



# 1 Inspection Overview

## SUMMARY

Inspection, patrol, procedures, and job aids are key elements of the preventive maintenance program. The actions recommended in this manual reduce the potential for component failures and facility damage and facilitate a proactive approach to repairing or replacing identified abnormal components.

- Inspections include detailed visual observations of individual structures, components, and equipment; operational readings; and component testing (e.g., hammer test) to identify abnormalities or circumstances that negatively impact safety, reliability, or asset life.
- Patrols include visual observations to identify abnormalities (i.e., obvious structural problems or hazards) or circumstances that negatively impact safety or reliability.
- Procedures associated with the [ETPM Manual](#) provide detailed step-by-step requirements on inspections.
- Job aids associated with the [ETPM Manual](#) give guidance for uniform evaluation of components of the assets.

Electric transmission line maintenance organizations follow baseline work, but can establish additional inspection, patrol, testing, and/or preventive maintenance requirements that exceed the requirements in this manual, based on local area experience and local conditions, and as needed for special equipment unique to the area. Additionally, the Asset Management organization may require electric transmission line maintenance organizations to undertake unique, non-routine patrols and inspections, as dictated by asset performance or other external factors.

Asset inspection and maintenance have progressed from time-based to risk-based. To inform risk-based approach, a failure modes and effects analysis (FMEA) was performed for each type of equipment, to look at the various modes of failure, including failures that could cause a fire ignition. Refer to [Transmission Line FMEA](#) (part of [TD-8123M, "Electric System Inspections and Preventative Maintenance Program"](#)). In addition, the various inspection modes were reviewed to determine the most effective method of identifying the failure mode.

Inspectors following the procedures in the TD-1001 series, inspect the electric facilities and identify the abnormalities requiring repairs. Field inspectors can also inspect the rights-of-way close to the facilities being inspected. If the inspectors need additional assistance to determine the need for repairs, subject matter experts (SMEs) are available within various departments, including Asset Strategy, Standards, Engineering, Vegetation Management, and Land.

## SUMMARY (continued)

Circuits supporting Diablo Canyon Power Plant (DCPP) and Morro Bay Power Plant (PP) require more frequent inspections and follow more rigorous maintenance practices. Refer to [Utility Procedure TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines,"](#) for the specifics of the DCPP and Morro Bay PP inspection and maintenance program.

## LEVEL OF USE

Informational Use

## TARGET AUDIENCE

This chapter applies to the following electric transmission personnel involved in the maintenance of transmission line facilities:

- Asset Strategy
- Standards
- Maintenance and Construction (M&C)
- Work Management
- 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

NA

### 1.1. Inspections

The inspection procedures are a key element of the preventive maintenance program. These requirements reduce the potential for component failures and facility damage and facilitate a proactive approach to identify, repair, or replace abnormal components and correct circumstances that can impact safety, reliability, compliance, or asset life.

## 1.2. Problem Identification

PG&E performs periodic inspections, patrols, and maintenance of its overhead and underground transmission facilities. Identify abnormal or potentially hazardous conditions by any of the following means:

- Periodic inspections or patrols of facilities in accordance with existing procedural requirements.
- Condition-based and/or diagnostic testing and monitoring of facilities.
- Observation by any employee during other activities, such as normal job assignments and emergency patrols (a qualified company representative [QCR] must perform an assessment to confirm problem identification).
- Corrective Action Program (CAP) issue.
- Internal engineering reviews.
- Customer or public reports (a QCR must perform an assessment to confirm the problem).
- During emergency or storm activities.
- Material Problem Reports (MPR).

## 1.3. Inspection Approach

Periodic inspections are planned and assigned to inspectors. Inspectors review each asset within the purview of the inspection program (e.g., structure, conductor, foundation, hardware, insulator). The inspector does not define the specific corrective action to be performed, but makes recommendations through an S5 staging notification. See [Figure 1-1, "Transmission Overhead Asset Inspection Process,"](#) on Page 1-4 and [Figure 1-2, "Transmission Overhead Conductor Inspection Process,"](#) on Page 1-5 for high-level procedural flow diagrams for asset-based (e.g., detailed ground inspections) and conductor-based (e.g., infrared inspections) inspection processes.

Forms, specific to inspection types, are used to capture the inspection findings. The forms capture information on the condition of the asset, whether it is in good condition or needs repair. Proper documentation of all findings is essential for completing repairs and serves as reference for future inspections.

A Line Corrective (LC) notification is created for required repairs – by a clerk or through an inspection software application.

SMEs are available for support with additional analysis, if needed. The CIRT reviews all staging notifications and determines required work (if any) and timeframes. See [Utility Procedure TD-1001P-10, "Centralized Inspection Review Team \(CIRT\)."](#)

### 1.3 (continued)

When an abnormality or nonconformance is identified, create the LC notification using the inspection software:

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

Use [Utility Procedure TD-8123P-103, "Electric Transmission Line Guidance for Setting Priority Codes,"](#) as a reference to determine the overall condition of the equipment that requires repair or replacement. This procedure was developed and is regularly updated by a cross-functional team of field personnel and SMEs. In addition, SMEs in various departments are available for consultation. The LC notifications are reviewed by CIRT for consistency and priority and then assigned to Maintenance for scheduling of required work.

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

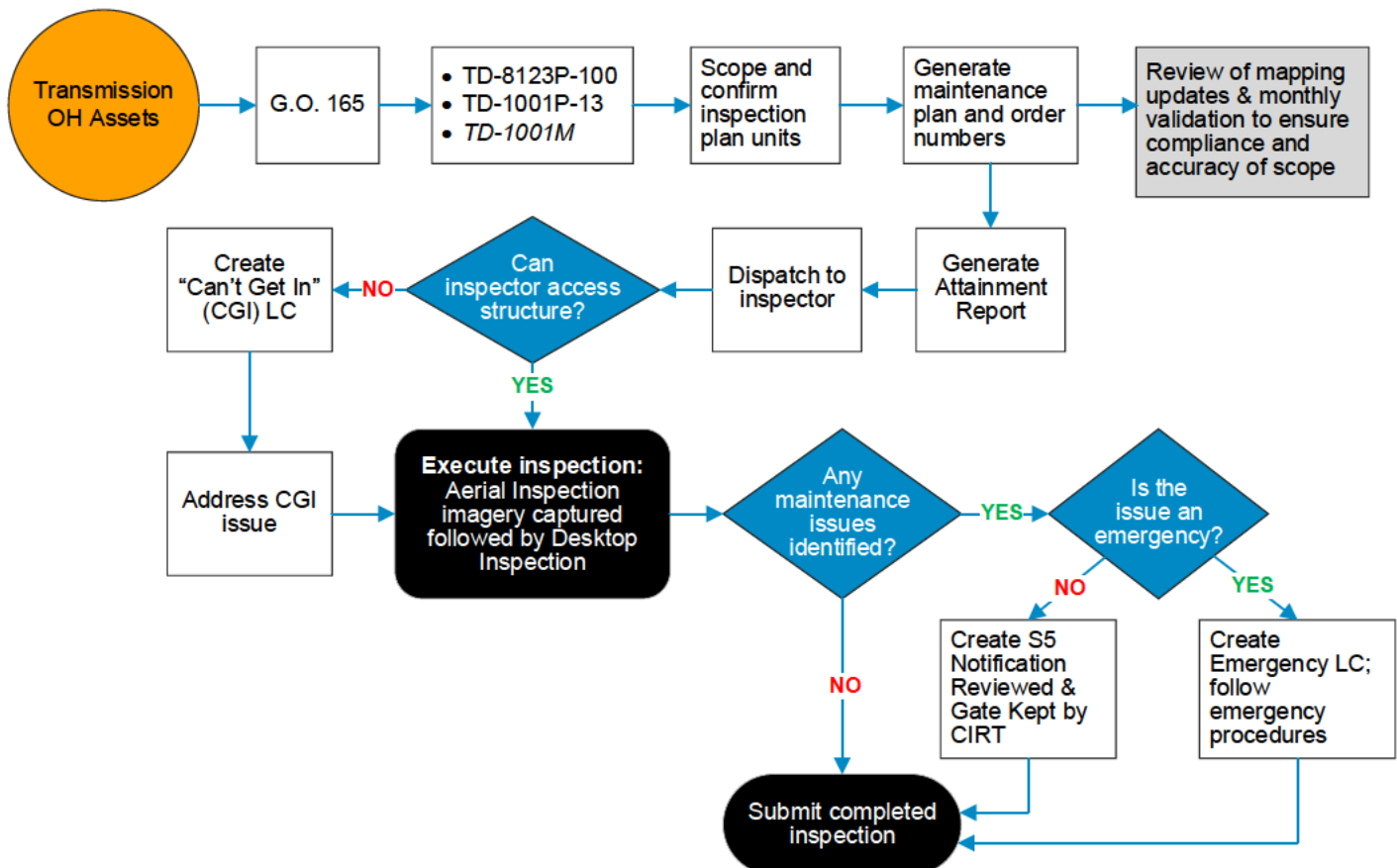
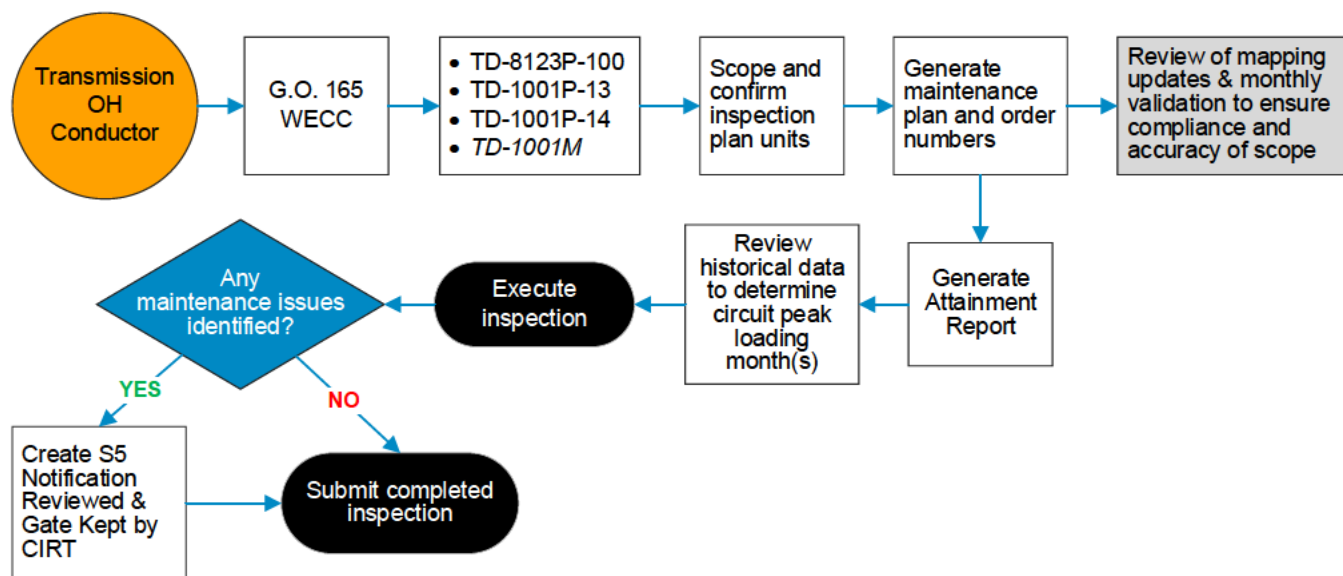


Figure 1-1. Transmission Overhead Asset Inspection Process

### 1.3 (continued)



**Figure 1-2. Transmission Overhead Conductor Inspection Process**

### 1.4. Inspections Best-View Positions

See [Table 1-1, "Inspection Best-View Position,"](#) for the best vantage points for inspections of specific items. Inspection methods may have obstructed viewpoints to components depending on structure type and topography.

**Table 1-1. Inspection Best-View-Position**

| Description  | Aerial Inspection | Ground Inspection | Climbing Inspection |
|--|-------------------|-------------------|---------------------|
| Cellular site  | X                 | O                 | X                   |
| Insulators and hardware  | X                 | O                 | X                   |
| Conductor and fittings   | O                 | O                 | O                   |
| Switches and associated elements                                       | X                 | O                 | X                   |
| Road access  |                   | X                 | X                   |
| Vegetation   | X                 | X                 | X                   |
| Overhead ground wire / fiber optic cable (OPGW, ADSS, non-ADSS lashed) | X                 | O                 | X                   |
| Foundations  | O                 | X                 | X                   |
| Anchors and guys   | O                 | X                 | X                   |
| Structures   | X                 | X                 | X                   |
| Electrical clearances  |                   | O                 | O                   |
| Arms/braces  | X                 | X                 | X                   |

X = Inspectable

O = May be obstructed by vantage point

## **1.5. Additional Information**

### **1.5.1. Definitions**

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

### **1.5.2. 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**

Transmission line Asset Strategy and SI personnel ensure that this document is provided to M&C, Work Management, CIRT, and other appropriate personnel.

## **GOVERNING DOCUMENT**

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

## **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](mailto: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<br>(LAN ID) |
|--------|-------------------------|------------------------|
| NA     | This is a new document. |                        |