontally from an aerial patrol.

Based on topography, line construction, and ecosystem type, the LiDAR inspection will be scheduled as needed. Refer to UVM-06, LiDAR Reference Guide.

If necessary the LiDAR inspection can be performed as early as one year from the previous flight but can be delayed if the LiDAR data is still actionable.. -

- Slow-growing plant communities or Subject Trees near or beyond the Border Zone can have valid LiDAR data older than five years from the inspection.

6.2.3 LiDAR Supplemented Ground Inspections

Vegetation concerns identified from evaluation of the LiDAR data will be followed up with LiDAR Supplemented Ground Inspections.

6.2.4 Aerial Inspections

Where Line Clearance cannot be readily assessed from the ground but the horizontal and vertical clearance between the vegetation and conductors can be determined from an aerial inspection, then aerial inspections are acceptable. Aerial inspections are also an acceptable method for conducting post-storm/post-fire emergency inspections.

6.3 Abnormal Field Conditions

Inspections that cannot be completed due to inaccessibility or restrictions will be promptly reported to VM personnel these areas will be documented on the UVM Abnormal Field Conditions form (Attachment G).

6.4 ROW Width

ROW widths are 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 (See Appendix D—ROW Width Table).

6.5 Vegetation Control Techniques

SCE uses industry standard Integrated Vegetation Management (IVM) techniques to perform scheduled and required work. These techniques may include:

- Manual (Pruning and Removal)
- Chemical (Herbicides)
- Mechanical (Mowing, Mastication, Feller Bunchers, etc.)
- Other cultural and biological practices to promote desirable, stable, low - growing plant communities that will resist invasion by tall growing tree species

Prescriptions for required work are generally developed on a case by case basis and consider a myriad of local factors.

6.6 Post Work Verification

VM TSPs perform a Post Work Verification after completion of contractor(s) work. The VM TSP reviews occur after the clearing work is completed. Review samples are selected in

accordance with UVM-07, Post Work Verification and UVM Program Oversight.

6.7 Personnel Qualifications and Training

6.7.1 Utility Vegetation Management Personnel

The VM TSPs responsible for performing Post Work Verifications shall be qualified in accordance with Procedure UVM-16, "Qualification of VM Technical Specialist." TSPs shall be Certified Arborists with the International Society of Arboriculture. TSPs are also trained to utilize transmission circuit maps; understand transmission and substation operations; recognize restricted areas; and are trained to understand all laws, regulations, and standards applicable to their work.

6.7.2 UVM Contractors

Contract personnel receive the majority of their training through their respective employers. This ongoing training is supplemented by SCE

Training provided by SCE to contract personnel includes, but is not limited to, the following:

- Regulatory Compliance Requirements (state and federal)
  - NERC Reliability Standard FAC-003, General Order 95, Public Resource Codes
- Imminent threat procedures (UVM-08, Vegetation Threat Procedure)
- Reporting inaccessible areas
- Environmentally sensitive habitat areas
- Avian restrictions
- SCE operations and contractual requirements

7. OUTAGES

7.1 Outage Investigations

Sustained Outages are investigated by a qualified Transmission department employee and/or a qualified VM employee to determine the cause. This investigation is performed using a Tree Caused Circuit Interruption (TCCI) Investigations Log.

7.1.1 Periodic Data Submittals

SCE will report vegetation related transmission outages to the Regional Entity pursuant to current Regional Entity's requirements under NERC Reliability Standard FAC-003-4. Outages will be reported using the following categories:

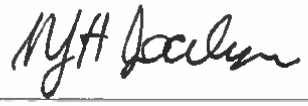
1. Category 1A — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, that are identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW
2. Category 1B — Grow-ins: Sustained Outages caused by vegetation growing into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, by vegetation inside and/or outside of the ROW
3. Category 2A — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, from within the ROW
4. Category 2B — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, from within the ROW
5. Category 3 — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines from outside the ROW
6. Category 4A — Blowing together: Sustained Outages caused by vegetation and applicable lines that are identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW
7. Category 4B — Blowing together: Sustained Outages caused by vegetation and applicable lines, but are not identified as an element of an IROL or Major WECC Transfer Path, blowing together from within the ROW

8. EVIDENCE

SCE shall retain data or evidence to show compliance with NERC Reliability Standard FAC-003-4, Requirements R1, R2, R3, R5, R6 and R7 for three calendar years unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

SCE shall retain data or evidence to show compliance with NERC Reliability Standard FAC-003-4, Requirement R4 for the most recent 12 months of operator logs or the most recent 3 months of voice recordings or transcripts of voice recordings, unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

9. APPROVALS

Program Manager	Signature	Date
Melanie Jocelyn		9/27/18

10. REVISION HISTORY

Version	Date	Description of the Revision	By	Next Review Year
1	7/1/18	Re-write to include the following enhancements: Clearing distances calculated based on additional factors such as sag and sway	UVM Build Team	2019
2	9/27/18	Updated to include all Vegetation Regulations – not just FAC-003	UVM Build Team	2019
3	2/1/19	Updated clearance distances in all tables	Bill Kotteakos	2019

11. REFERENCES

11.1 External References

- ANSI A300: Standards that apply to professionals who provide or supervise the management of trees or woody landscape plants
- ANSI A300 (Part 1): Identifies written pruning performance standards for tree care

- ANSI A300 (Part 7): Integrated approach to management of vegetation on utility right-of-way
- ANSI A300 (Part 9): Provides guidelines for the practice of tree risk assessment and standards for writing specifications
- ANSI Z 133.1: Applies to employers engaged in the business of pruning, maintaining, or removing vegetation and brush chipping
- NERC Glossary of Terms
- NERC Reliability Standard FAC-003-4 NERC Glossary of Terms https://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf

11.2 Internal References

- ECSS-02, E&C Shared Services Glossary of Terms
- UVM-06 LiDAR Reference Guide
- UVM-07 Post Work Verification and UVM Program Oversight
- UVM-16 Qualification of UVM Technical Specialist
- UVM-17 Training Employee and Contractor Training

12. ATTACHMENTS

Attachment A: WECC Transfer Paths and IROLs Under 200kV
Attachment B: UVM Inspection Report
Attachment C: UVM Post Work Verification Report
Attachment D: ROW Width Table
Attachment E: Tree Species in SCE Service Territory
Attachment F: NERC Reliability Standard FAC-003 - Table 2, Minimum Vegetation Clearance Distances
Attachment G: UVM Abnormal Field Conditions
Attachment H: UVM Outage Investigation Report

13. DISTRIBUTION AND DATA RETENTION

The official his version of the document shall be stored on the Maintenance and Inspection server (\\sce\workgroup\TDBU20\ts compliance) while in effect and for at least seven (7) years thereafter.

Distribution List:

- UVM Program Owner
- UVM Department Managers
- OU Touchpoints

14. KEY CONTACTS

T&D, Utility Vegetation Management Department, Senior Manager: Jeff Copeland, 310-995-6178

Attachment A
WECC Transfer Paths and IROLs Under 200kV

Attachment A – WECC Transfer Paths and IROLs Under 200kV

District	Line Designation	Line Voltage	Other Information as Needed
72	Ivanpah-Baker-Cool Water-Dunn-Siding-MT. Pass	115kV	
72	Kramer-Tortilla	115kV	
72	Cool Water-Segs 2-Tortilla	115kV	
73	Kramer-Victor	115kV	
79	Devers - Farrell – Windland	115kV	
79	Mirage-Santa Rosa-Tamarisk	115kV	
85	Control-Silver Peak "A" From PS 595 to Control	55kV	
85	Control-Silver Peak "C" From PS 594to Control	55kV	
85	Control-Haiwee-Inyokern	115kV	
87	Eagle Mountain-Blythe	161kV	

Attachment B
UVM Inspection Report

Attachment B: UVM Inspection Report

2017 GRID COVER SHEET

Circle one: **ROUTINE** or **CYCLE BUSTER**

Circle one: **DISTRIBUTION** or **TRANSMISSION**

Zone: **District:** **Grid:** **ISO:**

2016 (Previous Cycle)	
Total Inventory:	
Prescribed Trims:	
Prescribed Removals:	
Total PI Prescribed Units:	
Performed Trims:	
Performed Removals:	
Total Performed Units:	
# Of Cycle Busters:	

2017 (Current Cycle)	
Total Inventory:	
Prescribed Trims:	
Prescribed Removals:	
Total PI Prescribed Units:	
Performed Trims:	
Performed Removals:	
Total Performed Units	
# Of Cycle Busters:	

Summary	
Trim Rate:	0%
Trim Rate Change:	0%
Inventory Change:	0%
Cycle Buster Change:	0%
Removal Rate:	0%
PI Discrepancy:	0%

Company Name:	**Notes:**
Pre-Inspector:	
Start Date:	
Completion Date:	
I certify the work I performed within this grid to be accurate and in accordance with the applicable Statement of Work"	
Print/Signature:	

Company Name:	**Notes:**
VM Contractor GF:	
Start Date:	
Completion Date:	
I certify the work I performed within this grid to be accurate and in accordance with the applicable Statement of Work"	
Print/Signature:	

SCE TSP Review Date:	
Print/Signature:	

Date Received by SCE:	
Date Updated in Database:	

Updated 12/1/16

2017 Grid Coversheet.xlsx

EXAMPLE

Up-Front Review [X]
Cycle Buster Review [ ]

2018 Grid / Circuit Review Report

Distribution [X]
Transmission [ ]
ISO [ ]

District #	Grid #	Total Distribution Non-Conformance (Compliance Areas) (All Pages)		Transmission Non-Conformance (SCE Requirement) (All Pages)	Recommended Trims (Outside Conformance Zone) (All Pages)		Non-Reimbursable Trims (Trees under One Cycle Old/Specification Re-Trim) C-At Contractor Expense	Reimbursable Trims (New Trees/Trees Over One Cycle/ T&E Trims/Removals) E-SCE Approved Payment
50	20	0	0	0	0	TOTAL Account Findings (All Pages)	0	0
Line # / Tree ID Reviewed	Tree Species	18" Non-Conformance	48" Non-Conformance	12', 15', or 25' Non-Conformance	SCE Required Trims	Accounting C/E	Review Findings (SCE Comments)	Re-Trim Date (Contractor Comments)
							All trees are in compliance with PRC 4293.	No additional trees require mark at this time.
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
	TOTAL Review Findings (This Page)					TOTAL Account Findings (This Page)		

Review Pages	Add Pages	SCE Representative	Date of TSP Review
		Seth T. Reid	3.16.2018

Date Reliability Forms Sent to GF	Date Reliability Forms Sent to HFH	Date Reliability Forms Sent to DRI
NA	NA	NA

Date TSP Sent to Manager	Date SCE Issued to Contractor	Date Contractor Returned to SCE	SCE Manager Review Date	Date Received at SCE Data Center
3.16.2018				

Note: Trees estimated to be less than 18 inches at time of review in a CPUC compliance area.
Note: Trees estimated to be less than 48 inches at time of review in a High Fire designated area.
Note: Trees located outside the conformance zone (more than 18 or 48 inches) at time of review. SCE approval required prior to work.
Note: For contractor comments, identify date of trim or re-trim and any comments to validate trim/no trim decisions.

Updated 03/2017

Additional Comments:

Sampling Review

EXAMPLE

Attachment C
UVM Post Work Verification Report

Attachment C: UVM Post Work Validation Report

Up-Front Review [X]
Cycle Buster Review [ ]

2018 Quality Assurance Audit Report

Distribution [ ]
Transmission [X]
ISO [X]

District #	Grid #	Total Distribution Non-Conformance (Compliance Areas) (All Pages)		Transmission Non-Conformance (SCE Requirement)	Recommended Trims (Outside Conformance Zone) (All Pages)		Non-Reimbursable Trims (Trees under One Cycle Old/Specification Re-Trim) C=At Contractor Expense	Reimbursable Trims (New Trees/Trees Over One Cycle/ T&E Trims/Removals) E=SCE Approved Payment
		0	0	0	0	TOTAL Account Findings (All Pages)	0	0
Line # / Tree ID Reviewed	Tree Species	18" Non-Conformance	48" Non-Conformance	12', 15', or 25' Non-Conformance	SCE Required Trims	Accounting C/E	Review Findings (SCE Comments)	Re-Trim Data (Contractor Comments)
Address						Tree Prescription	* No encroachments were identified within the MVCD at the time of inspection	
Address						Tree Prescription	*All emergency trim locations were completed	
Address						Tree Prescription	*Additional work required in 2018 to achieve greater clearances.	
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
Address						Tree Prescription		
	TOTAL Review Findings (This Page)	0	0	0	0	TOTAL Account Findings (This Page)	0	0

Review Pages	Add Pages	SCE Representative	Date of TSP Review
0	0		

Date Reliability Forms Sent to GF	Date Reliability Forms Sent to HFH	Date Reliability Forms Sent to DRI
0	0	0

Date TSP Sent to Manager	Date SCE Issued to Contractor	ate Contractor Returned to SC	SCE Manager Review Date	Date Received at SCE Data Center
12.7.2017	0	12.7.2017		

Note: Trees estimated to be less than 18 inches at time of review in a CPUC compliance area.
Note: Trees estimated to be less than 48 inches at time of review in a High Fire designated area.
Note: Trees located outside the conformance zone (more than 18 or 48 inches) at time of review. SCE approval required prior to work.
Note: For contractor comments, identify date of trim or re-trim and any comments to validate trim/no trim decisions.

Updated 1/31/2017

Additional Comments: All trees clear of MVCD, PRC 4293, and GO 95 Rule 35 at time of inspection. Additional tree work required in 2018.

EXAMPLE

Attachment D
ROW Width Table

Attachment D: ROW Width Table

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	04302	4302 Metro East (220)			
	4357	4357 Metro East (220)			
	4644	4644 North Coast (220)			
	04709	4709 Highland (220)			
	04711	4711 Highland (500)			
	04733	4733 Highland (220)			
	04734	4734 Highland (220)			
46	00483	Alamitos-Barre No.1 (220)			
	01063	Alamitos-Barre No.2 (220)			
46	00488	Alamitos-Center (220)			
46	00461	Alamitos-Lighthipe (220)			
	00284	Alba-Sandlot (220)			
	00016	Antelope-Big Sky (220)			
36	04676	Antelope-Magunden No. 1 (220)			
36	04677	Antelope-Magunden No. 2 (220)			
36	00999	Antelope-Pardee (220)			
36	01905	Antelope-Vincent No. 1 (500)			
36	01906	Antelope-Vincent No. 2 (500)		N/A	
	01908	Antelope-Whirlwind (500)		N/A	
	01907	Antelope-Windhub		N/A	
	01963	Aqua-Pearblossom-Vincent (220)			
	01433	Arcogen-Hinson No.1 (220)			
	01434	Arcogen-Hinson No.2 (220)			
	00103	Avenue-Whirlwind (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
36	00665	Bailey-Pardee (220)			
36	00655	Bailey-Pastoria (220)			
48	00195	Barre - Ellis No.1 (220)			
	00196	Barre - Ellis No.2 (220)			
	00174	Barre - Ellis No.3 (220)			
48	00175	Barre - Ellis No.4 (220)			
	00946	Barre-Del Amo (220)			
48	01242	Barre-Lewis (220)			
48	01480	Barre-Villa Park (220)			
50	00449	Big Creek 1 – Big Creek 2 (220)			
51	01082	Big Creek 1 –Rector (220)			
	01081	Big Creek 1-Eastwood (220)			
	00513	Big Creek 2-3 (220)			
	00545	Big Creek 2-Big Creek 8 (220)			
	00577	Big Creek 3-4 (220)			
50	00609	Big Creek 3-8 (220)			
	04870	Big Creek 3-Mammoth (220)			
50	01046	Big Creek 3-Rector No.1 (220)			
50	01058	Big Creek 3-Rector No.2(220)			
50	07241	Big Creek 4-Springville (220)			
	00978	Black Creek – Colorado River (220 kV)			
	01528	BLM West-Kramer (220)			
	00539	Boulder Canyon-Hoover (220)			
	00245	Buck Blvd – Julian Hinds (220 kV)			
		Caldwell-Victor (220)			
	01043	Camino-Mead (East) (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	01044	Camino-Mead(West) (220)			
47	00490	Center-Del Amo (220)			
47	00926	Center-Mesa (220)			
		Center-Orlinda (220)			
44	01709	Chevmain-El Nido (220)			
44	01710	Chevmain-El Segundo (220)			
34	01277	Chino-Mira Loma No.1 (220)			
34	00601	Chino-Mira Loma No.2 (220)			
34	00592	Chino-Mira Loma No.3 (220)			
		Chino-Serrano (220)			
34	00880	Chino-Viejo (220)			
	00096	Cima-Eldorado-Pisgah No.1 (220)			
	00465	Cima-Eldorado-Pisgah No.2 (220)			
79	01483	Coachella Valley – Mirage (220 kV)			
	00820	Coalgas-Coolwater (220)			
	00908	Colorado River – Dracker (220 kV)			
	00935	Colorado River – Genesis (220 kV)			
87	79-943	Colorado River -Bluff No. 1 (500 kV)		N/A	
87	79-945	Colorado River -Palo Verde (500 kV)		N/A	
87	79-959	Colorado River -Red Bluff No. 2 (500 kV)		N/A	
	00173	Cool Water-Kramer (220)			
	00262	Cool Water-Sandlot (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	00585	CPC East-Windhub (220)			
	00587	CPC West-Windhub (220)			
	00464	Del Amo-Hinson(220)			
46	01062	Del Amo-Laguna Bell(220)			
	00041	Desert Star-Whirlwind (220)			
	00184	Desert Stateline-Ivanpah (220)			
	00123	Desert Sunlight – Red Bluff (220 kV)			
79	01124	Devers – Mirage No. 1 (220 kV)			
79	01125	Devers – Mirage No. 2 (220 kV)			
79	79-942	Devers - Red Bluff No. 1 (500 kV)		N/A	
79	79-958	Devers - Red Bluff No. 2 (500 kV)		N/A	
	00204	Devers – Sentinel (220 kV)			
79	31-71, 77-71	Devers - Valley No. 1 (500 kV)		N/A	
79	31-72, 77-72	Devers - Valley No. 2 (500 kV)		N/A	
79	01135	Devers – Vista No. 1 (220 kV)			
79	01124	Devers – Vista No. 2 (220 kV)			
79	00514	Devers-El Casco (220)			
79	00526	Devers-San Bernardino (220)			
	00035	Eagle Rock-Gould (220)			
	00771	Eagle Rock-Mesa (220)			
27	00755	Eagle Rock-Sylmar (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	00684	Edmonston-Pastoria (220)			
31	00515	El Caso-San Bernardino (220)			
44	01618	El Nido-El Segundo(220)			
44	00981	El Nido-La Cienega(220)			
44	01591	El Nido-La Fresa No.3(220)			
44	01594	El Nido-La Fresa No.4(220)			
		El Segundo Units 5-6(220)			
		El Segundo Units 7-8(220)			
72	72-106	Eldorado - Lugo		N/A	
	00116	Eldorado - McCullough			
	00121	Eldorado - Moenkopi		N/A	
	00079	Eldorado - Mohave		N/A	
	00185	Eldorado-Ivanpah(220)			
	00178	Eldorado-Magnolia (220)			
	00517	Eldorado-Mead No.1 (220)			
	00521	Eldorado-Mead No.2 (220)			
	00369	Eldorado-Merchant No.1 (220)			
	00378	Eldorado-Merchant No.2 (220)			
	00179	Eldorado-NSO (220)			
	00187	Eldorado-Primm (220)			
	02994	Ellis-Hunt. Beach No.1(220)			
	02995	Ellis-Hunt. Beach No.2(220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	01074	Ellis-Hunt. Beach No.3(220)			
	01075	Ellis-Hunt. Beach No.4(220)			
29	00972	Ellis-Johanna (220)			
29	00973	Ellis-Santiago (220)			
30	01901	Etiwanda-Rancho Vista No. 1(220)			
30	01903	Etiwanda-Rancho Vista No. 2(220)			
30	00397	Etiwanda-San Bernardino (220)			
30	0611	Etiwanda-Vista (220)			
	00122	Four Corners-Moenkopi (500)			
49	00337	Goleta-Santa Clara No. 1 (220)			
49	00338	Goleta-Santa Clara No. 2 (220)			
	00638	Goodrich-Gould (220)			
27	00766	Goodrich-Laguna Bell (220)			
27	00701	Gould-Sylmar (220)			
	01495	Harborgen-Hinson (220)			
	01496	Harborgen-Long Beach (220)			
	01260	Highwind-Mandible (220)			
52	00920	Highwind-Windhub (220)			
46	01038	Hinson-La Fresa(220)			
46	01050	Hinson-Lighthipe (220)			
	00042	Hoover-Mead No. 2 (220)			
	00043	Hoover-Mead No. 3 (220)			
	00749	Inland Empire-Valley		N/A	
	00188	Ivanpah-Primm (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
29	00973	Johanna-Santiago (220)			
79	00226	Julian Hinds – Mirage (220 kV)			
	00107	Kingbird-Whirlwind (220)			
	01538	Kramer-Lsp (220)			
	00276	Kramer-Sandlot (220)			
	00036	Kramer-Victor No. 1 (220)			
	00037	Kramer-Victor No. 2 (220)			
44	00982	La Cienega-La Fresa(220)			
44	04320	La Fresa-Laguna Bell (220)			
44	00216	La Fresa-Redondo No. 1(220)			
	00217	La Fresa-Redondo No.2(220)			
32	00709	Laguna Bell-Rio Hondo (220)			
32	04406	Laguna Bell-Velasco (220)			
	00142	Laughlin – Mohave No. 1 (500 kV)			
	00143	Laughlin – Mohave No. 2 (220 kV)			
	01867	Lebec-Pastoria (220)			
	01478	Lewis-Serrano No.1 (220)			
	01479	Lewis-Serrano No.2 (220)			
	01481	Lewis-Villa Park (220)			
46	01067	Lighthipe-Long Beach (220)			
46	04540	Lighthipe-Mesa (220)			
46	00219	Lighthipe-Redondo (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
73	30-83, 34-83, 73-83	Lugo-Mira Loma No. 2		N/A	
73	30-129, 34-129, 73-129	Lugo-Mira Loma No. 3		N/A	
73	73-81	Lugo-Mohave (500 kv)		N/A	
	00290	Lugo-Pisgah No.1 (220)			
	00289	Lugo-Pisgah No.2 (220)			
73	30-1895, 73-1895	Lugo-Rancho Vista (500)		N/A	
	00299	Lugo-Victor No.1 (220)			
	00306	Lugo-Victor No. 2 (220)			
	00038	Lugo-Victor No.3 (220)			
	00039	Lugo-Victor No.4 (220)			
	00117	Lugo-Victorville (500)		N/A	
73	73-112	Lugo-Vincent No. 1 (500)		N/A	
73	36-104, 73-104	Lugo-Vincent No. 2 (500)		N/A	
	00491	Magunden-Omar (220)			
51	00654	Magunden-Pastoria No.1 (220)			
51	00657	Magunden-Pastoria No.2 (220)			
51	00659	Magunden-Pastoria No.3 (220)			
51	07239	Magunden-Springville No.1 (220)			
51	07240	Magunden-Springville No.2 (220)			
51	08214	Magunden-Vestal No.1 (220)			
51	08342	Magunden-Vestal No.2 (220)			
39	04896	Mandalay-Santa Clara No. 1 (220)			
39	04897	Mandalay-Santa Clara No. 2 (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	00928	Manzana-Whirlwind (220)			
	00124	Mccullough-Navajo (500)			
22	00213	Mesa-Redondo (220)			
22	06866	Mesa-Rio Hondo (220)			
22	01091	Mesa-Vincent No. 1 (220)			
22	01093	Mesa-Vincent No. 2			
22	00689	Mesa-Walnut (220)			
51	36-126, 51-126	Midway-Vincent No. 1 (500)		N/A	
51	36-127, 51-127	Midway-Vincent No. 2 (500)		N/A	
51	36-194, 51-194	Midway-Whirlwind (500)		N/A	
	00763	Mira Loma-Olinda (220)			
34	34-1896	Mira Loma-Rancho Vista		N/A	
34	01897	Mira Loma-Rancho Vista No.1 (220)			
	01898	Mira Loma-Rancho Vista No.2 (220)			
34	34-135	Mira Loma-Serrano #2 (500)		N/A	
34	00134	Mira Loma-Serrano No. 1 (500)			
	00390	Mira Loma-Vincent (500)			
34	00594	Mira Loma-Vista No. 1 (220)			
34	00599	Mira Loma-Vista No. 2 (220)			
34	00602	Mira Loma-Walnut			
	01813	Mirage – Ramon (220 kV)			
35	00662	Moorpark-Ormond Beach No. 1 (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
35	00653	Moorpark-Ormond No. 2 (220)			
35	00838	Moorpark-Ormond No. 3 (220)			
35	00839	Moorpark-Ormond No. 4 (220)			
35	00845	Moorpark-Pardee No. 1 (220)			
35	00729	Moorpark-Pardee No. 2 (220)			
35	00731	Moorpark-Pardee No. 3 (220)			
35	00775	Moorpark-Santa Clara No. 1 (220)			
35	00778	Moorpark-Santa Clara No.2 (220)			
	01013	Mountainview-San Bernardino No. 3			
	01018	Mountainview-San Bernardino No.4 (220)			
	00322	Ocaso-Sandlot (220)			
26	01607	Olinda-Walnut (220)			
		Omar-Sycamore (220)			
34	01899	Padua-Rancho Vista No.1 (220)			
34	01900	Padua-Rancho Vista No.2(220)			
59	00667	Pardee-Pastoria (220)			
	00624	Pardee-Pastoria-Warne (220)			
59	00776	Pardee-Santa Clara (220)			
	00670	Pardee-Saugus No. 1 (220)			
	00679	Pardee-Saugus No. 2 (220)			
	00674	Pardee-Saugus No. 3 (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	00603	Pardee-Saugus No. 4 (220)			
59	00664	Pardee-Sylmar No. 1 (220)			
59	00677	Pardee-Sylmar No. 2 (220)			
59	01925	Pardee-Vincent No. 1 (220)			
	00669	Pardee-Vincent No. 2 (220)			
	00186	Primm-Silver State (220)			
51	01073	Rector-Springville			
51	01083	Rector-Vestal No.1 (220)			
51	06644	Rector-Vestal No.2 (220)			
	00708	Rio Hondo-Vincent No.1 (220)			
	00707	Rio Hondo-Vincent No.2 (220)			
	00840	Rose Meadow-Whirlwind (220)			
	00013	Roy-Solar Ranch-Whirlwind (220)			
31	00785	San Bernardino-Vista (220)			
	23010	San Onofre-Encina (220)			
	23006	San Onofre-Mission (220)			
	23002	San Onofre-Mission-San Luis Rey (220)			
43	01188	San Onofre-Santiago – No.1 (220)			
	01189	San Onofre-Santiago – No.2 (220)			
43	00471	San Onofre-Serrano (220)			

District	Line Designation	Line Name	Construction Documents	Pre-2007 Records	Blowout Standard
	23007	San Onofre-Talega No. 1 (220)			
	23052	San Onofre-Talega No. 2 (220)			
	00881	San Onofre-Viejo(220)			
39	00770	Santa Clara-Vincent (220)			
29	29-132, 77-132, 88-132	Serrano-Valley (500)		N/A	
	00474	Serrano-Villa Park No.1 (220)			
	00475	Serrano-Villa Park No.2 (220)			
		ST SPCC Parkway EAST (220)			
		ST SPCC Parkway West (220)			
	00910	Suncreek-Windhub (220)			
	00021	Teddy-Whirlwind (220)			
36	36-1914	Vincent-Whirlwind (500)		N/A	
	00153	Vincent-Windstar 1 (220)			
	00139	Walcreek-Walnut (220)			
	01910	Whirlwind-Windhub (500)		N/A	

Attachment E

Tree Species in SCE Service Territory

Attachment E: Tree Species in SCE Service Territory

Table 1: Tree Species Names and Growth Rates

Species Name	Growth Rate	Species Name	Growth Rate
Acacia-Bbw	Medium	Joshua	Slow
Ailanthus	Fast	Juniper	Slow
Albizzia	Medium	Lemon	Medium
Alder,White	Medium	LiqAmber-Gum	Medium
Almond	Medium	Locust	Fast
Ash	Fast	Magnolia	Slow
Aspen	Slow	Maple	Medium
Athel	Medium	Melaleuca	Medium
Avocado	Medium	Mesquite	Medium
Bamboo	Fast	Mimosa	Slow
Banana	Slow	Monkey Puzzle	Slow
Bay	Slow	Mulberry	Fast
Birch	Slow	Myoporum	Slow
Bird of Paradise	Medium	Oak	Slow
Bottle	Slow	Oleander	Slow
Bottlebrush	Sol w	Olive	Medium
Brisbane Box	Medium	Orange	Medium
Buckeye	Slow	Orchid	Medium
Camphor	Medium	Other	Medium
Carob	Medium	Palm	Fast
Carrotwood	Medium	Palo Verde	Slow
Casuarina	Medium	Pear	Medium
Catalpa	Medium	Pecan	Fast
Cedar	Slow	Pepper	Fast
Century Plant	Slow	Persimmon	Medium
Cherry	Medium	Pine	Medium
Chinaberry	Medium	Pistache	Medium
Citrus	Slow	Pistachio	Medium
Coral	Medium	Pittysporum	Medium
Cottonwood	Fast	Plum	Medium
Cow Itch	Slow	Podocarpus	Medium
Crape Myrtle	Slow	Poplar	Fast
Cypress	Slow	Privet	Medium
Deodara	Slow	Redwood	Medium
Dogwood	Slow	Rubber	Medium
Elder,Box	Medium	Salt Cedar	Medium
Elderberry	Medium	Sequoia	Slow
Elm	Fast	Spruce	Medium
Eucalyptus	Fast	Sumac	Medium
Eugenia	Medium	Sycamore	Fast
Ficus	Medium	Tallow	Medium
Fgi	Medium	Tulip	Fast
Fir	Slow	Unknown	Medium
Floss, Silk	Medium	Vine	Fast
Ginkgo	Slow	Walnut	Fast
Golden Rain	Slow	Willow	Fast
Grevillea	Fast	Yucca	Slow
Hackberry	Medium	Zekl ova	Medium
Jacaranda	Fast		

Approximate Growth Rate:
(S) Slow: 0 to 3 feet Annually
(M) Medium: 3.1 to 6 feet Annually
(F) Fast: More than 6 feet Annually

Attachment F
NERC Reliability Standard FAC-003 - Table 2, Minimum Vegetation Clearance Distances

Attachment F: NERC Reliability Standard FAC-003 - Table 2, Minimum Vegetation Clearance Distances (For Reference Only)

FAC-003 — TABLE 2 — Minimum Vegetation Clearance Distances (MVCD)[17]

For **Alternating Current** Voltages (feet)

(AC) Nominal System Voltage (KV)+	(AC) Maximum System Voltage (kV)[18]	MVCD (feet) Over sea level up to 500 ft	MVCD feet Over 500 ft up to 1000 ft	MVCD feet Over 1000 ft up to 2000 ft	MVCD feet Over 2000 ft up to 3000 ft	MVCD feet Over 3000 ft up to 4000 ft	MVCD feet Over 4000 ft up to 5000 ft	MVCD feet Over 5000 ft up to 6000 ft	MVCD feet Over 6000 ft up to 7000 ft	MVCD feet Over 7000 ft up to 8000 ft	MVCD feet Over 8000 ft up to 9000 ft	MVCD feet Over 9000 ft up to 10000 ft	MVCD feet Over 10000 ft up to 11000 ft	MVCD feet Over 11000 ft up to 12000 ft	MVCD feet Over 12000 ft up to 13000 ft	MVCD feet Over 13000 ft up to 14000 ft	MVCD feet Over 14000 ft up to 15000 ft
765	800	11.6ft	11.7ft	11.9ft	12.1ft	12.2ft	12.4ft	12.6ft	12.8ft	13.0ft	13.1ft	13.3ft	13.5ft	13.7ft	13.9ft	14.1ft	14.3ft
500	550	7.0ft	7.1ft	7.2ft	7.4ft	7.5ft	7.6ft	7.8ft	7.9ft	8.1ft	8.2ft	8.3ft	8.5ft	8.6ft	8.8ft	8.9ft	9.1ft
345	362[19]	4.3ft	4.3ft	4.4ft	4.5ft	4.6ft	4.7ft	4.8ft	4.9ft	5.0ft	5.1ft	5.2ft	5.3ft	5.4ft	5.5ft	5.6ft	5.7ft
287	302	5.2ft	5.3ft	5.4ft	5.5ft	5.6ft	5.7ft	5.8ft	5.9ft	6.1ft	6.2ft	6.3ft	6.4ft	6.5ft	6.6ft	6.8ft	6.9ft
230	242	4.0ft	4.1ft	4.2ft	4.3ft	4.3ft	4.4ft	4.5ft	4.6ft	4.7ft	4.8ft	4.9ft	5.0ft	5.1ft	5.2ft	5.3ft	5.4ft
161*	169	2.7ft	2.7ft	2.8ft	2.9ft	2.9ft	3.0ft	3.0ft	3.1ft	3.2ft	3.3ft	3.3ft	3.4ft	3.5ft	3.6ft	3.7ft	3.8ft
138*	145	2.3ft	2.3ft	2.4ft	2.4ft	2.5ft	2.5ft	2.6ft	2.7ft	2.7ft	2.8ft	2.8ft	2.9ft	3.0ft	3.0ft	3.1ft	3.2ft
115*	121	1.9ft	1.9ft	1.9ft	2.0ft	2.0ft	2.1ft	2.1ft	2.2ft	2.2ft	2.3ft	2.3ft	2.4ft	2.5ft	2.5ft	2.6ft	2.7ft
88*	100	1.5ft	1.5ft	1.6ft	1.6ft	1.7ft	1.7ft	1.8ft	1.8ft	1.8ft	1.9ft	1.9ft	2.0ft	2.0ft	2.1ft	2.2ft	2.2ft
69*	72	1.1ft	1.1ft	1.1ft	1.2ft	1.2ft	1.2ft	1.2ft	1.3ft	1.3ft	1.3ft	1.4ft	1.4ft	1.4ft	1.5ft	1.6ft	1.6ft

* Such lines are applicable to this standard only if PC has determined such per FAC-014 (refer to the Applicability Section above)

+ Table 2 – Table of MVCD values at a 1.0 gap factor (in U.S. customary units), which is located in the EPRI report filed with FERC on August 12, 2015. (The 14000-15000 foot values were subsequently provided by EPRI in an updated Table 2 on December 1, 2015, filed with the FAC-003-4 Petition at FERC)

[17] The distances in this Table are the minimums required to prevent Flash-over; however prudent vegetation maintenance practices dictate that substantially greater distances will be achieved at time of vegetation maintenance.

Attachment G
UVM Abnormal Field Conditions

Attachment G: UVM Abnormal Field Conditions Form

Abnormal Field Conditions Form

General Information:

Date:	Reporter:	Inspector Name and Company:	Local TSP:	Transmission Supervisor:

Location Information:

Circuit ID#	
Circuit ID Name	
Substation Origin	
Substation Destination	
Line Voltage	
Location Address(es)	
Property Owner(s)	
Location Origin GPS Coordinates	
Location Destination GPS Coordinates	
Origin Tower	
Destination Tower	
Span or Partial Span Length	

Restrictions:

Weather Conditions:								
Access Restrictions:								
Biological /Archaeological Restrictions?	Y	N	If yes, explain:					
Previous Inspection Date:			Method:					
Refusal Location:	Y	N	What easement rights do we have?					
What is the ROW width at this location?			Maximum line sag for this span:			Maximum line sag for the location		
Tier 1 Imminent Threat Location:	Y	N	Tier 2 Emergent Threat Location:	Y	N			
How often does the location need to be re-inspected?								
Is this an orchard?	Y	N	Will there be crop lost?	Y	N	Should this location be considered for orchard?	Y	N

Comments:

EXAMPLE

Attachment H

UVM Outage Investigation Report

Attachment H: UVM Outage Investigation Report

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GP–4: Tree-Caused Circuit Interruption Fact-Finding Procedures

1.0 Purpose

This procedure provides the requirements for field review of tree-caused circuit interruptions (TCCIs) and validation of interruption causes.

2.0 Policy Statements

It is a practice of the Vegetation Management department to review, validate, and document in the Vegetation Management database findings of known tree-caused circuit interruptions charged against the Vegetation Management Department. The Vegetation Management Department should maintain a listing of validated tree-caused circuit interruptions.

3.0 References

3.1 Grid Control Center (GCC) and T&D Joint Morning Reports

3.2 Vegetation Management Tree-Caused Circuit Interruption Report

4.0 Operations

Reported tree-caused circuit interruptions should be reviewed by Vegetation Management Technical Specialists to determine cause, validity, and correction.

4.1 If the identified tree is determined not to be the actual cause of the circuit interruption, Vegetation Management Technical Specialists will notify the Distribution Operations Center (DOC) that the field review shows the identified tree as not being the cause of the reported interruption. The Vegetation Management Technical Specialists will request the cause code be changed from "Tree Caused" to "No Cause Found" or another cause code determined by the DOC.

4.2 If the tree is determined to be the reported cause of the circuit interruption, Vegetation Management Technical Specialists will create a Vegetation Management Interruption Data Report. The Vegetation Management Technical Specialists will identify all outage-related data. The Vegetation Management Interruption Data Report should contain the following:

- Work location
- Circuit name
- Date/time
- Number of operations
- Tree normally trimmed
- Determination of whether the outage was controllable
- Type of tree
- Name of investigator
- Tree location
- Determination of cause
- Action/remarks

4.3 The Vegetation Management Technical Specialists will schedule any required tree maintenance to correct the cause of the circuit interruption. This may include a request to trim/remove the identified tree.