SCE	Legal, Regulatory, and Compliance	Transmission & Distribution Utility Vegetation Management (UVM)	Methodology	Doc. No.	UVM-02
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	Supersedes	Version 7			
Transmission Vegetation Management Plan (TVMP)					

THIS DOCUMENT IS REQUIRED TO BE MAINTAINED IN ACCORDANCE WITH ERCP COMPLIANCE DOCUMENT REQUIREMENTS

UVM-02
Utility Vegetation Management
Transmission Vegetation Management Plan (TVMP)

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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-003-5, 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-003-5
  - 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-003-5: 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 by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separations.
- Each overhead transmission line operated below 200kV identified as an element of a Major Western Electricity Coordinating Council (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:
  - Operated at 200kV or higher; or
  - Operated below 200kV and identified by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation.

[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.

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 UVM Program Glossary of Terms (UVM-16) 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-003-5 Requirement 1
- 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. 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

[2] FAC-003-5 Requirement 1does 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.

[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.

[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.

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 documentation using Attachment A, "Utility Vegetation Management (UVM) Inspection Report / Grid Cover Sheet," when applicable, and documenting Post Work Verifications in VM's Work Management System.

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

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-003-5 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.

[6] See Paragraph 1.2. Maintenance Procedures

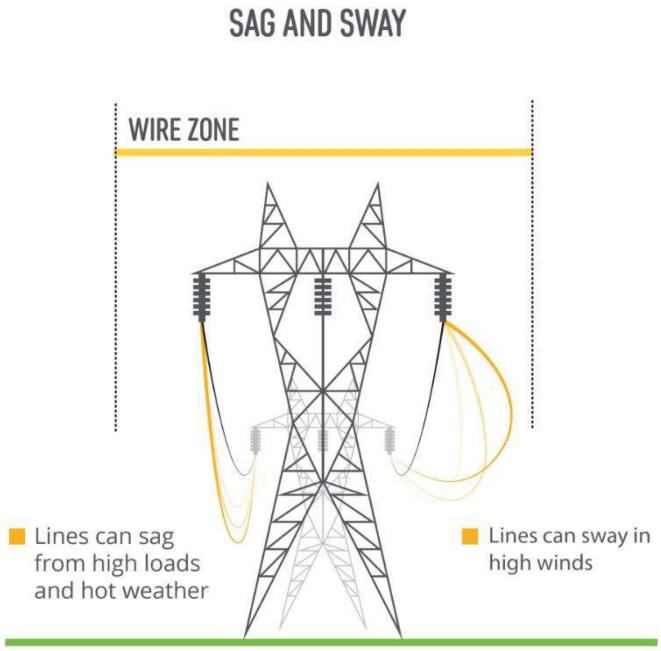

Figure 1: Sag and Sway

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 lines that are subject to NERC Reliability Standard FAC-003-5 will be documented on a span by span basis. This data will be provided to internal personnel and/or contractors performing inspection work when Light Detection and Ranging (LiDAR) data is not used.

ROW width, Sag and Sway data will allow field personnel to account for movement of the conductors under all Rated Electrical Operating Conditions when determining needed clearances or performing review. ROW width used for vegetation management may vary depending on site location, requirements, or restrictions. All lines subject to NERC Reliability Standard FAC-003-5 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 Section 5, Tables 1 & 2)
- Clearances are to be maintained under all operating conditions and at all times, as applicable (see Section 5, Tables 1 & 2)

4.3 Notification of Vegetation Threat

The following language is from NERC Reliability Standard FAC-003-5 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-003-5 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, then the following shall occur:

If the constraint was identified by an SCE employee/SSP, then:

- Manage Vegetation Threats in accordance with UVM-08, “Manage Vegetation Threats”
- Manage Customer refusals in accordance with UVM-14, “Manage Refusal Events.”

If the constraint was identified by an SCE Vegetation Contractor, then the details of the constraint shall be documented in the Work Management System and the SSP with local jurisdication shall be made aware of the constraint for assistance with resolution.

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.

4.5 Inspections

Requirements: FAC-003-5 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-003-5 Requirement 7; GO 95, Rule 35 and Rule 37; PRC 4293

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

[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.

[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.

- 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 as required by UVM-10, “Managing Work and Events”

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 of the applicable Table 1 or 2:

Grid Resiliency Clearance Distances (GRCD) are established to mitigate fire risk and maintain compliance with applicable regulatory 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

Refer to Table 1 for Fire Area clearances: FAC-003-5, PRC 4293, and GO 95, Rule 35 Case 14

Refer to Table 2 for Non-Fire Area clearances: FAC-003-5, and GO 95, Rule 35 Case 13

5.1.1 Restricted Areas

Restricted Areas may result in conditions preventing the GRCD-A or GRCD-B, TCD or CCD for Tables 1 or 2 from being implemented. Examples include crops, orchards, environmentally sensitive areas or lack of easement rights.

When restricted areas are encountered and the clearances specified in Tables 1 or 2 cannot be achieved, then:

- GRCD-A or GRCD-B can be modified and documented in the work management system to address the specific circumstances or restrictions at that location
- Ensure sufficient clearance is achieved to maintain RCD for 18 months

[9] TCD = CCD + 3-feet
[10] CCD = RCD x 1.5 (Safety Margin) rounded up

All Elevations in Fire Areas					
FAC-003-5, 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]**	**Border Zone/Sway - Clearance Distance at Time of Maintenance GRCD-B[13]**	**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 the greater of the following: (1) Defined ROW Boundaries or; (2) Maximum Blowout plus 30'	18'	15'	10.0'
230kV	30'		18'	15'	10.0'
161kV	30'		18'	15'	10.0'
115kV	30'		18'	15'	10.0'
69kV	12'	Clear to the greater of the following: (1) Defined ROW Boundaries or; (2) Maximum Blowout plus 12'	9'	6'	4.0'

Table 1: Clearance Distance –Fire Areas, FAC-003-5, PRC 4293, Rule 35 (Case 14)

The clearances in Table 1 must take into consideration maximum sag and sway under all Rated Electrical Operating Conditions and vegetation movement for lines subject to NERC Reliability Standard FAC-003-5.

[11] 161kV, 115kV, and 69kV Major WECC Transfer Path, when applicable
[12] If GRCD-A recommended clearances cannot be achieved, required maintenance shall ensure RCD for 18 months
[13] If GRCD-B recommended clearance (2) cannot be achieved, required maintenance shall ensure RCD for 18 months

Non-Fire Areas -Based on Elevations up to 8000' in FAC-003-5 and GO95 Rule 35 (Case 13)					
Nominal Voltage[14]	**Wire Zone/Sag - Clearance Distance at Time of Maintenance GRCD-A[15] [16] [17]**	**Border Zone/Sway - Clearance Distance at Time of Maintenance GRCD-B[18]**	**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 the greater of the following: (1) Defined ROW Boundaries or; (2) Maximum Blowout plus 30'	18'	15'	9.6'
230kV	30'		10'	7'	4.7'
161kV	10'	Clear to the greater of the following: (1) Defined ROW Boundaries or; (2) Maximum Blowout plus 10'	8'	5'	3.2'
115kV	10'		7'	4'	2.2'
69kV	6'	Clear to the greater of the following: (1) Defined ROW Boundaries or; (2) Maximum Blowout plus 6'	n/a	3'	1.5'

Table 2: Clearance Distances – Non-Fire Areas, FAC-003-5 and GO95 Rule 35 (Case 13)

The clearances in Table 2 must take into consideration maximum sag and sway under all Rated Electrical Operating Conditions and vegetation movement for lines subject to NERC Reliability Standard FAC-003-5.

[14] 161kV, 115kV, and 69kV Major WECC Transfer Path, when applicable
[15] GO95 Rule 35 Appendix E Case 13 (non-Fire Areas) recommends 10' clearance for 110kV to 300kV
[16] Although GO95 Rule 35 Appendix E Case 13 (non-Fire Areas) recommends 4' clearance for 2.4kV to 72kV, SCE is adopting a 6' clearance
[17] If GRCD-A recommended clearances cannot be achieved, required maintenance shall ensure RCD for 18 months
[18] If GRCD-B recommended clearance (2) cannot be achieved, required maintenance shall ensure RCD for 18 months

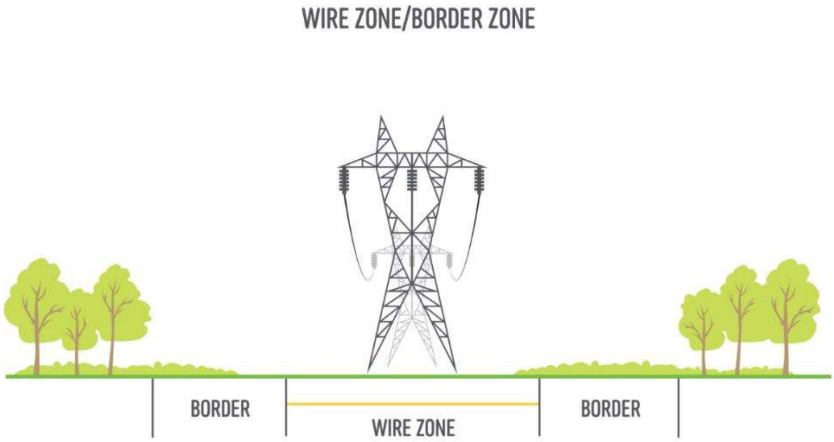

Figure 2: Wire Zone – Border Zone

- Vegetation in the Wire Zone must be cleared, and maintained per the clearances noted in the Tables 1 and 2, as appropriate. Fast Growing Tree Species that are located in the Wire Zone shall be removed as appropriate[19]. The Wire Zone in Tier 2 and Tier 3 fire areas will contain only low-growing trees, shrubs, and grasses. All fast growing tree species are described in Attachment B: "Tree Species in SCE Service Territory."
- 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 A: "UVM Inspection Report / Grid Cover Sheet," as applicable, or via Post Work Verification in the WMS if corrective action is needed.
- 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.
- If RCD plus 18 months growth clearance 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 in the work management system and re-inspected as necessary throughout the year.

[19] Trees that have the capability to encroach into the clearance distances at maturity shall be removed

5.1.2 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.

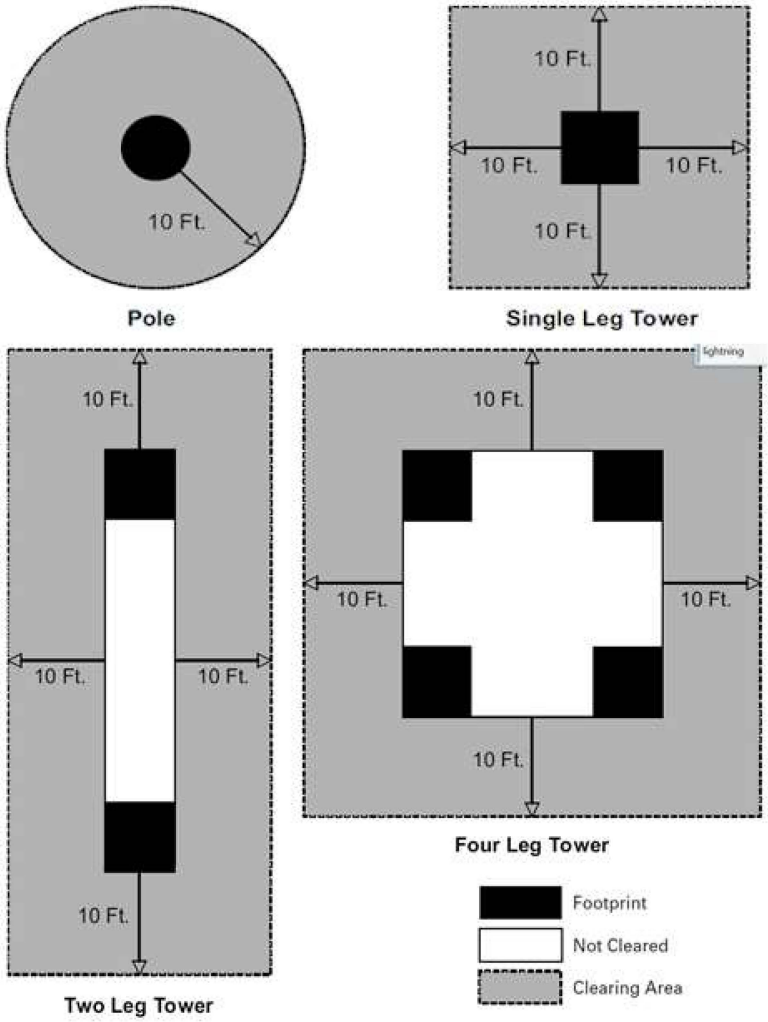

Figure 3: Clearances around Poles and Towers

6. Other Program Elements

6.1 Inspection Types

6.1.1 Inspections performed by SCE's Pre-Inspectors (PIs)

SCE or contracted PIs conduct inspections (denoted as 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. For lines that are subject to NERC Reliability Standard FAC-003-5, when vegetation LiDAR data is not available and ground inspections are required, then the ground inspections require the use of Sag and Sway table data to determine when pruning is required to maintain the required clearance.

6.2.2 LiDAR Inspections

LiDAR is a surveying method that measures distance to a target by illuminating the target with pulsed laser light and measuring the reflected pulses with a sensor. Differences in laser return times can then be used to make digital three-dimensional representations of the target. LiDAR data acquisitions are conducted via air patrol.

SCE uses LiDAR as an inspection and measurement tool to identify clearances between high-voltage lines and vegetation. This method of inspection and measurement is used on selected ROWs in the SCE system, and is employed when 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. Due to the increased accuracy and additional data obtained using LiDAR technology, LiDAR is the preferred method of inspection, when practical.

Vegetation concerns identified from evaluation of the LiDAR data may be supplemented by foot/ground patrols to validate the concerns and/or other required information, as applicable.

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

6.2.3 Ground Inspections Using Previously Acquired LiDAR Data

Slow-growing plant communities or Subject Trees near or beyond the Border Zone can have valid LiDAR data older than five years from the original LiDAR inspection detailed in section 6.2.2. In these instances, ground inspections using previously acquired LiDAR data can be used to identify changes/growth of vegetation and assessment of required pruning/maintenance to achieve required clearance. When using this method of inspection, the preinspector is required to inspect from the source point to the end of line.

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, customer refusals or other restrictions will be promptly reported to the VM Event Expeditor for managing the condition in accordance with UVM-14. When these conditions are identified by SCE Vegetation contractors, the condition and/or reason for the incomplete work shall be documented in the Work Management System and the SSP with local jurisdication shall be notified to assist with resolution of the identified 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.

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.

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 SSPs perform a Post Work Verification after completion of contractor(s) work. The VM SSP reviews occur after inspection and/or line 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 SSPs responsible for performing Post Work Verifications shall be qualified in accordance with Procedure UVM-11, "Qualification of UVM Senior Specialists." SSPs shall be Certified Arborists with the International Society of Arboriculture. SSPs 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-003-5, General Order 95, Public Resource Codes
- Imminent threat procedures (UVM-08, Vegetation Threat Procedure)
- Managing Refusal Events (UVM-14, Manage Refusal Events)
- 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-003-5. 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 by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, 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 by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, 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 by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, from within the ROW
4. Category 2B — Fall-ins: Sustained Outages caused by vegetation falling into applicable lines, but are not identified by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, 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 by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, blowing together from within the ROW
7. Category 4B — Blowing together: Sustained Outages caused by vegetation and applicable lines, but are not identified by the Planning Coordinator, per its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability Assessment (Planning Coordinator only), as Facilities that if lost or degraded are expected to result in instances of instability, Cascading, or uncontrolled separation, blowing together from within the ROW

8. Evidence

SCE shall retain data or evidence to show compliance with NERC Reliability Standard FAC-003-5, Requirements R1, 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-003-5, 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
[NAME REMOVED] Principal Manager	[NAME REMOVED]	3/19/24

10. Revision History

Revision Number	Date	Description of the Revision	By	Next Review Date
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	[NAME REMOVED]	2019

Revision Number	Date	Description of the Revision	By	Next Review Date
4	5/17/19	General Document Refresh Deleted "ROW Width Table" from document and added to VM SharePoint site	[NAME REMOVED]	5/17/20
5	8/9/19	Revised GRCD clearances and footnotes. Provided additional clarification for inspection methods	[NAME REMOVED]	8/9/20
6	3/1/21	Removed "For Internal Use" Procedure Designation	[NAME REMOVED]	3/1/22
7	7/28/23	Deleted prior Attachment A Changed 6.2.2 "will" to "may" Changed procedure retention time to 10 years Updated Tree Species List	[NAME REMOVED]	7/28/24
8	4/1/24	Updated to incorporate FAC-003-5 Deleted prior attachment B and E Updated Tree Species List	[NAME REMOVED]	4/1/25

11. References

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

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-08, Managing Vegetation Threats
- UVM-11, Qualification of UVM Senior Specialists
- UVM-12, Employee and Contractor Training
- UVM-14, Manage Refusal Events

12. Attachments

Attachment A: UVM Inspection Report / Grid Cover Sheet

Attachment B: Tree Species in SCE Service Territory

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

Attachment D: UVM Outage Investigation Report

13. Distribution and Data Retention

The approved version of the document shall be stored on the Vegetation Management SharePoint site while in effect and for at least ten (10) years thereafter.

Distribution List:

- UVM Program Owner
- UVM Department Managers
- OU Touchpoints

14. Key Contacts

UVM Principal Manager, Operations: [NAME AND PHONE NUMBER REMOVED]

UVM Senior Manager, Compliance: [NAME AND PHONE NUMBER REMOVED]

Attachment A
UVM Inspection Report / Grid Cover Sheet

Circle one: DISTRIBUTION or TRANSMISSION

Zone: ____ District: ____ Grid: ____ ISO: ____

Pre-Inspection	
2018 Inventory	
2018 Prescribed Trims	
2019 Inventory	
2019 Prescribed Trims	
2019 Prescribed Removals	
2019 Removals Approved	
Total Hours Invoiced	
Approved Exceptions	
Unapproved Exceptions	
Priority 1	
Additional Compliance	
Notification Consultant	

Tree Contractor	
2018 Performed Trims	
2019 Performed Trims	
2019 Performed Removals	
Total Hours Invoiced	
Approved Exceptions	
Unapproved Exceptions	
Priority 1 Permanently Res.	
Additional Compliance	
Add Locations	
Abnormal Field Conditions	

SCE Senior Specialist	
% GRCD Trims Achieved	
% Approved Exceptions	
% Unapproved Exceptions	
Trim Refusals Pending	
Removal Refusals Pending	
P1 Not Permanently Res.	
SCE Field Review	

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 Senior Specialist PI Review Date:	
SCE Senior Specialist TC Review Date:	
Senior Specialist Print/Signature (PI):	Senior Specialist Print/Signature (TC):

Date Received by SCE:	
Date Updated in Database:	

EXAMPLE

Attachment B
Tree Species in SCE Service Territory

Common Name	Genus	species	Growth Rate	Risk Rating
Ailanthus	Ailanthus	altissima	Fast	High
Arundo	Arundo	donax	Medium	High
Ash	Fraxinus	spp	Fast	High
Ash - Evergreen	Fraxinus	udhei	Fast	High
Ash - Modesto	Fraxinus	velutina	Fast	High
Ash - Raywood	Fraxinus	oxycarpa	Fast	High
Aspen - Quaking	Populus	tremuloides	Medium	High
Athel	Tamarix	spp	Fast	High
Bamboo	Bambusa	spp	Fast	High
Catalpa	Catalpa	speciosa	Fast	High
Century Plant	Agave	americana	Fast	High
Coolibah	Eucalyptus	coolabah	Fast	High
Coral	Erythrina	corallodendron	Fast	High
Cottonwood	Populus	spp	Fast	High
Cottonwood - Black	Populus	trichocarpa	Fast	High
Cottonwood - Western	Populus	fremontii	Fast	High
Eucalyptus	Eucalyptus	spp	Fast	High
Eucalyptus - Blue Gum	Eucalyptus	globulus	Fast	High
Eucalyptus - Lemon	Corymbia	citriodora	Fast	High
Eucalyptus - Manna Gum	Eucalyptus	viminalis	Fast	High
Eucalyptus - Red Flowering Gum	Corymbia	ficifolia	Fast	High
Eucalyptus - Red Gum	Eucalyptus	camaldulensis	Fast	High
Eucalyptus - Red Ironbark	Eucalyptus	sideroxylon	Fast	High
Eucalyptus - Silver Dollar Gum	Eucalyptus	polyanthemos	Fast	High
Jacaranda	Jacaranda	mimosifolia	Fast	High
Liquid Amber	Liquidambar	styraciflua	Medium	High
Locust	Gleditsia	spp	Fast	High
Locust - Black	Robinia	pseudoacacia	Fast	High
Locust - Honey	Gleditsia	triacanthos	Fast	High
Maple	Acer	spp	Fast	High
Maple - Bigleaf	Acer	macrophyllum	Fast	High
Maple - Box Elder	Acer	negundo	Fast	High
Maple - Silver	Acer	saccharinum	Fast	High
Mimosa	Albizia	julibrissin	Fast	High
Mulberry	Morus	alba	Fast	High
Oak - Black	Quercus	kelloggii	Medium	High
Oak - Valley	Quercus	lobata	Fast	High
Palm - California	Washingtonia	filifera	Fast	High
Palm - Canary Island	Phoenix	canariensis	Medium	High

Common Name	Genus	species	Growth Rate	Risk Rating
Palm - Date	Phoenix	dactylifera	Fast	High
Palm - Guadalupe	Brahea	edulis	Fast	High
Palm - King	Archontophoenix	cunninghamiana	Medium	High
Palm - Mexican	Washingtonia	robusta	Fast	High
Palm - Other	Palm	spp	Fast	High
Palm - Queen	Syagrus	romanzoffiana	Fast	High
Palm - Triangle	Dypsis	decaryi	Medium	High
Pepper - Brazilian	Schinus	terebinthifolius	Fast	High
Pepper - California	Schinus	molle	Fast	High
Pine - Canary Island	Pinus	canariensis	Medium	High
Pine - Gray	Pinus	sabiniana	Medium	High
Pine - Lodgepole	Pinus	contorta	Slow	High
Poplar	Populus	spp	Fast	High
Poplar - Lombardy	Populus	nigra 'italica'	Fast	High
Poplar - White	Populus	alba	Fast	High
Sycamore	Platanus	occidentalis	Fast	High
Tanoak	Notholithocarpus	densiflorus	Medium	High
Tipuana	Tipuana	tipu	Fast	High
Vine	Ivy	spp	Fast	High
Willow	Salix	spp	Fast	High
Willow - Weeping	Salix	babylonica	Fast	High
Acacia	Acacia	spp	Medium	Medium
Acacia - Bailey	Acacia	baileyana	Medium	Medium
Acacia - Blackwood	Acacia	melanoxylon	Medium	Medium
Alder	Alnus	spp	Medium	Medium
Alder - Red	Alnus	rubra	Medium	Medium
Alder - White	Alnus	rhombifolia	Medium	Medium
Aracauria	Araucaria	spp	Medium	Medium
Araucaria - Bunya Pine	Araucaria	bidwillii	Medium	Medium
Araucaria - Monkey Puzzle	Araucaria	araucana	Medium	Medium
Araucaria - Norfolk Island Pine	Araucaria	heterophylla	Medium	Medium
Avocado	Persea	americana	Medium	Medium
Bottle	Brachychiton	acerifolius	Medium	Medium
Camphor	Cinnamomum	camphora	Medium	Medium
Carob	Ceratonia	siliqua	Medium	Medium
Carrotwood	Cupaniopsis	anacardioides	Medium	Medium
Casuarina	Casuarina	equisetifolia	Fast	Medium
Cedar	Cedrus	spp	Slow	Medium
Cedar - Atlas	Cedrus	atlantica	Slow	Medium

Common Name	Genus	species	Growth Rate	Risk Rating
Cedar - Deodara	Cedrus	deodara	Slow	Medium
Cedar - Incense	Calocedrus	decurrens	Slow	Medium
Cherry	Prunus	avium	Medium	Medium
Chinaberry	Melia	azedarach	Medium	Medium
Cow Itch	Lagunaria	patersonia	Medium	Medium
Elm	Ulmus	spp	Fast	Medium
Elm - American	Ulmus	americana	Medium	Medium
Elm - Chinese	Ulmus	parvifolia	Fast	Medium
Ficus	Ficus	spp	Medium	Medium
Ficus - Indian Laurel	Ficus	nitida	Medium	Medium
Ficus - Rusty Leaf Fig	Ficus	rubiginosa	Medium	Medium
Ficus - Weeping Fig	Ficus	benjamina	Medium	Medium
Fir - White	Abies	concolor	Slow	Medium
Golden Rain	Koelreuteria	paniculata	Medium	Medium
Grevillea - Banks	Grevillea	banksii	Medium	Medium
Hackberry	Celtis	reticulata	Fast	Medium
Laurel - Bay	Laurus	nobilis	Medium	Medium
Laurel - California Bay	Umbellularia	californica	Medium	Medium
Magnolia - Southern	Magnolia	grandiflora	Medium	Medium
Mayten	Maytenus	boaria	Medium	Medium
Melaleuca	Melaleuca	linariifolia	Medium	Medium
Oak - Canyon Live	Quercus	chrusolepis	Slow	Medium
Oak - Interior Live	Quercus	wislizeni	Slow	Medium
Oak - Pin	Quercus	palustris	Medium	Medium
Orchid	Bauhinia	spp	Medium	Medium
Other	Misc	spp	Medium	Medium
Other - Fast Growing	Misc	spp	Fast	Medium
Other - Medium Growing	Misc	spp	Medium	Medium
Palo Verde	Parkinsonia	spp	Medium	Medium
Pecan	Carya	illinoinensis	Fast	Medium
Pine - Bishop	Pinus	muricata	Slow	Medium
Pine - Italian Stone	Pinus	pinea	Slow	Medium
Pine - Ponderosa	Pinus	ponderosa	Slow	Medium
Pistache	Pistacia	chinensis	Medium	Medium
Podocarpus	Podocarpus	spp	Medium	Medium
Rubber	Ficus	elastica	Medium	Medium
Sequoia - Coast Redwood	Sequoia	sempervirens	Slow	Medium
Silk Floss	Ceiba	speciosa	Medium	Medium
Silk Oak	Grevillea	robusta	Fast	Medium

Common Name	Genus	species	Growth Rate	Risk Rating
Sumac	Rhus	spp	Medium	Medium
Tallow	Triadica	spp	Medium	Medium
Tulip	Liriodendron	tulipifera	Medium	Medium
Walnut	Juglans	spp	Fast	Medium
Walnut - Black	Juglans	californica	Fast	Medium
Walnut - English	Juglans	regia	Fast	Medium
Willow - Australian	Geijera	parviflora	Medium	Medium
Zelkova	Zelkova	serrat	Medium	Medium
Almond	Prunus	amygdalus	Medium	Low
Apple	Malus	domestica	Medium	Low
Beech	Fagus	spp	Slow	Low
Birch	Betula	spp	Slow	Low
Bird of Paradise	Strelitzia	spp	Medium	Low
Bottlebrush	Callistemon	citrinus	Medium	Low
Brisbane Box	Lophostemon	confertus	Medium	Low
Brush	Misc	spp	Slow	Low
Brush - Fast	Misc	spp	Fast	Low
Buckeye	Aesculus	californica	Slow	Low
Ceanothus	Ceanothus	spp	Slow	Low
Chestnut	Castanea	seguinii	Medium	Low
Citrus	Citrus	spp	Medium	Low
Cypress	Cupressus	spp	Slow	Low
Cypress - Italian	Cupressus	sempervirens	Slow	Low
Cypress - Monterey	Cupressus	macrocarpa	Slow	Low
Dogwood-Pacific	Cornus	nuttallii	Slow	Low
Elderberry	Sambucus	spp	Medium	Low
Eugenia	Syzygium	paniculatum	Medium	Low
Fir	Abies	spp	Slow	Low
Fir - Douglas	Pseudotsuga	menziesii	Slow	Low
Fir - Grand	Abies	grandis	Slow	Low
Fir - Red	Abies	magnifica	Slow	Low
Fruit Tree	Misc	spp	Medium	Low
Ginkgo - Maidenhair	Ginkgo	biloba	Medium	Low
Hawthorn	Crataegus	spp	Slow	Low
Hemlock	Tsuga	spp	Slow	Low
Hemlock - Western	Tsuga	heterophylla	Slow	Low
Hickory	Carya	spp	Medium	Low
Joshua	Yucca	brevilfolia	Slow	Low
Juniper	Juniperus	spp	Slow	Low

Common Name	Genus	species	Growth Rate	Risk Rating
Linden	Tilia	spp	Slow	Low
Loquat	Eriobotrya	japonica	Slow	Low
Macadamia	Macadamia	tetraphylla	Medium	Low
Madrone	Arbutus	meniesii	Slow	Low
Magnolia - Saucer	Magnolia	soulangeana	Slow	Low
Magnolia - Star	Magnolia	stellata	Slow	Low
Mesquite	Prosopis	glandulosa	Medium	Low
Myoporum	Myoporum	laetum	Slow	Low
Myrtle - Crape	Lagerstroemia	Indica	Slow	Low
Myrtle - Pacific Wax	Myrica	cerifera	Slow	Low
New Zealand Christmas Tree	Metrosideros	excelsa	Slow	Low
Oak	Quercus	spp	Slow	Low
Oak - Blue	Quercus	douglasii	Slow	Low
Oak - Coast Live	Quercus	agrifolia	Slow	Low
Oak - Cork	Quercus	suber	Slow	Low
Oak - English	Quercus	robur	Slow	Low
Oak - Holly	Quercus	ilex	Slow	Low
Oak - Northern Red	Quercus	rubra	Slow	Low
Oak - Oracle	Quercus	x morehus	Slow	Low
Oak - Oregon White	Quercus	garryana	Slow	Low
Oak - Scrub	Quercus	dumosa	Slow	Low
Oleander	Nerium	oleander	Slow	Low
Olive	Olea	europaea	Medium	Low
Other - Slow Growing	Misc	spp	Slow	Low
Peach	Prunus	persica	Medium	Low
Pear	Pyrus	calleryana	Medium	Low
Pear - Evergreen	Pyrus	kawakamii	Medium	Low
Persimmon	Diospyros	texana	Slow	Low
Photinia	Photinia	fraseri	Slow	Low
Pine	Pinus	spp	Slow	Low
Pine - Aleppo	Pinus	halepensis	Slow	Low
Pine - Jeffery	Pinus	jeffreyi	Slow	Low
Pine - Knobcone	Pinus	attenuata	Slow	Low
Pine - Monterey	Pinus	radiata	Slow	Low
Pine - Sugar	Pinus	lambertiana	Slow	Low
Pine - Western white	Pinus	monticola	Slow	Low
Pine - Whitebark	Pinus	albicaulis	Slow	Low
Pistachio	Pistacia	vera	Slow	Low
Pittosporum	Pittosporum	undulatum	Slow	Low

Common Name	Genus	species	Growth Rate	Risk Rating
Plum	Prunus	domestica	Medium	Low
Pomegranate	Punica	granatum	Slow	Low
Privet	Ligustrum	japonicum	Slow	Low
Redbud - Eastern	Cercis	canadensis	Slow	Low
Redbud - Western	Cercis	occidentalis	Slow	Low
Redwood - Dawn	Metasequoia	glypostroboides	Slow	Low
Sequoia - Giant	Sequoiadendron	giganteum	Slow	Low
Spruce	Picea	spp	Slow	Low
Spruce - Blue	Picea	pungens	Slow	Low
Toyon	Heteromeles	arbutifolia	Slow	Low

Attachment C
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 D
UVM Outage Investigation Report

SOUTHERN CALIFORNIA EDISON® An EDISON INTERNATIONAL® Company

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.

EFFECTIVE DATE	Tree-Caused Circuit Interruption Fact-Finding Procedures	GP–4
6-1-2013		
APPROVED	Vegetation Management Operations Manual ▸ SCE Internal ◂	PAGE 1

EXAMPLE