Vegetation Management Transmission Inspection

SUMMARY

This procedure outlines the tasks necessary to fulfill the inspection requirements of the Transmission Vegetation Management (VM) program. Inspections of vegetation around Pacific Gas & Electric Company's (PG&E) overhead electric transmission Facilities help maintain safe and reliable operation.

Level of Use: Informational Use

TARGET AUDIENCE

Transmission and Distribution Vegetation Management Inspectors (VMIs)

Vegetation Program Managers (VPMs)

Senior Vegetation Program Managers (SVPMs)

Vegetation Program Leads (VPLs)

Database Management Specialists (DMSs)

Tree Crews (TCs)

SAFETY

Use caution and stay alert when inspecting vegetation around overhead electric transmission lines and Facilities.

Working next to high hazard roadways may result in significant injury or death. Be aware and alert of passing motor vehicles at all times.

BEFORE YOU START

All VMIs must complete PG&E Academy training required for inspections prior to performing this procedure.

Vegetation Management Transmission Inspection

TABLE OF CONTENTS

Vegetation Management Transmission Inspection

PROCEDURE STEPS

1 Outline of Transmission Inspection

1.1 The transmission inspection program uses two types of inspections:

- Aerial LiDAR inspections
- Ground-based inspections

1.2 The timelines for inspections are as follows:

1. Aerial LiDAR inspections are collected annually. Data is geographically collected. Analytical reporting is produced in the following order:
   a. Non-NERC reports, interval receipt as data is processed
   b. NERC reports after January 1
2. Ground inspections typically begin on the following schedules:
   a. Non-NERC inspections after Nov. 15, or earlier if directed by PG&E leadership
   b. NERC inspections after January 1

1.3 The VMI must ASSESS the condition of all vegetation (represented by the LiDAR Detection points) AND DOCUMENT observations in the system of record.

1.4 After inspection of a conductor segment/Facilities, the VMI must CHOOSE at least one of the following three outcomes for the vegetation:

- No work needed
- Pruning is required
- Felling is required

1.5 For observed conditions that present a hazard to the public or utility workers

OR could impact service reliability and/or safe operation, inspection, or asset life of PG&E Facilities,

SEE the steps in Section 5, “Observing Hazards.”

2 Rapid Reporting of Urgent Critical Detections

2.1 WHEN the LiDAR vendor provides Urgent Critical Detections (UCDs),

THEN the VPM must ASSIGN the UCD(s) to the VMI for field verification.

Vegetation Management Transmission Inspection

NOTE

Rapid response Scope of Work applies to Rank 1 and Rank 2 Detections only. SEE Table 1, "Vegetation Detection Specifications," in Appendix B, LiDAR Clearance Parameters.

2.2 The VMI must:

1. FIELD REVIEW the LiDAR Detections and DETERMINE whether action is necessary to maintain compliance.

   a. REVIEW tree(s) as described in Section 3, "Inspecting Routine Detections on NERC and Non-NERC Facilities."

2. FIELD VERIFY the NERC urgent critical Detections within two business days of receipt from the LiDAR vendor, unless an exception is authorized by a VM Manager or VM Director.

3. VERIFY non-NERC urgent critical Detection within 10 business days of receipt from the LiDAR vendor, unless an exception is authorized by a VM Manager or VM Director.

4. CONTACT the VPL to arrange for the Database Manager to assign work to the TC as needed (SEE the steps in Section 4, "Prescription.")

5. ENTER LiDAR DATA into system of record (SEE Appendix A, "Project Management Database (PMD) Data Entry."

3 Inspecting Routine Detections on NERC and Non-NERC Facilities

3.1 IF Aerial LiDAR information exists for a transmission line (T-line),

THEN the VMI does not need to perform ground patrol of the entire line segment.

3.2 The VMI must:

1. SEE the LiDAR Detection list for the span,

   AND

   REFER to Appendix B, "LiDAR Clearance Parameters" to determine a patrol plan.

2. EVALUATE trees for the following characteristics:

   - Species
   - Tree growth, sway, taper, and fall-in and strike potential
   - Weather conditions (as applicable: wind, rain, drought, snow)
   - Site conditions (including whether in a Riparian area or not)
   - Defects
   - Lean (toward right-of-way [ROW])

3. DETERMINE whether the tree requires work to maintain conformance by following the steps in Section 4, “Prescription.”

4. INSPECT all transmission lines within a Corridor as described in Appendix A, “Project Management Database (PMD) Data Entry.”

5. INSPECT transmission overhead circuits entering or exiting Substations, generation stations, or switchyards. The Substation fence line/wall is the start/stop point.

   a. REVIEW trees as stated in Step 3.2 above.

6. PERFORM a perimeter walk around any Substations, generation stations, or switchyards (For more information, SEE TD-7103P-01-Att01, “Transmission Substation Inspection.”)

4 Prescription

4.1 The VMI should COMPLETE the following tasks during routine inspections if the tree requires work:

1. PRESCRIBE felling for all trees less than 24 inches (in.) in diameter at breast height (DBH) as a best management practice.

2. PRESCRIBE felling for all palm trees as a best management practice.

3. For high fire threat districts (HFTDs), at the time of trim, PRESCRIBE no less than the California Public Utilities Commission (CPUC)-recommended minimum clearance distance when trees require work and are NOT felled.

4. NOTE that LiDAR detection codes ranked 1, 2, 3, 4, 7, and 9 (NERC-only) require a tree record. (SEE Appendix B, “LiDAR Clearance Parameters.”)

NOTE

CPUC General Order (GO) 95, Rule 35 in Appendix E recommends a minimum 12 ft. clearance for 60/70 kV lines and a 30 ft. clearance for lines with voltages 115 kV and above. SEE Appendix F, “CPUC Recommendations for Clearance at Time of Trim in HFTD” of this procedure.

4.2 IF the tasks in step 4.1 are not achievable,

THEN the VMI must ESCALATE the issue to the VPL, VPM, SVPM (or Delegate).

Adjustments to Prescriptions are at the discretion of PG&E VPM, SVPM (or Delegate).

4.3 The VMI must COMPLETE the following tasks during routine inspections if the tree required work:

1. For NERC voltage lines, PRESCRIBE felling for all century plants (Agave spp.) located within or outside the easement that might pose a potential conformance violation at maturity. SEE Appendix D, “Century Plants.”

Vegetation Management Transmission Inspection

2. For non-NERC voltage lines, PRESCRIBE felling for all century plants (Agave spp.) as necessary to maintain mandated clearances.

3. ASSESS hazard and Danger Trees.

   a. REPORT any potential hazards or imminent threats. SEE Utility Procedure TD-7103P-09, "Transmission Vegetation Management Imminent Threat and Hazard Notification Procedure."

   b. PRESCRIBE work to make the tree safe per the unified work codes.

4. PERFORM the following tasks to control overhangs:

   a. INSPECT AND PRESCRIBE work to prevent overhanging limbs.

   b. PRESCRIBE felling of overhanging trees or pruning of overhanging limbs.

   c. For HFTD Extended Overhang clearance, LIST trees for work that were detected as rank 7 when vegetation is observed within 0 to 6 ft. from the outside transmission wire.

      This requirement creates a clear-to-sky Extended Overhang zone beyond the transmission conductors.

5. PRESCRIBE felling for all vegetation requiring bi-annual (twice yearly) pruning.

6. APPLY a cut stump treatment using an Environmental Protection Agency (EPA)-approved herbicide after felling a re-sprouting species, unless specifically denied by the property owner, land manager, or regulation.

7. For Idle Lines and Lines Energized at a Lower Voltage,

   a. TREAT all Idle, de-energized, and lower voltage lines attached pole to pole as energized at the designed transmission voltage.

   b. INSPECT AND PRUNE to maintain clearance pole to pole around Idle, de-energized lines, and lines energized at a lower voltage, unless an exception is authorized by a VM Manager or VM Director.

8. For Non-PG&E Owned transmission lines,

   a. IF the VMI or TC observes a compliance violation on non-PG&E lines during adjacent routine inspections or other work,

      THEN the VMI or TC must NOTIFY the VPM (or Delegate).

b. IF compliance violations are observed on non-PG&E lines during adjacent routine inspection,

THEN the VMI must:

(1) NOTIFY the VPM (or Delegate).

(2) RECORD on the patrol maps.

(3) INSPECT **only** those non-PG&E-owned transmission lines for which VM maintenance agreements exist.

c. The VPM (or Delegate) must:

(1) INVESTIGATE transmission lines indicated as non-PG&E on GIS (or provided via Utility Procedure TD-7103P-11, "Vegetation Management Transmission Line Verification Procedure") during the annual planning period.

(2) CONTACT the Land Department to determine whether third-party maintenance agreements exist for the non-PG&E owned transmission lines.

(3) IF a third-party maintenance agreement exists for the non-PG&E owned transmission lines,

THEN INSTRUCT the VMI to patrol the lines in accordance with this procedure and the requirements of the third-party maintenance agreement.

(4) IF a third-party Maintenance Agreement does NOT exist for the indicated non-PG&E transmission lines,

AND compliance violations are observed on these lines during adjacent routine inspections,

THEN:

- MAKE reasonable attempts to NOTIFY the property owner.
- NOTIFY PG&E stakeholders of compliance status.
- NOTIFY the appropriate regulatory agency, as deemed necessary by the VPM (or Delegate).

9. For non-PG&E-owned properties, PRESCRIBE accordingly:

   a. IF chipper access is available within 100 ft. of debris,

      THEN CHIP brush and REMOVE debris that is less than 4 in. in diameter.

      OR

      IF chipper access is NOT available within 100 ft. of debris,

      THEN LOP AND SCATTER brush and debris.

   b. LEAVE wood greater than 4 in. in diameter on site.

10. For PG&E-owned properties, such as fee strips, PERFORM the following tasks:

   a. PRESCRIBE removal of all material.

   b. IF unable to achieve removal,

      THEN CONTACT the VPM (or Delegate) to discuss additional options.

11. IF the required vegetation work is for orchard tree species (i.e., almond or walnut spp.) located in an orchard,

    THEN CONTACT the VPM (or Delegate) about a notification of potential work.

12. For Transmission Orchard Patrols, SEE TD-7103P-01-Att02, "Inspecting Transmission Lines in Orchard."

4.4 Tower, Pole, or Guy Wire

1. The VMI may PRESCRIBE work for tower, pole, or guy wire when performing inspections around Facilities other than conductors.

NOTE

Tower, pole, or guy wire clearing work is considered a best management practice and is NOT considered annual work performed during a routine cycle. Tower, pole, or guy wire clearing work may be stopped or started depending on operational needs.

2. IF prescribing tower, pole, or guy wire clearing work, THEN the VMI should:

   a. CREATE a separate location record for tower, pole, or guy wire clearing work.

   b. ENTER **CC1A** in the SSD # field of the location record.

   c. ENTER the tower or pole number in the Location Comments field.

3. IF prescribing work for Woody Vegetation that is in contact with the structure, pole guy wire, and/or anchor AND interferes with the visual inspection,

   THEN the VMI should PERFORM the following tasks:

   a. For vines and woody vegetation with a DBH less than 24 in., USE professional judgement to prescribe felling, pruning, or no work, depending on field conditions.

   b. For trees with a DBH greater than or equal to 24 in., USE professional judgement to prescribe pruning or no work, depending on field conditions.

      (1) Using professional judgement, IF the VMI DETERMINES that felling is a safer option,

      THEN CONSULT with the VPL.

   c. When prescribing pruning to achieve clearance from the structure, guy wires, and anchors:

      - Best management practice is 10 ft. of clearance from structure AND 5 ft. around guy wires and/or anchors.
      - Using professional judgement, IF the VMI DETERMINES that less clearance is required,

        THEN CONSULT with the VPL or VPM (or Delegate) about the applicable clearance.

   - PRESCRIBE stump treatment when felling a re-sprouting species.
   - PRESCRIBE that “no cut” materials are left within the 10 ft. of clearance from any part of a structure.

4.5 Blow-Out Detections (NERC and Non-NERC)

1. For rank 9 (NERC only) the VMI must FIELD REVIEW and PRESCRIBE work. SEE the appropriate steps in Appendix A, “PMD Data Entry.”

2. For rank 9 (non-NERC only) and rank 10, the VMI must FIELD REVIEW but does NOT need to prescribe work unless the VMI determines work is necessary. SEE the appropriate steps in Appendix A, “Project Management Database (PMD) Data Entry.”

3. Acceptable reasons for VMI NOT listing blow-out Detection trees (rank 9; VC1c_BO) on Non-NERC transmission lines are:

   - Transmission conductor movement outside of the easement
   - Idle transmission lines
   - Construction changes since LiDAR flight
   - Transmission operating at distribution voltages
   - Tree has already been felled

Vegetation Management Transmission Inspection

5 Observed Hazards

5.1 For observed vegetation hazard impacting PG&E Facilities, the VMI must PERFORM the appropriate task:

- For imminent threat conditions affecting NERC conductors and for grow-into / strike potential situations requiring immediate or urgent mitigation, FOLLOW the Utility Procedure TD-7103P-09, "Transmission Vegetation Management Imminent Threat and Hazard Notification."
- For Danger Trees located on or adjacent to a utility ROW or facility that could damage PG&E Facilities should it fall where:

  (1) The tree leans toward the ROW,

  OR

  (2) The tree is Defective because of any cause, such as heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other reason that could result in the tree or a main lateral of the tree falling,

  ASSIGN an appropriate unified work code.

5.2 For observed hazards NOT impacting PG&E Facilities, the VMI must PERFORM the appropriate task:

- For a condition that affects a third-party utility (e.g., electric, communication), FOLLOW the Job Aid TD-2014P-01-JA01, "VM Instructions for Form TD-2104P-01-F01 (62-3447)" to complete the Utility Procedure TD-2014P-01, "Notification of Conditions to Third-Party Utility."
- For a condition that affects a third-party non-utility, FOLLOW the Utility Procedure TD-2015P-01, "Notifying Non-Utility Third Parties of Safety/Compliance Conditions for Which They Are Responsible."

5.3 For a non-vegetation condition that poses an immediate hazard to PG&E Facilities, REFER to the Utility Procedure TD-7102P-09, "Reporting Abnormal Field Conditions Procedure for Vegetation Management."

Vegetation Management Transmission Inspection

6 Marking the Tree

6.1 The VMI must MARK the tree, using at least one of the methods in this section, after tree work has been identified.

1. Painting

   a. SPRAY the paint near the base of a tree using one of the following shapes:

   - A dot for pruning.
   - An X for felling

   b. When painting a mark, use the following guidelines:

   - The best location for marking is above surrounding vegetation (grass and bushes) and above any expected snowline.
   - The best location for marking is on the side that a tree crew will most likely see first.
   - Spray new marks over any marks from previous years, but with some of the older mark still showing.
   - Cover incorrect marks with black or brown paint.

2. Flagging

   a. SECURELY ATTACH flagging that will help the tree crew identify the tree.

NOTE

Paint and flagging colors are assigned to programs and to specific years of some programs. See Appendix I, Tree Marking Colors.

3. Cannot Paint or Flag

   a. IF the VMI cannot paint or flag a tree,

   THEN UPDATE the tree record with the code **CNP** (cannot paint) or **CNF** (cannot flag) and ADD a description of the tree's location within the span.

7 Constraints and Interference

7.1 IF the ability to perform the prescribed work or complete inspection to meet requirements of this procedure is constrained,

THEN the VMI must DOCUMENT the constraint in the system of record

AND WORK with the VPL or VPM (or Delegate) to resolve the constraint.

7.2 IF the customer/property owner interferes with the work or inspection,

THEN the VMI or TC must FOLLOW the steps in the TD-7103P-07, "Vegetation Management Transmission Interference" procedure.

8 Prescribing VM Work for Underbuilt Locations

8.1 In Underbuilt locations, the distribution VMI must PRESCRIBE work to the transmission specifications.

1. Distribution VMI:
   a. PRESCRIBE work for both distribution and transmission lines.
   b. IF the vegetation being prescribed work for distribution lines also requires work for transmission lines,

      THEN ADD comments about transmission clearance, as specified in this procedure.
2. Transmission VMI:
   a. PRESCRIBE work for transmission lines.
   b. As a best management practice,

      IF the vegetation being prescribed work for transmission also requires work for distribution,

      THEN ADD comments about distribution clearance, as specified in the TD-7102P-01, "Vegetation Management Distribution Inspection" procedure.

9 Handling Non-PG&E Facilities

9.1 IF the VMI observes any potentially hazardous vegetation near non-PG&E Facilities,

OR the VMI is notified of a potential hazard,

THEN the VMI must:

1. FOLLOW Utility Procedure TD-2015P-01, "Notifying Non-Utility Third Parties of Safety/Compliance Conditions for Which They Are Responsible."
2. NOTIFY the VPL.

9.2 The VPL must NOTIFY the VPM (or Delegate).

9.3 IF the VMI observes a compliance issue with non-PG&E Facilities,

THEN the VMI must:

1. FOLLOW Job Aid TD-2014P-01-JA01, "VM Instructions for Form TD-2104P-01-F01 (62-3447)," to complete, as necessary:
   - Utility Procedure TD-2014P-01, "Notification of Conditions to Third-Party Utility"
   - Utility Procedure TD-2015P-01, "Notification of Conditions to Third-Party Non-Utility"
2. NOTIFY the VPL.
3. The VPL must NOTIFY the VPM (or Delegate).

10 Additional Patrols

10.1 At their discretion, the VPM or SVPM may INITIATE an additional patrol.

10.2 IF an additional patrol is initiated,

THEN the Contract Partner must FOLLOW the scope and timing that the VPM or SVPM provides to the Contract Partner.

END of Instructions

DEFINITIONS

Aerial Inspections: Use of a helicopter or fixed-wing aircraft, with or without remote sensing technologies (such as LiDAR), to perform inspection of vegetation conditions including vegetation-to-conductor clearances.

Attachment: Any wire affixed to electric overhead Facilities (e.g., guy wires) and may extend for multiple spans.

Bus: A heavy conductor, or group of conductors, to which several units of the same type of equipment may be connected.

Contract Partner: Company directly hired by PG&E to complete a specific Scope of Work or service. This term also applies to all subcontract partners, at any tier, which have been retained by a primary PG&E contract partner to provide a service for PG&E related project work. Additionally, the term "subcontract partner" may include an individual, a group of workers (crew), equipment or other items used on a PG&E facility, project, or assets.

Corridor: A strip of land with one or more transmission lines located within an easement or contiguous easements, or within proximity of each other, regardless of whether there is a documented easement.

Danger Tree: Any tree located on or adjacent to a utility ROW or facility that could damage utility Facilities should it fall where: (1) the tree leans toward the ROW, or (2) the tree is Defective

because of any cause, such as heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other reason that could result in the tree or a main lateral of the tree falling.

Defect: Any cause, such as: heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other cause that could result in the tree or a main lateral of the tree falling.

Delegate: Can be Employees or Contract Partners (together, Personnel) within the VM Functional Area (FA).

Detection: A LiDAR-collected data point representing vegetation that could impact the utility Facilities.

Easement: An interest in land owned by another person or entity that gives the owner of the easement limited right to that land for a specific, defined purpose. It is a non-possessory, restricted right for a specific use or activity on the land of another that is less than ownership. Used interchangeably with right-of-way.

Extended Overhang: Limbs approaching the vertical plane that may be removed as part of a high fire threat district (HFTD).

Facilities (Transmission): Conductors, towers, and attachments within one span.

Hazard Tree: A whole or partial tree that is dead, exhibiting signs of disease, decay, or ground/root disturbance and may fall into or otherwise impact electric Facilities.

- **All Lines:** Trees that are dead or show signs of disease, decay, or ground or root disturbance which might 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 potential to fail within the next two years (as assessed by the VMI), which would pass within the PG&E minimum clearance requirements.

- **All lines in HFTD:** In addition to traditional arboricultural evaluation of trees for hazard, transmission VM has both LiDAR and wind modeling that can be used to further inform decision making.

High Fire-Threat District (HFTD): High Fire-Threat District means those areas comprised of the following:

- (1) Zone 1 is Tier 1 of the latest version of the United States Forest Service (USFS) and CAL FIRE's joint map of Tree Mortality High Hazard Zones (HHZs). (Note: The Tree Mortality HHZs Map may be revised regularly by the USFS and CAL FIRE.)

- (2) Tier 2 is Tier 2 of the CPUC Fire-Threat Map.

- (3) Tier 3 is Tier 3 of the CPUC Fire-Threat Map.

Vegetation Management Transmission Inspection

Idle: Facilities (wire pole-to-pole) that are not currently being used to serve transmission load or generation Facilities. Idle Facilities can be either transmission line Facilities that are deenergized or Facilities that are energized at distribution voltages. Refer to Utility Procedure TD-1003P-01, "Management of Idle Electric Transmission Line Facilities," for additional details.

Imminent Threat: A vegetation condition affecting NERC transmission lines that is likely to cause a fault at any moment, and vegetation within the NERC Minimum Vegetation Clearance Distances (MVCD). This condition may arise from within or outside the electric transmission ROW and may be the result of tree growth, potential tree or limb failure, new construction that changes equipment dimensions or placement, or line movement due to sag or sway.

Impact: To strike a target or cause a disruption that affects activities.

Interference: Situations where the Customer/Property Owner:

- Interferes with access to the property (e.g., the Customer/Property Owner physically blocks access to the property, the Customer/Property Owner verbally threatens the VM representative, etc.);

- Interferes with completion of identified tree work as defined in the TD-7102P-01 "Vegetation Management Distribution Inspection" procedure (e.g., the Customer/Property Owner gets in the work zone, creates unsafe working condition, calls the police department and creates hostile environment to work, or threatens harm);

  AND/OR

- Wants to Hire Own Contractor (HOC) or do work themselves.

Lean: The predominant angle of the trunk from vertical.

LiDAR (Light Detection and Ranging): Technology that uses laser pulses to determine highly accurate measurements between objects. For the PG&E VM program, LiDAR is used to assess vegetation conditions, particularly distances and clearances in relation to the electric conductors, structures, and easement boundaries.

May Fall Into: Tree failure where vegetation (categorized as a whole tree or portion of a tree) has the likelihood of impacting PG&E Facilities during reasonably foreseeable conditions.

Minimum Vegetation Clearance Distance (MVCD): Minimum vegetation clearance distance required between trees and power lines to prevent flash-over.

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

Non-PG&E-Owned Transmission Lines: Transmission lines connected to PG&E Facilities or within PG&E service territory that are not owned by PG&E.

Vegetation Management Transmission Inspection

Prescription: A recommendation of tree work to be performed. Information provided typically includes type of Pruning (e.g., top-trim, or side-trim), how much of the tree to be trimmed or removed, and any other information that would be helpful for the tree contractor.

Right-of-Way (ROW): See Easement definition.

Riparian Area: The areas bordering bodies of water: Streams, rivers, canals, ditches, ponds, lakes, etc. For the purposes of this procedure, the riparian area extends from the water's edge to the top of bank (TOB) and outward to the outer edge of contiguous riparian vegetation.

Substation: An assemblage of equipment for purposes of switching and/or changing or regulating the voltage of electricity. Substations that simply connect two or more transmission circuits without transforming the voltage are called switching stations.

- **Distribution Substation:** A Substation located near the end-users and that decreases the transmission or sub-transmission voltage to lower levels for use by end-users.
- **Transmission Substation (Tran-sub):** A Substation that receives electric power from a nearby generating facility and uses a large power Transformer to increase the voltage for transmission to distant locations. A transmission Bus is used to distribute electric power to one or more transmission lines.

Transformer: A device, mounted on a pole, pad, vault, or in a switchyard, encased in metal and used to reduce or increase voltage.

Underbuilt: Electric distribution lines located directly under and parallel with transmission lines and attached to the same pole or structure.

Woody Vegetation: Perennial trees, vines, and shrubs having stiff stems and bark. Woody vegetation does not include grasses and forbs.

A strip of land with one or more transmission lines located within an easement or contiguous easements, or within proximity of each other, regardless of whether there is a documented easement.

IMPLEMENTATION RESPONSIBILITIES

The VM team is responsible for the maintenance, communication, and implementation of this procedure.

The VM execution leadership team is responsible for communicating and keeping their employees and contractors accountable for complying with this procedure.

The target audience is responsible for understanding and complying with this procedure.

GOVERNING DOCUMENT

Utility Standard TD-7103S, "Vegetation Management Transmission Program"

Vegetation Management Transmission Inspection

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

Records and Information Management:

PG&E Data, Information, and Records are company assets that must be traceable, verifiable, accurate, and complete and can be retrieved upon request. Functional Areas are responsible for complying with the Information & Records Governance Policy, Standards, and the Information and Records Retention Schedule. Refer to GOV-7101S, "Enterprise Records and Information Management Standard" for further guidance or contact Information & Records Governance at Information&RecordsGovernance@pge.com.

North American Electric Reliability Corporation (NERC) Reliability Standard FAC-003-5

California Public Utilities Commission (CPUC), General Order 95, Rule 35

California Public Utilities Commission (CPUC), General Order 95, Rule 35 in Appendix E

California Public Utilities Commission (CPUC), CPUC General Order 95, Rule 18

California Public Utilities Commission (CPUC) Table 1 (Cases 13 and 14)

California Public Resources Code (PRC), sections 4293 to 4295.5

Title 14 California Code of Regulations, section 1257

California Independent System Operator (CAISO), "Transmission Control Agreement"

REFERENCE DOCUMENTS

Developmental References:

TD-7103S, "Vegetation Management Transmission Program"

California Power Line Fire Prevention Field Guide

Supplemental References:

ANSI A300 "Tree Care Standards" (2023 Edition)

Utility Arborist Association (UAA), Utility Best Management Practices, "Tree Risk Assessment and Abatement for Fire-Prone States and Provinces in the Western Region of North America"

PG&E Wildfire Mitigation Plan

RISK-6301S, "Quality Management Audit Standard"

RISK-6340S, "Electric CAISO Maintenance Practice Compliance Program"

TD-1003P-01, "Management of Idle Electric Transmission Line Facilities"

TD-2014S, “Third-Party Notification and Resolution of Potential Violations and Safety Hazards”

TD-2014P-01, “Notification of Conditions to Third-Party Utility”

TD-2014P-01-JA01, “VM Instructions for Form TD-2104P-01-F01 (62-3447)”

TD-2015S, “Notification to Third-Party Non-Utility of Nonconformance”

TD-2015P-01, “Notifying Non-Utility Third Parties of Safety/Compliance Conditions for Which They Are Responsible”

TD-7102P-01, “Vegetation Management Distribution Inspection Procedure”

TD-7102P-09, “Vegetation Management Reporting Abnormal Field Conditions”

TD-7102P-14, “Vegetation Management Distribution Circuit Verification Procedure”

TD-7103P-07, “Vegetation Management Transmission Interference”

TD-7103P-09, “Transmission Vegetation Management Imminent Threat and Hazard Notification Procedure”

TD-7103P-10, “Vegetation Management Transmission Inspection Mapping Procedure”

TD-7103P-11, “Vegetation Management Transmission Line Verification Procedure”

One VM Info Hub

VM Core Share

APPENDICES

Appendix A, Project Management Database (PMD) Data Entry

Appendix B, LiDAR Clearance Parameters

Appendix C, Data Entry of External Tree I.D.

Appendix D, Century Plants

Appendix E, Components of Transmission Facilities

Appendix F, CPUC Recommendations at Time of Trim in HFTDs

Appendix G, Tree Mark Colors

Vegetation Management Transmission Inspection

ATTACHMENTS

TD-7102P-01-Att01, “Transmission Substation Inspection”

TD-7103P-01-Att02, “Inspecting Transmission Lines in Orchards”

DOCUMENT RECISION

TD-7103P-01, “Vegetation Management Transmission Inspection Procedure,” rev, 3, 11/22/2023

DOCUMENT APPROVER

[redacted], Director, Execution South and Transmission, Vegetation Management

DOCUMENT OWNER

[redacted], Senior Manager, Transmission, Vegetation Management

DOCUMENT CONTACT

[redacted], Supervisor, Transmission Vegetation Management

[redacted], Supervisor, Transmission Vegetation Management

REVISION NOTES

Where?	What Changed?
Entire Document	Updated hyperlinks and job titles. Added LiDAR information.
Section 4 (now Section 5)	Updated Note references to Appendices.
Step 4.4	Updated information about performing tower, pole, and guy wire clearing work
Section 6 & 7 (version 3.0)	Removed orchard inspection steps and created a new attachment: TD-7103P-01-Att02, “Inspecting Transmission Lines in Orchards.”
Section 11 (version 3.0)	Removed PMD instructions and created in an Appendix A, “Project Management Database (PMD) Data Entry.”
Definitions Section	Updated definitions.
Appendices	Removed Appendices for orchard inspections and placed them into TD-7103P-01-Att02, “Inspecting Transmission Lines in Orchards.” Updated Modeled Blowout data in Vegetation Detection Specifications table. Updated Clearance Prescription Tables.

Vegetation Management Transmission Inspection

Appendix A, Project Manager Database (PMD) Data Entry
Page 1 of 3

1. IF there is one Aerial LiDAR data delivery per PMD project,

   THEN the VPL or DMS must UPDATE the PMD according to Table 1.

Table 1. If There is One Aerial LiDAR Data Delivery Per PMD Project

PMD Field	Description
PMD PI Start Date	The date of Aerial LiDAR delivery to the mobile platform. VPL or DMS notes the field verification start date in the PMD project notes.
PMD PI Close Date	The date VMI Field Verification is complete.
PMD TC Start Date	The date tree work begins.
PMD TC Complete Date	The date tree work is complete.

2. IF more than one Aerial LiDAR data delivery occurs for a given PMD project,

   THEN the VPL or DMS must UPDATE the PMD schedule according to Table 2.

Table 2. If There are More Than One Aerial LiDAR Data Delivery Per PMD Project

PMD Field	Description
PMD PI Start Date	The date of Aerial LiDAR delivery to the mobile platform. VPL or DMS notes the field verification start date in the PMD project notes.
PMD PI Close Date	The date VMI Field Verification is complete from the final delivery.
PMD TC Start Date	The date tree work begins from the first delivery.
PMD TC Complete Date	The date tree work is complete from the final delivery.

Vegetation Management Transmission Inspection

Appendix A, Project Manager Database (PMD) Data Entry
Page 2 of 3

3. For transmission Corridors, the VPL or DMS must RECORD all line segments included as a Corridor using the Spans tool in the PMD.

   a. INCLUDE partial lines that enter and exit the Corridor at varying locations.

4. LIST all tower (pole) numbers in sequential order.

1. Where vegetation Detections occur, the VMI must INSPECT the LiDAR Detections

   AND LIST tree and brush work as described in:

   - Section 4, “Inspecting Routine Detections on NERC and Non-NERC Facilities”

     AND

   - Section 5, “Performing Prescription.”

2. The VMI must ENSURE the following data fields are accurate in the system of record:

   - Address
   - City
   - County
   - Circuit – Transmission Corridor Name
   - SSD # – Tower number
   - SSD Rte
   - Loc Rte
   - Line Name
   - Pole #
   - Location Comments – Provide relevant information for the specific location.
   - Tree Species
   - External Tree ID – SEE Appendix C, “Data Entry of External Tree ID”
   - Quantity – Grouping trees is permissible.
   - Trim Type
   - Tree Comments – Include the LiDAR Detection code as a best management practice.
   - Notification

Vegetation Management Transmission Inspection

Appendix A, Project Manager Database (PMD) Data Entry
Page 3 of 3

3. For LiDAR Detection code ranked 1, 2, 3, 4, 7, and 9 (NERC only) in Appendix B:

   a. The VMI must PRESCRIBE work (REFER to Section 4, “Prescription.”)

   b. IF NO Prescription for work is required,

      THEN the VMI must RECORD each tree as:

      - Priority Type = **No trim**
      - Notification Type = **Inventory**

   c. ENTER the LiDAR Detection code of each tree not worked in the Tree Comments.

   d. ENTER an explanation of why no Prescription is listed (SEE to Appendix B, “LiDAR Clearance Parameters.”)

   e. The VMI must DOCUMENT that the span was inspected in the system of record.

4. For LiDAR Detection code ranked 5, 6, 8, 9 (non-NERC only), 10, 11, 12, 13, 14, 15, and 16 (SEE to Appendix B, “LiDAR Clearance Parameters.”)

   a. VMI must EVALUATE the condition of all vegetation represented by Detection points.

   b. For ranks 5, 6, and 8, the VMI must PRESCRIBE work for vegetation that could encroach within PG&E’s Clearance Requirements prior to the next inspection cycle.

   c. For rank 9 (non-NERC only) and 10, the VMI must PERFORM a field review but does NOT need to prescribe work, unless the VMI determines work is necessary.

   d. For ranks 11, 12, 13, 14, 15, and 16, the VMI must PRESCRIBE work when tree-related hazards are observed that May Fall Into or otherwise Impact PG&E overhead Facilities.

   e. VMI must CREATE a record to document that the span was inspected.

      (1) IF NO tree work is required for the current cycle,

      THEN the VMI must CREATE a location record for the transmission line span. (SEE to Appendix B, “LiDAR Clearance Parameters.”)

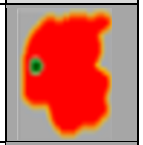
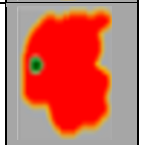
5. For transmission Corridors, the VMI must:

   a. USE the highest voltage transmission line and corresponding span to record the transmission line name and span in the location record.

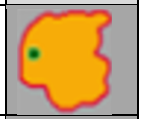
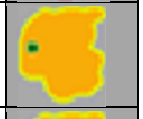
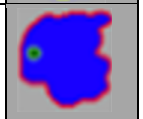
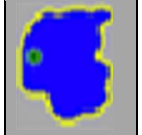
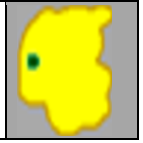
   b. IDENTIFY each transmission line within a Corridor by name in the tree record.

      (1) DESCRIBE VM Work for each transmission line within the Corridor accordingly.

Appendix B, LiDAR Clearance Parameters

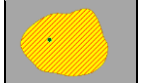
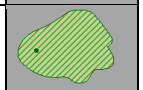
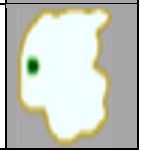
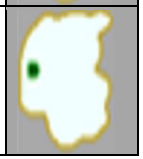
Vegetation Detection Specifications Table											
Tree Clearance Parameters							Clearance Distance (ft)				VMPI Polygon
Rank	Type	Status	Acronym	Description	Area of Application	Tree Record Documentation	500 kV	230 kV	115 kV	60 kV 70 kV	
1	As Flown Grow-In	URGENT	VC1U_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance."	HFTD and Non HFTD	Required	15	10	10	4	
2	Max Op Grow-In	URGENT	VC1U_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance." Conductor is modeled under maximum operating conditions.	NERC only	Required	15	10	10 (NERC only)	4 (NERC only)	
3	As Flown Grow-In	conformance	VC1c_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance."	HFTD and Non HFTD	Required	25	15	15	10	
4	Max-op Grow-In	conformance	VC1c_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance." Conductor is modeled under maximum operating conditions.	HFTD and Non HFTD	Required	25	15	15	10	
5	As Flown Grow-in	potential	VC1p_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance."	HFTD and Non HFTD	Not required	40	25	25	15	
6	Max-op Grow-in	potential	VC1p_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance." Conductor is modeled under maximum operating conditions.	HFTD and Non HFTD	Not required	40	25	25	15	

Vegetation Management Transmission Inspection

Vegetation Detection Specifications Table											
Tree Clearance Parameters							Clearance Distance (ft)				VMPI Polygon
Rank	Type	Status	Acronym	Description	Area of Application	Tree Record Documentation	500 kV	230 kV	115 kV	60 kV 70 kV	
7	As Flown OVERHANG (0 - 2 feet)	conformance	VC1c_OV	Vegetation above and within 2 ft. of the upward vertical plane of the conductor. Applies to Non High Fire Threat Districts only.	Non HFTD only	Required	2	2	2	2	
7	As Flown OVERHANG (0 - 6 feet)	conformance	VC1c_OV	Vegetation above and within 6 ft. of the upward vertical plane of the conductor. Applies to High Fire Threat Districts only.	HFTD only	Required	6	6	6	6	
8	As Flown OVERHANG (2 - 12 feet)	potential	VC1p_OV	Vegetation above and within 2 -12 ft. of the upward vertical plane of the conductor. Applies to Non High Fire Threat Districts only.	Non HFTD only	Not required	12	12	12	12	
8	As Flown OVERHANG (6 - 12 feet)	potential	VC1p_OV	Vegetation above and within 6-12 ft. of the upward vertical plane of the conductor. Applies to High Fire Threat Districts only.	HFTD only	Not required	12	12	12	12	
9	Modeled Blowout	conformance	VC1c_BO	Vegetation within a specified distance of the conductor based on line voltage as described in the columns under the header "Clearance Distance" where the conductor position is modeled at 56 mph wind.	HFTD and NERC only	Required (NERC only)	10	6	4 (NERC only)	4 (NERC only)	
10	Modeled Blowout	potential	VC1p_BO	Vegetation within a specified distance of the conductor based on line voltage as described in the columns under the header "Clearance Distance" where the conductor position is modeled at 56 mph wind.	HFTD and NERC only	Not required	15	12	10 (NERC only)	10 (NERC only)	
11	As Flown Fall-in (inside ROW)	conformance	VC2c_AF	Vegetation inside ROW capable of striking conductor as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	HFTD and Non HFTD	Not required	60	40	25	20	

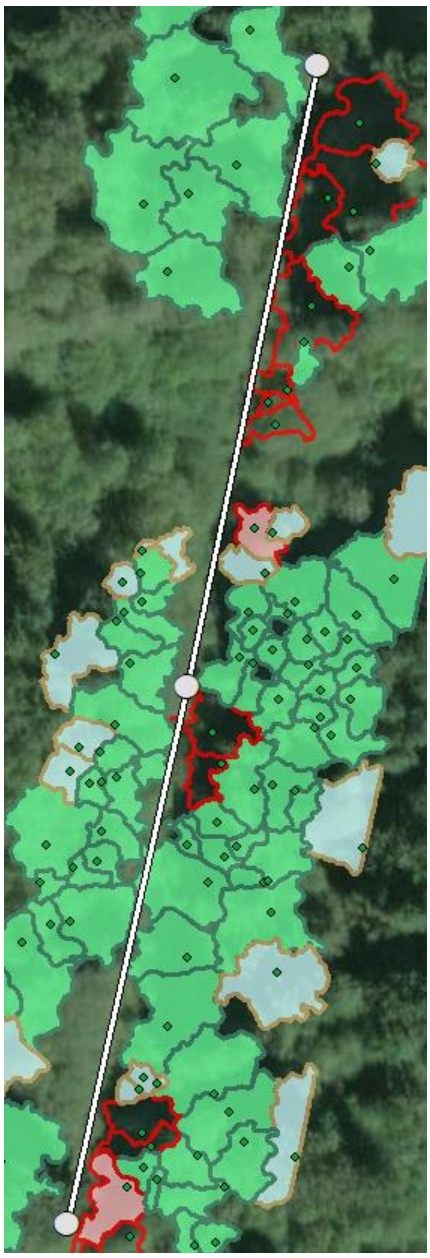
Vegetation Management Transmission Inspection

Vegetation Detection Specifications Table

Tree Clearance Parameters							Clearance Distance (ft)				VMPI Polygon
Rank	Type	Status	Acronym	Description	Area of Application	Tree Record Documentation	500 kV	230 kV	115 kV	60 kV 70 kV	
12	As Flown Fall-in (outside ROW)	conformance	VC3c_AF	Vegetation outside ROW capable of striking conductor as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	HFTD and Non HFTD areas	Not required	>60	>40	>25	>20	
13	As Flown Fall-in Tower and Attachment (inside ROW)	routine	VC2r_AT	Vegetation inside ROW capable of striking tower or pole and any attached wires as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	HFTD and NERC only	Not required	60	40	25	20	
14	As Flown Fall-in Tower and Attachment (outside ROW)	routine	VC3r_AT	Vegetation outside ROW capable of striking tower or pole and any attached wires as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	HFTD and NERC only	Not required	>60	>40	>25	>20	
15	As Flown Fall-in (inside ROW)	potential	VC2p_AF	Vegetation inside ROW as specified by the average half ROW width by voltage as described in columns under "Clearance Distance." Tree is tall enough to strike within 6 ft. of conductor.	HFTD and Non HFTD areas	Not required	60	40	25	20	
16	As Flown Fall-in (outside ROW)	potential	VC3p_AF	Vegetation outside ROW as specified by the average half ROW width by voltage as described in columns under "Clearance Distance." Tree is tall enough to strike within 6 ft. of conductor.	HFTD and Non HFTD	Not required	>60	>40	>25	>20	

Appendix B, LiDAR Clearance Parameters
Page 6 of 11

Figure B-1. Example of LiDAR Detections in VMPI2



Appendix B, LiDAR Clearance Parameters
Page 7 of 11

- LiDAR Detections Rank 1-16 require at least one location record to show proof of Span Inspection.
- LiDAR Detection codes ranked 1, 2, 3, 4, 7, and 9 (NERC only) require a tree record, as shown in the table below.
- In some instances, the system of record may need a tree record with priority code **No Trim** to document proof of span inspection for LiDAR Detection codes ranked 5, 6, 8, 9 (non-NERC only), 10, 11, 12, 13, 14, 15, and 16.

Reference Table for Documenting Detections When No Work is Required

Rank	Risk Type	Status	Acronym	Description	Tree Record Documentation	Area of Application
1	As Flown Grow-In	URGENT	VC1U_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance"	Required	HFTD and Non HFTD
2	Max Op Grow-In	URGENT	VC1U_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance". Conductor is modeled under maximum operating conditions.	Required	NERC only
3	As Flown Grow-In	conformance	VC1c_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance"	Required	HFTD and Non HFTD
4	Max-op Grow-In	conformance	VC1c_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance." Conductor is modeled under maximum operating conditions.	Required	HFTD and Non HFTD
5	As Flown Grow-in	potential	VC1p_AF	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance"	Not Required	HFTD and Non HFTD

Vegetation Management Transmission Inspection

Reference Table for Documenting Detections When No Work is Required

Rank	Risk Type	Status	Acronym	Description	Tree Record Documentation	Area of Application
6	Max-op Grow-in	potential	VC1p_MO	Vegetation within a specified distance of the conductor based on line voltage as described in columns under the header “Clearance Distance." Conductor is modeled under maximum operating conditions.	Not Required	HFTD and Non HFTD
7	As Flown OVERHANG (0 - 2 feet)	conformance	VC1c_OV	Vegetation above and within 2 ft. of the upward vertical plane of the conductor. Applies to Non High Fire Threat Districts only.	Required	Non HFTD only
7	As Flown OVERHANG (0 - 6 feet)	conformance	VC1c_OV	Vegetation above and within 6 ft. of the upward vertical plane of the conductor. Applies to High Fire Threat Districts only.	Required	HFTD only
8	As Flown OVERHANG (2 - 12 feet)	potential	VC1p_OV	Vegetation above and within 2 -12 ft. of the upward vertical plane of the conductor. Applies to Non High Fire Threat Districts only.	Not Required	Non HFTD only
8	As Flown OVERHANG (6 - 12 feet)	potential	VC1p_OV	Vegetation above and within 6-12 ft. of the upward vertical plane of the conductor. Applies to High Fire Threat Districts only.	Not Required	HFTD only
9	Modeled Blowout	conformance	VC1c_BO	Vegetation within a specified distance of the conductor based on line voltage as described in the columns under the header "Clearance Distance" where the conductor position is modeled at 56 mph wind.	**Required (NERC Only)**	HFTD and NERC only
10	Modeled Blowout	potential	VC1p_BO	Vegetation within a specified distance of the conductor based on line voltage as described in the columns under the header "Clearance Distance" where the conductor position is modeled at 56 mph wind.	Not Required	HFTD and NERC only
11	As Flown Fall-in (inside ROW)	conformance	VC2c_AF	Vegetation inside ROW capable of striking conductor as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	Not Required	HFTD and Non HFTD
12	As Flown Fall-in (outside ROW)	conformance	VC3c_AF	Vegetation outside ROW capable of striking conductor as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	Not Required	HFTD and Non HFTD areas

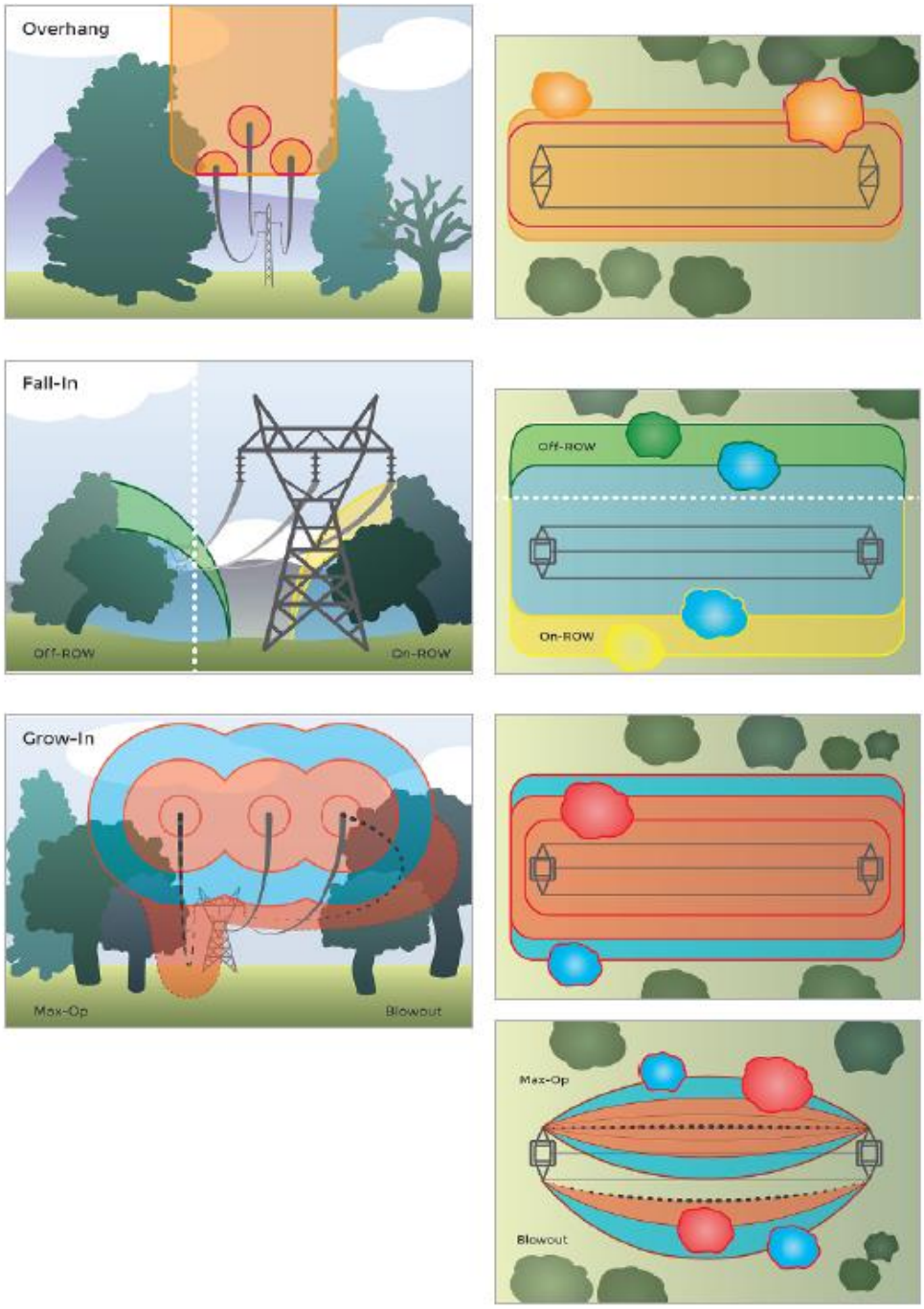
Vegetation Management Transmission Inspection

Reference Table for Documenting Detections When No Work is Required

Rank	Risk Type	Status	Acronym	Description	Tree Record Documentation	Area of Application
13	As Flown Fall-in Tower and Attachment (inside ROW)	routine	VC2r_AT	Vegetation inside ROW capable of striking tower or pole and any attached wires as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	Not Required	HFTD and NERC only
14	As Flown Fall-in Tower and Attachment (outside ROW)	routine	VC3r_AT	Vegetation outside ROW capable of striking tower or pole and any attached wires as specified by the average half ROW width by voltage as described in columns under "Clearance Distance."	Not Required	HFTD and NERC only
15	As Flown Fall-in (inside ROW)	potential	VC2p_AF	Vegetation inside ROW as specified by the average half ROW width by voltage as described in columns under "Clearance Distance." Tree is tall enough to strike within 6 ft. of conductor.	Not Required	HFTD and Non HFTD areas
16	As Flown Fall-in (outside ROW)	potential	VC3p_AF	Vegetation outside ROW as specified by the average half ROW width by voltage as described in columns under "Clearance Distance." Tree is tall enough to strike within 6 ft. of conductor.	Not Required	HFTD and Non HFTD

Appendix B, LiDAR Clearance Parameters
Page 10 of 11

Figure B-2. Visual Depiction of Detection Specifications for Overhang, Fall-in, and Grow-in Scenarios



Vegetation Management Transmission Inspection

Appendix B, LiDAR Clearance Parameters
Page 11 of 11

Figure B-3. Cage Clearances

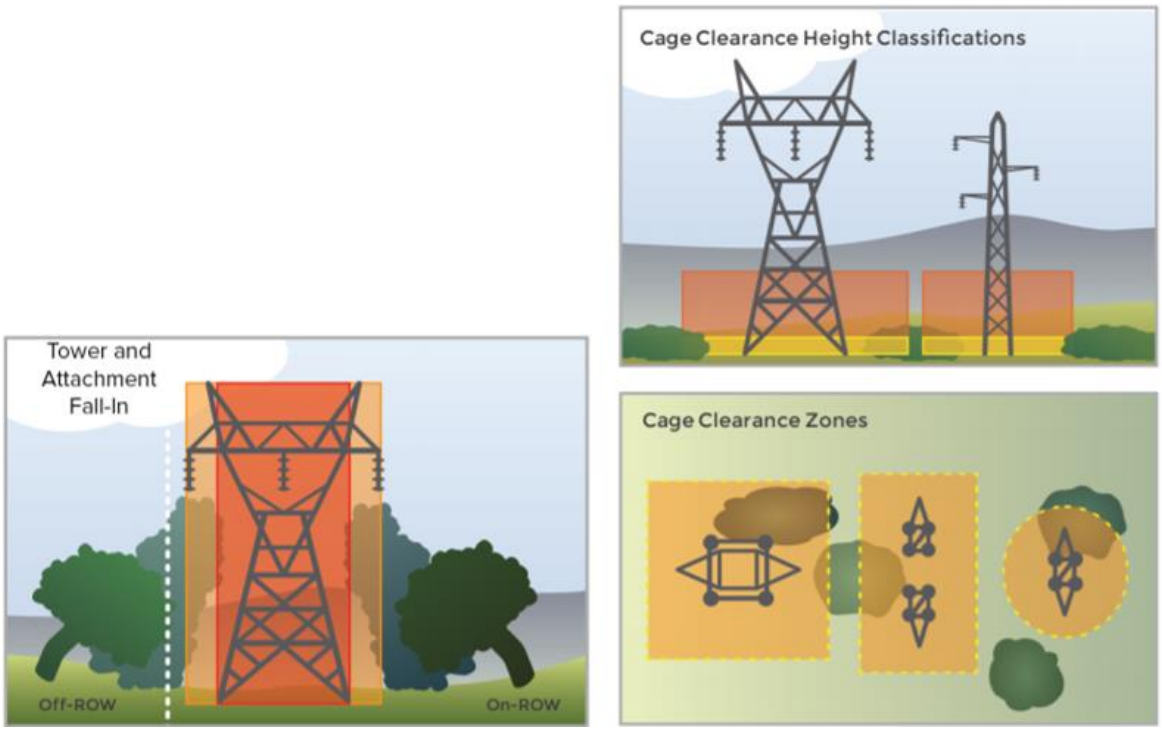
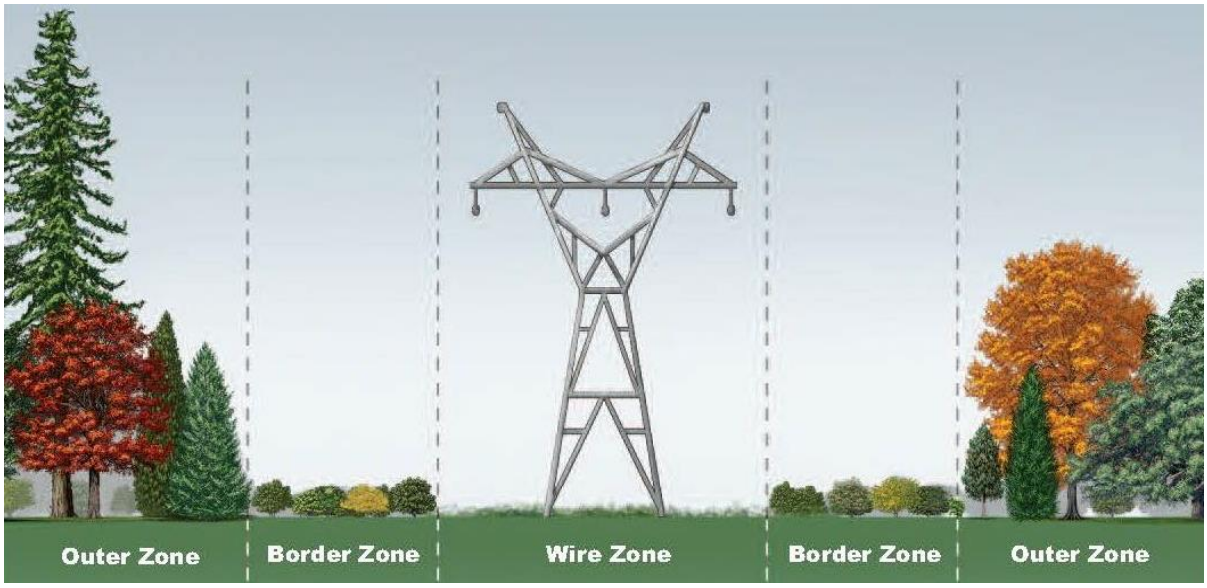


Figure B-4. ROW Zones



Vegetation Management Transmission Inspection

Appendix C, Data Entry of External Tree ID

For trees requiring work during the current cycle, the VMI must ADD the Tree ID into the **External Tree ID** field in the tree record as follows:

5. SELECT the tree polygon on the map.

6. NAVIGATE to the **External Tree ID** field in the tree record.

7. SELECT **Paste**.

The latitude and longitude on the tree record are automatically updated when the **External Tree ID** field is populated.

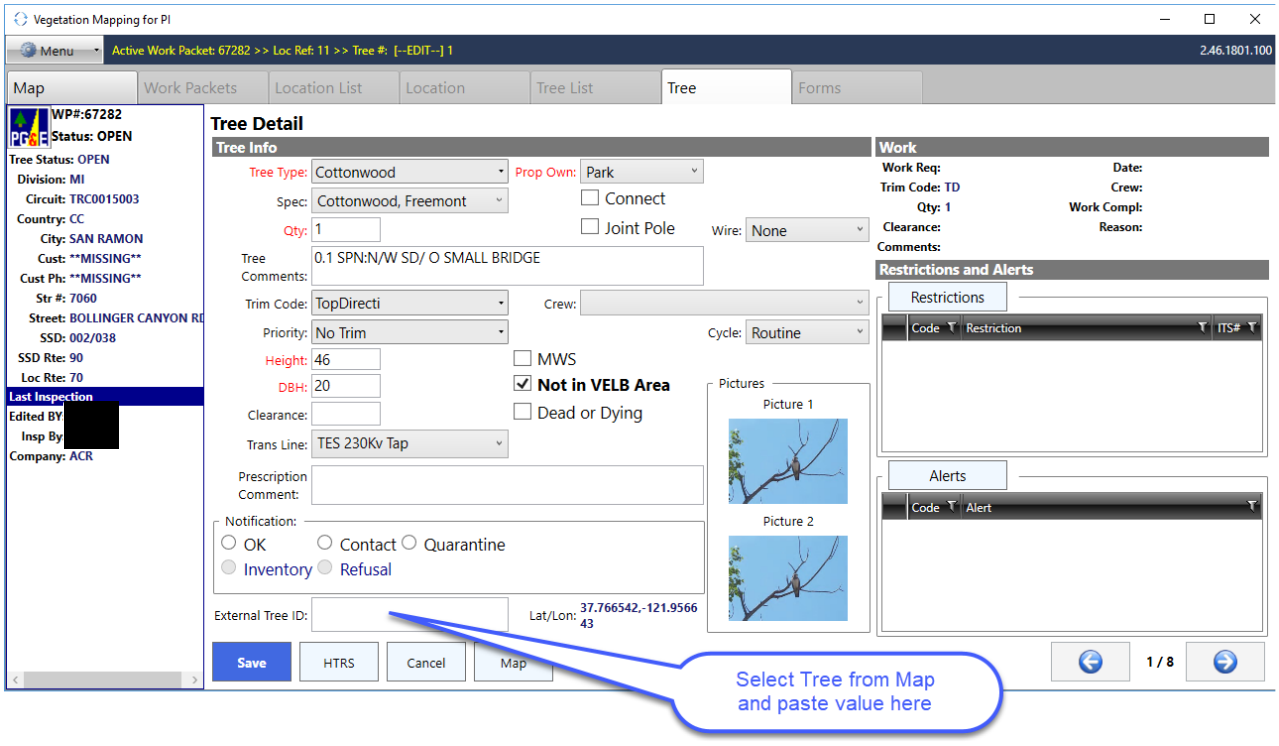
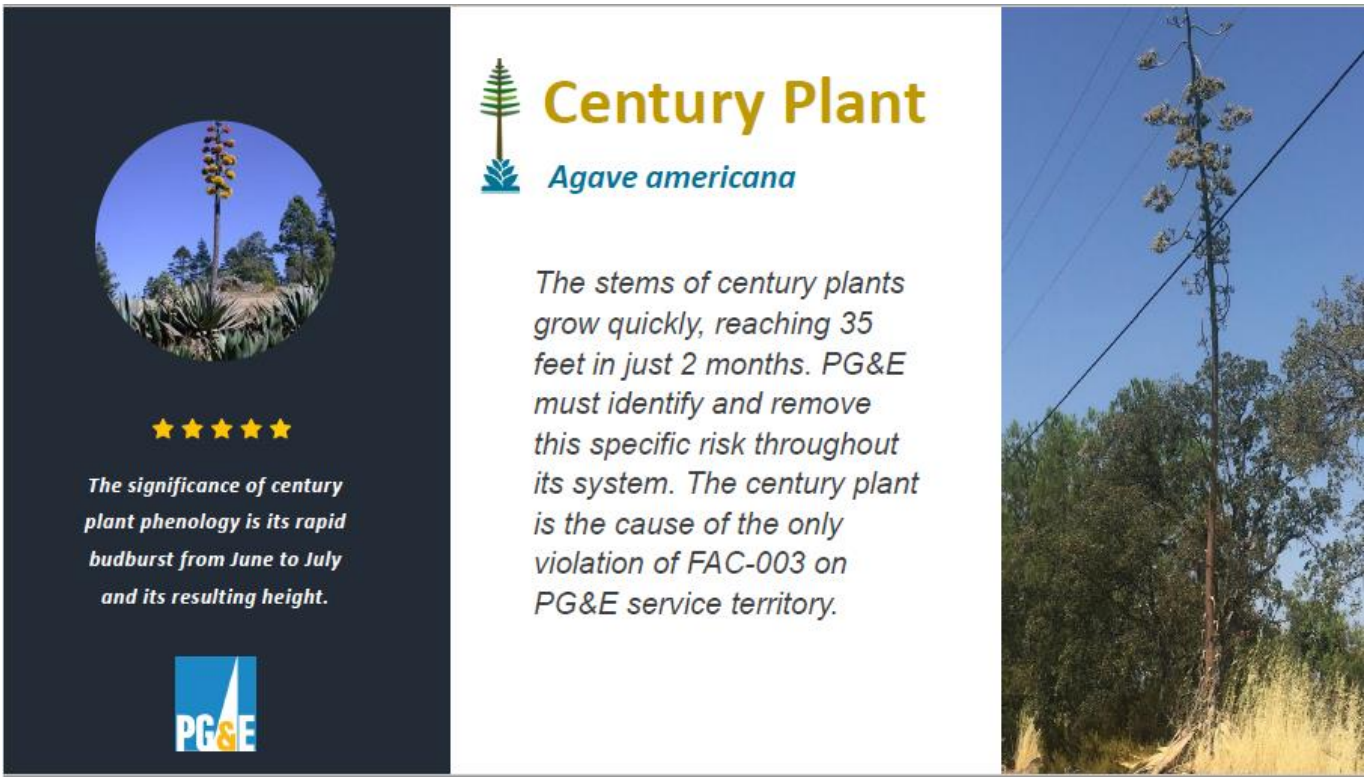


Figure B-1. Tree Record

Vegetation Management Transmission Inspection

Appendix D, Century Plants
Page 1 of 1

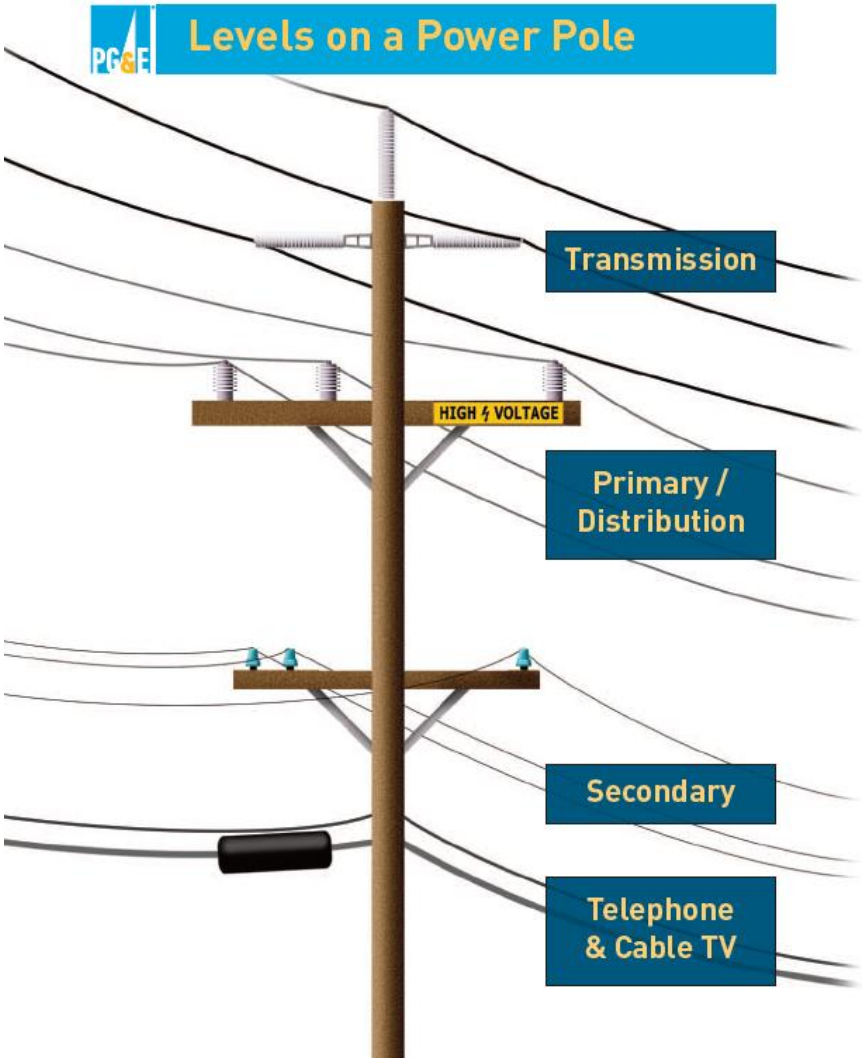


Vegetation Management Transmission Inspection

Appendix E, Components of Transmission Facilities
Page 1 of 2

Overhead electric transmission Facilities with distribution Underbuilt range from 60 kV up to 230 kV. The most common configuration is 60/70 kV transmission with 12–21 kV primary distribution Underbuilt.

Figure E-1. Electric Transmission Facility With Distribution Underbuilt



Vegetation Management Transmission Inspection

Appendix E, Components of Transmission Facilities

Overhead electric transmission Facilities with steel structure (a.k.a. cage) range from 60 kV up to 500 kV.

Figure E-2. Electric Transmission Facilities With Steel Structure

Vegetation Management Transmission Inspection

Appendix F, Clearance Prescription Tables

Table F-1. PG&E Minimum Clearance Distance

PG&E Minimum Clearance Distance	60/70 kV	115 kV	230 kV	500 kV
	4 ft.	10 ft.	10 ft.	15 ft.

Note: The PG&E-defined minimum clearance distances (Table F-1) are designed to meet or exceed all applicable regulatory requirements, at all times, including NERC Reliability Standard FAC-003-5.

Table F-2. GO 95, Rule 35 Compliance Clearance Distance Chart

GO 95, Rule 35 (Non-HFTD)	60/70 kV	115 kV	230 kV	500 kV
	18 in.	19 in.	30.5 in.	9 ft. 7in.

Note: The CPUC minimum clearance distances are in Appendix F, Part 1 of the GO 95, Rule 35.

Table F-3. NERC Minimum Vegetation Clearance Distance (MVCD)

Elevation (feet)	60/70 kV	115 kV	230 kV	500 kV
0–500 ft.	1.1 ft.	1.9 ft.	4.0 ft.	7.0 ft.
501–1000	1.1	1.9	4.1	7.1
1001–2000	1.1	1.9	4.2	7.2
2001–3000	1.2	2.0	4.3	7.4
3001–4000	1.2	2.0	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
9000–10000	1.4	2.3	4.9	8.3
10001–11000	1.4	2.4	5.0	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: NERC minimum vegetation clearance distances are in NERC Reliability Standard FAC-003-5.

Vegetation Management Transmission Inspection

Appendix G, Tree Marking Colors
Page 1 of 2

One color can be assigned to several programs. The sample column is approximate and illustrative only. The paint brands and color names in the table match the assigned colors.

Program	Color	Sample	Paint Brand and Color Name
• Distribution routine program years: 2020, 2024, 2028 • Transmission routine program years: 2022, 2026, 2030	Orange		• Nelson Aero Spot: Orange • Aervoe: Orange • Aervoe Professional Choice: Orange
• Distribution routine program years: 2021, 2025, 2029 • Transmission routine program years: 2023, 2027, 2031	Light Green		• Nelson Aero Spot: Lite Green
• Distribution routine program years: 2022, 2026, 2030 • Transmission routine program years: 2020, 2024, 2028	Red		• Nelson Aero Spot: Red • Aervoe: Red • Aervoe Professional Choice: Red
• Distribution routine program years: 2023, 2027, 2031 • Transmission routine program years: 2021, 2025, 2029	White		• Nelson Aero Spot: White • Aervoe: White • Aervoe Professional Choice: White
• Fire and storm response	Fluorescent Green		• Nelson Aero Spot: Green Glo • Aervoe: Fluorescent Green • Aervoe Professional Choice: Fluorescent Green
• Estimating arborist	Pink		• Nelson Aero Spot: Pink Glo • Aervoe: Fluorescent Hot Pink
• Transmission reliability (TVMR)	Blue		• Nelson Aero Spot: Lite Blue • Aervoe Professional Choice: Light Blue
• Enhanced vegetation management (EVM) • Fuel reduction • Second patrol/CEMA	Yellow		• Nelson Aero Spot: Yellow • Aervoe: Yellow • Aervoe Professional Choice: Yellow

Vegetation Management Transmission Inspection

Program	Color	Sample	Paint Brand and Color Name
• Cover paint	Black		• Nelson Aero Spot: Black • Aervoe: Black
	Brown		• Nelson Aero Spot: Brown
• Work Verification	Pink with a pattern	Examples:   (flagging only)	