

Transmission Vegetation Management Standard

SUMMARY

The Pacific Gas and Electric Company (PG&E) Transmission Vegetation Management (VM) Program has been designed and implemented to ensure the safe and reliable operation of bulk transmission facilities and to prevent vegetation outages that could lead to widespread cascading failures. In addition, the Transmission VM Program is designed to ensure that PG&E meets or exceeds state and federal laws and regulations including:

- PG&E's Transmission Maintenance Agreement, approved and enforced by the California Independent System Operator
- CPUC General Order (G.O.) 95 Rule 35
- Public Resource Code 4292
- Public Resource Code 4293
- North American Electric Reliability Corporation (NERC) Standards for Vegetation Management, NERC FAC-003-4 Transmission Vegetation Management

TARGET AUDIENCE

- Vegetation Management Planning
- Vegetation Management Operations

SAFETY

NA

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REQUIREMENTS

1 Program Overview

1.1 Program Description

PG&E's Transmission VM Program consists of six separate programmatic elements, all of which are ongoing and occur continuously over time. Four of the elements are distinct programmatic approaches to vegetation management work:

- Routine Vegetation Management
- Right-of-Way (ROW) Maintenance
- Orchard Program
- Vegetation Control (VC)

Each of these sub-programs employs a specific strategy, while supporting the overall goals and objectives of the program.

The final two (2) elements of the PG&E Transmission VM Program are Quality Assurance (QA) and Quality Control (QC). These two programs are overlaid across the four programmatic elements and complement each other as part of a quality management system.

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1.2 Program Strategy

1. The Routine VM program strategy is to perform an annual patrol and complete identified tree work of 100% of the overhead transmission facilities to maintain radial clearance between vegetation and conductors/structures and to identify hazard trees which may strike the conductors or encroach within the Minimum Vegetation Clearance Distance (MVCD). This approach allows for ongoing monitoring of vegetation conditions to prevent an encroachment into the MVCD (see Appendix A: Table 2.) and to prevent reasonably foreseeable outages and/or possible fire ignitions.
2. The ROW Maintenance Program strategy is to clear the ROW of incompatible vegetation and to maintain low-growing diverse plant communities that are compatible with electrical facilities by using Integrated Vegetation Management (IVM) methods. This is a long-term approach which supports system reliability through reclaiming the Transmission ROW (T-ROW) and managing for future workload. This approach allows for ongoing ROW monitoring of vegetation corridors to prevent encroachment into the MVCD.
3. The Orchard Program strategy is to completely remove incompatible walnut and almond trees in production orchards that are under electrical transmission facilities, to patrol and prune the existing trees in the interim until they are removed, and to prevent newly-planted incompatible orchards in the ROW. This approach supports system reliability through near-term reclamation of the ROW, drives toward a desired future state and manages potential future workload by eliminating new plantings.
4. The VC Program strategy is to inspect transmission subject poles and structures in State Responsibility Areas (SRA), and prescribe the required activities to maintain compliance with California Public Resource Code (PRC) 4292. PRC 4292 requires that the utility maintain a fire break around those transmission poles or structures which support transmission switches. This approach supports system reliability and safety through prevention of fire ignition and elimination of any subsequent outages and equipment damage. This work activity does not directly address vegetation encroachment into the MVCD.
5. The QA program performs scheduled audits throughout the year regardless of planned, pending, and completed inspection and tree pruning/removal work, to ascertain compliance with CPUC GO 95- Rule 35, PRC 4293, PRC 4292 and NERC FAC-003-4, along with any other applicable federal or state clearance requirements in accordance with ANSI/ISO 10011. The reporting of timely, on-going and relevant QA information allows for the opportunity to take appropriate corrective action and to address gaps in process and procedure.
6. The QC program monitors contractor work performed in the Routine VM and VC programs. QC provides for on-going, in work stream review of contractor work product relative to PG&E contract specifications and PG&E standards and procedures. The reporting of timely and on-going QC information related to strategic VM goals allows for the opportunity to take appropriate corrective action and to address gaps in process and procedure.

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1.3 Minimum Vegetation Clearance Distances (MVCD)

NERC Standard FAC-003-4 requires that a Transmission Owner determine and document the Minimum Vegetation Clearance Distances to be maintained for separation between a transmission conductor and vegetation.

Appendix A presents tables and guidelines for determining clearance distances to maintain separation between vegetation and transmission conductors at all times.

1.4 Notification of Hazardous Condition

The PG&E VM Hazard Notification (HN) Procedure provides guidance for the notification and mitigation of any vegetation condition which under observed conditions encroaches within PG&E's Minimum Clearance Requirements (Appendix A: Table 1). This procedure applies to all PG&E VM employees and VM contractors. It is initiated whenever a vegetation condition is found which does not meet the PG&E Minimum Clearance Requirements.

1.5 Imminent Threat

The PG&E VM Imminent Threat Procedure provides guidance for the notification and mitigation of any vegetation condition which is likely to cause a fault at any moment. This includes vegetation which under observed conditions encroaches within the MVCD distances (Appendix A: Table 2), or poses an imminent threat to the reliability of the transmission facilities.

2 Routine Vegetation Management

2.1 Program Description-Routine

As described in the Transmission Routine Patrol Procedure, the PG&E VM Routine Program performs an annual patrol of all non-orchard overhead transmission lines rated at 60kV and above.

2.2 Planning and Scheduling

Detailed planning for the Routine Line Clearance program is done in the fourth quarter of each year for the following year. The detailed planning process includes forecasting the number of units to be worked on each transmission line and setting the following years' schedule. After the current-year forecast is developed, the schedule for the year is determined considering the following additional factors:

- Last patrol date and duration
- Line criticality
- Outage statistics
- Tag statistics

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2.2 (continued)

- Environmental restrictions, ex. limited operating periods
- Stakeholder feedback (contractors)
- Accessibility (snow, flooding)
- Property owner activities (e.g. orchards)
- Transmission line length and tree density
- Resource availability
- LiDAR data and analytics

Lines may be segmented into multiple Project Management Database (PMD) projects. Once the plan is finalized, all transmission line sections, the patrol method and their associated forecasts are entered into the PMD. PMD is used throughout the year to monitor work progress and work completion status.

2.3 Work Practice and Procedure

Pre-Inspection and Tree Pruning work is performed in accordance with PG&E PI Contract Specifications, TC Contract Specifications, the PG&E VM Transmission Routine Patrol Procedure, and other applicable PG&E standards and procedures contained in the Reference Documents and Governing Documents Sections.

2.4 Work Completion Status

The VM Program maintains a project management database (PMD) that allows ongoing forecasting and status completion tracking for all work performed.

2.5 Quality Control

Monitoring of pre-inspection and tree-pruning contractor work performance is performed by a separate QC contractor as described in the Quality Control Program section of this document.

3 Orchard Program

3.1 Program Description-Orchard

The Orchard Program consists of three main elements: removal, interim mitigation, and monitoring of newly planted orchards. The strategy is to completely remove incompatible walnut and almond trees in production orchards that are under electrical transmission facilities. The removal program offers owners an alternative to the severe pruning required to maintain compliance on trees in the transmission ROW. Because all trees cannot be removed immediately, existing trees are patrolled and pruned in the interim until they are removed to

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prevent encroachment into the MVCD and to maintain conformance with the Orchard Patrol Procedure. To help manage future risk, newly-planted incompatible orchards in the ROW are identified and escalated in order that they do not become future work.

3.2 Removal - Orchard

The Orchard Program Removal Program offers owners of commercial walnut and almond orchards an alternative to the severe pruning required to maintain compliance on trees in the transmission ROW. The current alternative is removal of the trees at PG&E cost, and an incentive payment to the grower in consideration of an enhanced easement document. As the program continues and the mature orchards are removed, removal of more recently planted orchards will be done with no incentive and more reliance on enforcement of existing easement rights. This is provided that adequate notification is performed after a new planting is identified.

3.3 Patrol and Pruning - Commercial Orchard

As described in the Transmission Orchard Patrol Procedure, overhead electric transmission lines identified in existing, mature commercial orchards are patrolled and pruned on an interim basis until they are able to be included in the Orchard Removal Program. PI contractor is required to identify the location of the orchard tree in relation to the span length – i.e., tower zone, quarter zone and belly zone. Within each zone, clearance is achieved by leaving a tree at a defined height.

The commercial orchard tree height after pruning uses the estimated annual tree growth, the Minimum Ground to Conductor Clearances (MGCC) for the line voltage (GO 95 Rules 37 and 43), the span length, the conductor height at tower, and the PG&E Minimum Clearance Requirement. Where modeled LiDAR data is available, the PG&E VPM will provide the PI Contractor with the modeled MGCC to use rather than the Rule 37/43 MGCC.

For manually-harvested fruit trees only, if a grower's production pruning results in tree heights that do not exceed 15 feet within a 12-month cycle, then the PI Contractor will use this production pruning tree height when considering listing practices.

3.4 Newly Planted Orchards

In order to manage potential future risk and workload, when a new orchard (including ground preparation) is identified in the field by orchard pre-inspectors, information will be entered into the handheld device by PI with the proper alert coding.

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4 Right-of-Way (ROW) Maintenance Program

4.1 Program Description

The ROW Maintenance Program includes two separate elements that work in conjunction with each other.

- Transmission ROW Reclamation (T-ROW) Program
- Transmission Integrated Vegetation Management (IVM) Program

The T-ROW Program is executed in accordance with ANSI Standard A300 Part 7 and uses IVM methods to implement Wire Zone-Border Zone concepts on PG&E transmission ROW. T-ROW maintenance and reclamation work consists of the following primary activities:

- Removal of structurally unsound hazard trees from inside and outside of the ROW
- Removal of incompatible vegetation within the wire zone area of the ROW
- Selective removal of vegetation in the border zone area
- Use of EPA approved herbicides, where possible, to maintain sustainable low-growing diverse plant communities that are compatible with electrical facilities

The IVM Program focuses on promoting desirable, stable, low-growing plant communities that will resist invasion by tall growing tree species through the use of appropriate, environmentally sound, and cost effective control methods. IVM focuses on reclaimed ROW corridors. IVM control methods can include a combination of chemical, biological, cultural, mechanical and or manual treatments.

4.2 Planning

Detail planning for the ROW Maintenance Program is typically done in the fourth quarter of each year for the following year's work.

T-ROW Maintenance is prioritized by considering some or all of the following:

- Individual line priority rating
- Voltage
- Existing compliance workload
- Historic outage information
- Wildfire history

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4.2 (continued)

- Electrical (Non-Vegetation Management) line patrol information and surveys
- Known Timber Harvest Plans (THP) for other entities
- LiDAR data and analytics

4.3 Scheduling and Work Completion Status

After the ROW and IVM projects for the year are identified, they are entered into PMD. PMD is used to monitor project status.

4.4 Work Practice and Procedure

Project Set-up for ROW Maintenance Program is performed by a Professional Services (PS) Contractor or pre-inspection contractor in accordance with contract specifications and applicable PG&E standards and procedures. Work completion for ROW Maintenance is performed in accordance with contract specifications and applicable PG&E standards and procedures.

1. Work Completion

The reclamation and IVM contractors must perform their work based on the trees that are marked in the field and in accordance with work as described in the bid specification and the final contract documents.

The work must be performed as described in the Contract Work Authorization (CWA) and must use the work practice most appropriate to the work location and the prescribed work.

2. Quality Control

QC for ROW Maintenance projects consists of ongoing and regular field inspections by the Professional Services Contractor and/or QC inspection contractor to verify that assigned work was completed and that work quality is satisfactory prior to invoice approval.

5 Vegetation Control (VC) Program

5.1 Program Description

Vegetation Control (VC) is the PG&E system wide program of patrolling, identifying, prescribing work, conducting work and documenting work around subject poles and transmission towers to maintain compliance with California Public Resource Code (PRC) 4292 and PG&E standards. Transmission subject poles are those poles and towers with transmission switches within the State Responsibility Areas. During the declared fire season the utility is required to maintain 10 feet of radial clearance and 8 feet of vertical clearance

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from vegetation at the base of transmission subject poles and structures. The VC program is described in detail in PG&E specification #5380 and PRC 4292.

5.2 Planning and Scheduling

The VC program's project year generally runs from October through the following September. The location and number of subject poles is stable and the annual work plan is based on the geographical locations of the subject poles and historical knowledge relative to the timing of fire season.

5.3 Planning and Work

VC maintains an inventory of all transmission switch subject poles/towers within SRA. An annual patrol generally between the months of October through March of the transmission subject poles/towers is conducted and work is prescribed at each location. Every transmission subject pole/tower has an associated annual record that documents the patrol and work completed.

5.4 Quality Control

Monitoring and auditing of VC work is sampled and reviewed for work complete and compliance with PRC 4292.

6 Quality Control (QC) Program

6.1 Program Description

The QC program monitors contractor work for accuracy, quality and contractual conformance. To maintain appropriate separation, reviews are performed by a separate third-party contractor whose only function in the PG&E VM Program is in the Quality Programs work group. There are three primary types of QC audits: review of pre-inspection (PI) work complete, review of tree pruning/removal (TC) work complete and mid-cycle reviews. Work complete audits verify conformance of completed contractor work to PG&E contract specifications and PG&E work procedures. During mid-cycle reviews, QC audits line sections to assess whether contractor work was sufficient to maintain regulatory compliance.

For the Vegetation Control program, QC activities focus on review of PI and VC work complete to verify conformance to PG&E contract specifications and PG&E work procedures.

6.2 Work Practice and Procedure

QC work is performed in accordance with PG&E contract specifications and applicable PG&E standards and procedures. The progress of QC work is monitored on an ongoing basis by the Sr. Quality Assurance Specialist in charge of the QC program.

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6.3 Work Identification and Completion

For Routine VM Program, PI and TC work complete audits. The transmission line locations to be audited are selected from a computer-generated, randomized list of locations where work has been identified or performed. The sample locations are reviewed by the auditor after completion of PI and TC work. Review findings are sent to PG&E Operations. Corrective actions are implemented as warranted.

Mid-cycle line section audits are performed on sections of transmission lines that were worked by the Routine program at least five months prior to the audit date, and may present a higher risk as defined by the local operations program manager. The field technician completes the audit in the field by identifying any hazard trees that may fail prior to the next scheduled cycle, and any trees that will not hold PG&E Clearance Requirement Guidelines until the next scheduled patrol/pruning. The auditor documents their findings on field data sheets which are forwarded to local PG&E Operations. As needed, local PG&E operations will set requirements for corrective action by the PI or TC.

VC audits are performed on a random, representative set of PI and VC work complete transmission subject poles in each division. As needed, local PG&E Operations will set requirements for corrective action by the VC contractor.

6.4 Quality Control

The QC contractor has an ongoing internal quality control process. On a monthly basis, each QC field technician will have one completed audit reviewed by a contractor QC Supervisor. QC Management will require internal corrective actions when necessary, and has quarterly meetings with the PG&E QC Sr. QAS to analyze and benchmark review processes.

7 Quality Assurance (QA) Program

7.1 Program Description

The QA program consists of a team of PG&E QA Specialists and contractors located throughout the PG&E service territory. QA performs a system-wide audit of the routine and orchard programs each year, regardless of planned, pending, or completed inspection and tree pruning/removal work, to ascertain a true "real-time" condition of the system. Audits are conducted to measure compliance with G.O. 95/Rule 35, PRC 4293, and NERC FAC-003-4 standards. Each audit uses statistical sampling methods and randomly selects portions of the overhead system to audit for compliance. The auditors perform root-cause analysis on observed compliance issues and any approaching non-compliances, identify trends, and report the results to the department director, the operations manager and the area VM program manager. The Supervising Vegetation Program Manager is responsible for taking action to correct identified deficiencies and for communicating any required corrective actions to the contractors. If a recurring or systemic issue is identified, the VM Operations group, working in conjunction with QA, develops long term action plans for its contractors to reduce or prevent recurrence.

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7.2 Planning

The QA work plan is developed annually in the fourth quarter of the year. Developing the audit plan includes consideration of:

- Voltage levels
- Mileage (exposure)
- Contractor make up or recent contract changes
- Recent changes in process or procedures

Input is solicited from the Operations and Planning Managers and the final annual plan is reviewed and authorized by the department Director.

7.3 Scheduling

QA audits are performed by the Quality Assurance Specialists (QAS) and contract Quality Assurance Auditors (QAA) located throughout PG&E's system. Transmission audits are usually performed in the third and fourth quarters to have an extra set of eyes on the ground during times of high fire danger.

7.4 Work Status

Each QA audit has an associated Audit Plan which defines the scope and projected timeline of the audit. Monitoring of status and work progress is done through a weekly update report which is provided to the QA Program Manager, Operations and Planning Managers and the area Supervising Vegetation Program Manager. The weekly report provides work complete percentages, preliminary findings and any critical observations.

7.5 Work Practice and Procedure

VM-QA audit practices are consistent with ANSI/ISO/ASQC Q10011 Guidelines for Auditing Quality Systems. A standardized transmission audit process is used that addresses planning, performing, analysis, reporting, communications, corrective action, and follow-up.

Each audit is independent of the operations work stream and includes all lines and towers/poles in the audit population regardless of the operations work plan. Statistical sampling is used to ensure a valid representation of the audit area is covered. Audit areas are stratified by voltage level; audit locations are randomly selected and reviewed prior to field work by using satellite and aerial photographic images available through PG&E's Geographic Information System (GIS) and Google Earth. Where LiDAR data is available, that may also be reviewed and used as part of the audit process.

Upon receipt of the final report, the responsible operations personnel develop and complete appropriate short-term and long-term corrective actions to address the audit findings.

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7.6 Quality Control

The QA program has three activities to maintain QC for their work performance:

- Detailed audit processes and flow charts are used to ensure consistency within the QAS group.
- The QA Program Manager performs periodic evaluations of the audit preparation, related field work and any root cause analysis performed by the QAS. All reports are reviewed and approved by the QA Program Manager and authorized by the department Sr. Manager.
- PG&E's Internal Auditing department performs periodic audits of the overall QA program.

8 ROW Width Definition

8.1 The corridor of land under a transmission line(s) needed to operate the line(s). The width of the corridor is established as follows:

- For all ROWs, the edge of the ROW is an established distance perpendicular from the centerline of the poles or structures based on the as-built condition of the line.
- For 500kV or greater:
- The edge of the ROW is defined by the easement document.
 - For NERC Critical lines less than 500kV:
- The edge of the ROW is defined by either the easement document or by the engineering document "WIDTHS OF RIGHT-OF-WAY FOR 110 AND 220kV TOWER LINES" Drawing Number 022974, "OPEN AREA", dated 5-22-46, whichever is less. The 110kV standard shall apply to 115kV and 60/70kV construction and the 220kV standard shall apply to 230kV construction.

8.2 The ROW width in no case exceeds PG&E's legal rights but may be less based on the aforementioned criteria.

9 Major WECC Transfer Paths

Transfer path is defined as the facility or facilities between systems or internal to a system, for which schedules and / or actual flows can be monitored for reliability purposes. Facilities in a path may originate and terminate at the same point (sub-station or generation station) or at different points. Two or more individual paths can be combined into a single path for rating purposes, although they may be separate scheduling paths. WECC distinguishes between regular Transfer Paths and Major Transfer Paths.

9.1 The VM Planning group reviews and verifies the current Major WECC Transfer paths annually.

END of Requirements

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DEFINITIONS

Aerial Patrol – Use of a helicopter or other aircraft with or without LiDAR capability for the purpose of visual inspection of vegetation.

Blow-out – The maximum distance the conductors will move off-center in less than fresh gale conditions (39 mph wind speeds).

Corridor – The presence of one or more transmission lines located within an easement or contiguous easements, or within close proximity of each other.

Distribution Under-build – The presence of electric distribution lines located directly under and parallel with the transmission lines, and attached to the same pole or structure.

Easement (or Right of Way) – For the purposes of this Standard it is the as-built condition of a geographically described strip of land upon which PG&E's electric transmission facilities are constructed, operated and maintained. "Easement" refers specifically to the legal description of that corridor.

Even Ground – Where the elevation difference between two adjacent towers is less than 20 feet.

Existing Orchard – A commercial orchard that has been pruned by PG&E contractors to meet utility compliance regulations and is part of the routine schedule. Emergency work does not apply to this definition.

Grid Control Center (GCC) – PG&E's transmission control center that holds switching authority for the specific transmission line where a potential imminent threat may exist. When an imminent threat is confirmed to exist, notification to the GCC is required without undue delay.

First Responder – A PG&E employee or contractor, in the field, who identifies a potential imminent threat or hazard condition.

Hazard Condition – A vegetation condition affecting transmission or distribution lines which does not pose an imminent threat, but where the condition has the potential to become an imminent threat and is at or encroaching the PG&E clearance distance.

Hazard Trees - Any tree whose height is at or approaching the PG&E Minimum Clearance Requirements (Appendix A: Table 1).

- All lines: Trees that are dead, show signs of disease, decay or ground or root disturbance, which may fall into or otherwise impact the conductors, towers or guy wires before the next inspection cycle.
- NERC lines only: In addition, trees within the easement with a likely potential to fail within the next two years (as assessed by the pre-inspector), which would pass within PG&E's Minimum Clearance Requirements.

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Imminent Threat (for NERC lines only) – A vegetation condition that is at or approaching the FAC 003-4 flashover (spark-over) distance (Appendix A: Table 2), or poses an imminent risk to the reliability of a critical line.

Light Detection and Ranging (LiDAR) – Technology used to determine vegetation conditions, predominantly distances and clearances, in relation to the electric conductors and easement boundaries.

- **“As-Flown” LiDAR Data** – A “snap shot” of data taken at the time of LiDAR visual patrol and includes vegetation conditions, facility locations, span lengths, and conductor heights.

Low Lines – Transmission lines that are observed to be sagging below the Rule 37 MGCC distances.

Maximum Tree Height Allowed– The Rule 37 MGCC minus the PG&E Minimum Clearance Requirement

Minimum Clearance Requirement – PG&E defined minimum clearance designed to meet or exceed all applicable regulatory requirements at all times.

Minimum Vegetation Clearance Distance (MVCD) – Minimum vegetation clearance distance required to prevent Flash-over. However, prudent vegetation maintenance practices dictate that substantially greater distances will be achieved at time of vegetation maintenance.

Minimum Ground to Conductor Clearance (Rule 37 MGCC) – The closest the lines can sag to the ground based on clearances listed in General Order 95, Rule 37, Table 1, and Case 4. MGCC is provided through engineering analysis of “as-flown” LiDAR data which have been analyzed to determine maximum conductor sag along the line span.

NERC-Regulated Transmission Lines (NERC lines) – Transmission lines operated at 200kV or higher and certain sub-200kV lines that are elements of a Major Western Electric Coordinating Council (WECC) Transfer Path

New Orchard – A commercial orchard that has not been routinely pruned to meet utility compliance regulations. Emergency pruning is not considered routine VM work.

New Orchard Removal Incentive Program – A Program offered to certain growers of new walnut and almond orchards that have been planted beneath transmission lines.

Orchard – Any commercial-producing orchard. Only includes trees that are part of the production crop.

Orchard Tree – Any commercial-producing fruit or nut tree that is part of the production crop.

Orchard Program – A Program offered to growers of existing orchards which provides a monetary incentive for the removal of orchard trees within a NERC transmission line easement. New orchards are ineligible for the Removal Program.

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Path – Facility or facilities between systems or internal to a system for which schedules and/or actual flows can be monitored for reliability purposes. Facilities in a path may originate and terminate at the same point (substation or generation station) or at different points. Two or more individual paths can be combined into a single path for rating purposes, although they may be separate scheduling paths.

Professional Judgment – A process used to reach a well-reasoned conclusion that is based on the relevant facts and circumstances available at the time of the conclusion. A fundamental part of the process is the involvement of individuals with sufficient knowledge and experience. Professional judgment involves the identification, without bias, of reasonable alternatives; therefore, careful and objective consideration of information that may seem contradictory to a conclusion is key to its application.

Right-of-Way – See Easement.

Riparian Area – A geographic area within 25 feet of the high water mark or the top of the bank, including but not limited to steams/watercourses, with or without water during dry season, wetlands, ditches, and ponds.

Refusal – A situation that occurs when a customer / property owner refuses to allow PG&E to perform pre-inspection work or to complete 100% of the work prescribed.

Safety Buffer Zone – The term used for each of the distances in Appendix A: Table 1 and includes the flash-over (spark-over) distance.

Treatment Prescriptions – A prescription can be a treatment type or a combination of treatment types within the same area to achieve the goal of encouraging a low growing compatible vegetative community with a corresponding lower fire fuel load.

Under-build – The presence of distribution construction directly under and parallel with transmission construction.

Wire Zone - For 60/70kV the wire zone is the section of the corridor located between the outside conductors plus 10 feet on each side. For 115kV and 230kV, the wire zone is the section of the corridor located between the outside conductors plus 15 feet on each side. For 500kV, the wire zone is the section of the corridor located between the outside conductors plus 20 feet on each side.

Zones – The geographic divisions within line spans: tower, quarter, and belly zones.

IMPLEMENTATION RESPONSIBILITIES

The Vegetation Management Team is responsible for the implementation, communication, and maintenance for this standard and associated procedures.

GOVERNING DOCUMENT

NA

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COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

North American Electric Reliability Corporation (NERC) Standards for Vegetation Management, [NERC FAC-003-4 Transmission Vegetation Management](#)

[CPUC General Order \(G.O.\) 95 Rule 35](#)

California Public Resource Code 4293

California Public Resource Code 4292

REFERENCE DOCUMENTS

Developmental References:

[TD-7103P-01, "Transmission Non-Orchard Routine Patrol Procedure \(TRPP\)"](#)

[TD-7103P-02, "Transmission Orchard Patrol Procedure \(TOPP\)"](#)

[TD-7103P-03, "Transmission Right of Way Maintenance Procedure \(TROW\)"](#)

[TD-7103P-04, "Transmission Integrated Vegetation Management \(IVM\) Procedure"](#)

[TD-7103P-05, "Transmission Vegetation Management Imminent Threat Procedure"](#)

[TD-7103P-06, "Transmission Vegetation-Related Outage Investigation Procedure"](#)

[TD-7103P-07, "Transmission Vegetation Refusal Procedure"](#)

[TD-7103P-08, "Transmission Vegetation Corrective Action Procedure"](#)

[TD-7103P-09, "T&D Vegetation Management Hazard Notification Procedure"](#)

Database Monitoring Procedure

Tree Painting / Flagging Procedure

Supplemental References:

NA

APPENDICES

Clearance Prescription Tables

ATTACHMENTS

NA

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DOCUMENT REVISION

[Transmission Vegetation Management Program \(TVMP\) Version 1](#)

DOCUMENT APPROVER

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REVISION NOTES

Where?	What Changed?
Entire Document	Updated FAC-003-3 to -4; removed detailed information now covered in procedures.
Summary section	Added reference to: NERC Standards for Vegetation Management, NERC FAC-003-4 Transmission Vegetation Management.
Definitions section	Updated definition for MVCD.
Compliance Requirements/Regulatory Commitment section	Updated link to the FAC-003-4 version: North American Electric Reliability Corporation (NERC) Standards for Vegetation Management, NERC FAC-003-4 Transmission Vegetation Management
Approved By, Document Owner, Document Contact	Updated names and titles.
Appendix A	Updated Table 2. NERC Minimum Vegetation Clearance Distance (MVCD) in Feet

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Appendix A: Clearance Prescription Tables

Table 1 PG&E Clearance Requirements

Voltage	60/70	115	230	500
PG&E Minimum Clearance Requirement ⁽¹⁾	4 ft	10 ft	10 ft	15 ft

Note:

(1) PG&E defined minimum clearance is designed to meet or exceed all applicable regulatory requirements at all times including FAC-003-4.

Table 2 NERC Minimum Vegetation Clearance Distance (MVCD) in Feet

NERC Minimum Vegetation Clearance Distance (MVCD) (in Feet)				
Elevation (feet)	60/70kV	115kV	230kV	500kV
0 - 500	1.1	1.9	4	7
501 - 1000	1.1	1.9	4.1	7.1
1001 - 2000	1.1	1.9	4.2	7.2
2001 - 3000	1.2	2	4.3	7.4
3001 - 4000	1.2	2	4.3	7.5
4001 - 5000	1.2	2.1	4.4	7.6
5001 - 6000	1.2	2.1	4.5	7.8
6001 - 7000	1.3	2.2	4.6	7.9
7001 - 8000	1.3	2.2	4.7	8.1
8001 - 9000	1.3	2.3	4.8	8.2
9001 - 10000	1.4	2.3	4.9	8.3
10001 - 11000	1.4	2.4	5	8.5
11001 - 12000	1.4	2.5	5.1	8.6
12001 - 13000	1.5	2.5	5.2	8.8
13001 - 14000	1.6	2.6	5.3	8.9
14001 - 15000	1.6	2.7	5.4	9.1

Note: The maximum tree heights described in this procedure must always meet (or exceed) the NERC MVCD requirements described in this table.