



4 Ground

SUMMARY

The methodology establishes a consistent inspection sequence for components and determines the type of inspection that provides the best viewing position for identifying component defects. Failure Modes and Effects Analysis (FMEA) was developed to identify single points of failure of electric system components that could lead to a failure based on occurrence, severity, and detection risk priority. Inspection methods were developed that can most appropriately identify the condition of these respective components. Refer to [Transmission Line FMEA](#) (part of [TD-8123M, "Electric System Inspections and Preventative Maintenance Program"](#)).

Inspected facilities include overhead assets, rights-of-way, fiber-optic facilities, and vegetation. The inspections include an external visual evaluation of the overhead facilities. See [ETPM Manual, Chapter 2, "Maintenance Overview,"](#) for requirements that are part of PG&E's overall maintenance program, in addition to the visual inspection items identified in this section.

The primary responsibility of a Qualified Company Representative (QCR) performing an inspection is to examine the facilities and record any abnormal conditions. This inspection requires an extensive evaluation (e.g., visual observation, which could include using measuring devices or tools) to detect any abnormal structural problems or hazards that adversely impact safety, service reliability, or asset life, and to evaluate when each identified abnormal condition warrants maintenance.

LEVEL OF USE

Informational Use

TARGET AUDIENCE

This chapter applies to all personnel involved in the inspection of transmission line facilities, including, but not limited to:

- Asset Strategy
- System Inspections (SI)
- Centralized Inspection Review Team (CIRT)
- Quality Control/Compliance

SAFETY

This chapter describes administrative tasks that do not expose personnel or the public to any specific hazards.

BEFORE YOU START

Whenever a potentially unsafe situation is identified, personnel must promptly relocate to a safe area and immediately notify a supervisor for further guidance.

Review the following documents:

- [Code of Safe Practices \(CSP\)](#)
- [Safety Handbook](#)

Use "[Keys to Life](#)" to maintain personnel and public safety. Safety hazards differ based on the task. Always maintain situational awareness and follow essential safety protocols to protect both personnel and the public.

Inspector Qualifications:

Before conducting inspections, PG&E personnel and contractors must hold a current journeyman classification and have successfully completed the required compliance training.

Training Overview:

- SAFE-3050, "System Inspection Onboarding"
- ELEC-1000, "New Electric Compliance Inspector Training"
- TECH-0020, "Compliance Inspector Refresher Training"

Training for Contractors:

- SAFE-3050, "System Inspection Onboarding"
- PSOS-0410, "System Inspection-Elec Tran Day-1"
- PSOS-0451, "System Inspection-Elec Tran Day-2"
- PSOS-0452, "System Inspection-Elect Tran Day-3"

Personal Protective Equipment (PPE):

Personnel are required to wear appropriate PPE and any additional safety equipment necessary for the specific task and while working in the field. For inspections requiring access via boardwalks, consult [Appendix E, "Boardwalk Access and Personal Safety."](#)

4.1. Ground Inspection Overview

The proper method of inspection is determined by the inspection cycle identified in [Utility Standard TD-8123S, "Electric System \(T/S/D\) Patrol, Inspection, and Maintenance Program."](#) During ground inspections, the inspector reviews each asset (e.g., structure, conductor, foundation, hardware, insulator) and documents its operational condition.

4.1 (continued)

Inspections require viewing all sides of the facilities from the ground (including line equipment). Evaluating line equipment requires a visual inspection of the following (not an exhaustive list):

- Disconnect switches
- Control cabinets
- Switch platforms
- Lightning arrestors
- Midspan crossings

4.2. Inspector Requirements

Inspections must be performed by Qualified Company Representatives (QCRs) trained to perform the duties of an inspector. They must be familiar with all facilities and equipment involved and all associated safety rules and procedures.

The inspectors do not define the specific corrective action to be performed but make recommendations based on their findings.

4.3. When Repairs Are Needed

An inspector must identify and document field scenarios that impact safety and reliability on an approved PG&E electronic device. The InspectApp serves as the system of record for capturing information on the asset's condition.

When an abnormality or nonconformance is identified, the inspector must create a line corrective (LC) notification using the inspection software, as follows:

- Choose the appropriate asset.
- Select the Facility/Damage/Action (FDA) codes.
- Select the priority code for the condition to be addressed.
- Attach the required photos.
- Add comments describing the fire tier, condition, access information, and any additional information needed to schedule and perform the work.

Use [Table 2-2, "Overhead Facility, Damage, and Corrective Action Codes,"](#) in [ETPM Manual, Chapter 2](#) as a reference to determine the overall condition of the equipment that requires repair or replacement. This table was developed and is regularly updated by a cross-functional team of field personnel and subject matter experts (SMEs).

Priority-A notifications require QCR to immediately notify and consult the supervisor for direction and further action, which may require standby.

4.1 (continued)

SMEs in various departments are available for consultation and/or support with additional analysis, if needed.

The CIRT reviews all notifications for consistency and priority and determines work required (if any), and timeframes (see [Utility Procedure TD-1001P-10, "Transmission Centralized Inspection Review Team \[CIRT\]"](#)).

The notifications are then assigned to Maintenance personnel for scheduling of required work.

4.4. Documents and Forms

Keep adequate, auditable records of inspections, documenting all the facilities inspected. SAP is the system of record for documenting the completion of inspections.

Inspection forms for the electric facilities are available in the InspectApp. Retain inspection form templates for reference.

Inspections **MUST be completed** in the InspectApp, EXCEPT in the rare situations when there is tech-down AND with supervisor's approval to use the paper form.

The QCR may have access to information on open LC notification(s) for each asset to prevent duplicating LC notifications and provide the information on existing LC notifications to the CIRT.

Where available, electronic patrol and inspection documentation is preferred. Where electronic documentation is not regularly available (e.g., patrols, underground), retain completed paper forms in accordance with [GOV-7101S, "Enterprise Records and Information Management Standard."](#)

4.4.1. Routine Inspections

Inspection forms within the inspection software provide adequate, consistent, and auditable inspection records, and must be used to document the inspection. Inspection forms are used for detailed ground, climbing, and aerial inspections. Inspection forms are available for steel structures (500 kV and non-500 kV), non-steel structures, and switches.

4.5. Documenting Responsibilities

The QCR's primary responsibility when inspecting an electric facility is to examine and record any compelling abnormal conditions defined in the following applicable job aids:

- [TD-1001M-JA01, "Patrol, Inspection and Closing Process"](#)
- [TD-1001M-JA02, "Detailed and Climbing Overhead Inspection Job Aid"](#)
- [TD-1001M-JA04, "Identifying Levels of Deterioration and Corrosion on Transmission Line Steel Structures and Supports"](#)
- [TD-1001M-JA06, "Identifying Levels of Damage and Condition on Wood Poles and Non-Steel Framing on Transmission Line Structures and Supports"](#)
- [TD-1001M-JA07, "Identifying Levels of Corrosion and Condition of Hardware and Insulators on Transmission Line Structures and Supports"](#)
- [TD-1001M-JA08, "Identifying Levels of Damage and Condition of Animal Guards on Transmission Line Structures and Supports"](#)
- [TD-1001M-JA09, "Identifying Maintenance Work on Bird Nests on Transmission Line Structures and Supports"](#)
- [TD-1001M-JA10, "Identifying Conductor and Clearance Conditions"](#)
- [TD-1001M-JA11, "Evaluating Conditions of OPGW in Transmission Line"](#)
- [TD-1001M-JA12, "Identifying Foundation Conditions on Transmission Line Foundations"](#)
- [TD-1001M-JA13, "Identifying Levels of Damage and Condition of Guys and Anchors of Transmission Line Structures and Supports"](#)
- [TD-1001M-JA14, "Identifying Levels of Damage and Condition of Splices, Connectors, Dampers, and Spacers on Transmission Line Structures and Supports"](#)
- [TD-1001M-JA15, "Identifying Levels of Deterioration and Corrosion on Transmission Line Switches"](#)
- [TD-1001M-JA19, "Evaluating Conditions from Infrared \(IR\) Inspection in Transmission Lines"](#)
- [TD-1001M-JA20, "Evaluating Conditions for Vegetation Nonconformances in Transmission Lines"](#)

The inspection documentation process, as described below, is the responsibility of the transmission supervisor and the QCR.

- a. Before starting an inspection, the QCR must access the inspection software to identify facilities to inspect. The information available is the location of the facility, type of facility, and information on open LC notifications.

NOTE: Inspector must ensure that the most up-to-date version of InspectApp is used.

4.5 (continued)

- b. If field inspectors cannot access the location (e.g., "Cannot Get In" [CGI]: road deteriorated, locked gate, vegetation issues), they complete the appropriate notification to have the access issue addressed. Complete the inspection at a later date.
- c. Perform inspections on each asset, review the current condition and, if there are any pending (open) notifications, address the following issues:
 - Did the condition of the facilities deteriorate faster than expected?
 - Has the work already been completed?
 - Is the required completion date still appropriate?
- d. Use InspectApp to document the existing condition of each element on the structure, including any new abnormalities and minor or incidental work corrected at the time of inspection.
 - Document the required information to support the creation of individual LC notifications, detailing each abnormality as it was identified during the inspection.
 - Include pictures and detailed comments for each abnormality requiring an LC notification and for conditions requiring monitoring.

Inspection/patrol logs and notification forms are available in the inspection software application. They are also listed in [Appendix B, "References – Forms, Job Aids, Flowcharts, and Related Documents."](#) and are available in the [Technical Information Library \(TIL\)](#).

4.6. Records

This section provides general records guidance and retention requirements for the maps, logs, and notifications used to document the inspections, and corrective actions identified on the electric transmission line system.

4.6.1. General Guidelines for Company Records and Documentation

Store records electronically, unless impractical. Refer to Section 7 of the [GOV-7101S, "Enterprise Records and Information Management Standard."](#)

4.6.2. Hand-Written Records

Although electronic signatures and certifications are now allowed, the requirements for hand-written records have not changed.

Complete all hand-written records using non-erasable ink. To correct an item on a hand-written record, the following requirements apply:

- Use a non-erasable black or blue ink pen.
- Do not erase or white out any portion of the log.

4.6.2 (continued)

- Draw a single line through the entry(s) being deleted.
- Enter the correct information into the log.
- Initial and date the change.

To ensure legibility, personnel must print their full name, initials, or LAN ID, as required, on these documents. Rubber stamps are not allowed (see [Bulletin 247, "Gas and Electric M&O Record Requirements"](#) – FRO, issued 12/31/07).

All hand-written forms and paperwork requiring a QCR or supervisor signature must be "wet"-signed by hand in non-erasable blue or black ink by the respective personnel. Computer print-outs with the date and LAN ID are acceptable; however, all signatures on paper must be "wet."

Routine, non-routine, and emergency circuit inspection or patrol reports generated by the QCR must be recorded in the appropriate SAP database. The records must be maintained in accordance with the Independent System Operator (ISO) Transmission Control Agreements (TCA). QCRs use the following ETPM forms to document abnormal conditions identified during inspection and patrol:

- [TD-1001M-F01, "Transmission Line Inspection Datasheet OH"](#)
- [TD-1001M-F04-a, "Steel Structure Detailed Inspection Form"](#)
- [TD-1001M-F04-b, "Non-Steel Structure Detailed Inspection Form"](#)

These documents must validate that all structures and facilities were inspected and that all abnormal conditions observed were corrected or captured as maintenance notifications during the inspection or patrol.

In general, do not provide additional notes and comments on the forms, unless they further describe the findings captured. Acceptable notes for inspection field documentation include:

- Access notes describing the navigation path or procedure used to safely and efficiently access the target structure or equipment.
- Range finder readings describing the target span, temperature, date, time, and laser range finder (or similar) result.
- Status of non-findings being monitored, such as woodpecker hole position and size; ground movement near the structure; species presence.

4.7. Additional Information

4.7.1. Definitions

See [Appendix A, "Acronyms and Definitions of Terms."](#)

4.7.2. Reference Documents

See [Appendix B, "References – Forms, Job Aids, Flowcharts, and Related Documents."](#)

APPENDICES

- [Appendix A, "Acronyms and Definitions of Terms"](#)
- [Appendix B, "References – Forms, Job Aids, Flowcharts, and Related Documents"](#)
- [Appendix C, "Equipment, Tools, and Materials"](#)
- [Appendix D, "Line Patrol File Guidelines"](#)
- [Appendix E, "Boardwalk Access and Personal Safety"](#)

ATTACHMENTS

NA

IMPLEMENTATION RESPONSIBILITIES

Principal Program Manager or Public Safety and Regulatory is responsible for communicating this manual chapter to target audience.

GOVERNING DOCUMENT

[Utility Standard TD-1001S, "Electric Transmission Line Inspection and Preventive Maintenance Program"](#)

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

[California Public Utilities Commission \(CPUC\) General Order \(G.O.\) 165, "Inspection Requirements for Electric Distribution and Transmission Facilities"](#)

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.

DOCUMENT RECISION

This chapter supersedes corresponding information in TD-1001M, "Electric Transmission Preventative Maintenance Manual," Rev. 5, dated 08/31/2020.

DOCUMENT APPROVER

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REVISION NOTES

Where?	What Changed?	Updated by (LAN ID)
NA	This is a new document.	