

Electric Distribution Maintenance Requirements

SUMMARY

This utility standard outlines the requirements for safely patrolling, inspecting, assessing, maintaining, repairing, and replacing electric distribution equipment. In addition, it directs personnel to follow the detailed instructions and procedures in [TD-2305M, “Electric Distribution Preventive Maintenance \(EDPM\) Manual”](#) and other related standards and procedures.

This standard also describes maintenance practices that promote safe and reliable electrical service within PG&E’s service territory. These maintenance practices apply to all electric distribution facilities owned and/or maintained by PG&E or subject to regulation by the California Public Utilities Commission (CPUC) and, where applicable, the regulations of other agencies.

This standard supports [GOV-1038S, “Inspection and Corrective Maintenance Governance.”](#)

TARGET AUDIENCE

All electric distribution personnel involved in patrols, inspections and maintenance.

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REQUIREMENTS

1 Maintenance Requirements

1.1 Maintenance Plans

1. Develop a system-wide annual plan for infrared (IR) inspections based on area-specific submittals.
2. Develop a system-wide annual plan for wood pole testing and treating (Intrusive Testing).

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1.1 (continued)

3. Develop annual division-specific preventive maintenance plans. The plans must cover:
 - a. The next five years for overhead (OH) patrols and inspections.
 - b. The next three years for underground (UG) patrols and inspections.
 - c. Annual line equipment testing, as required, per [TD-2302P-05, "Electric Distribution Maintenance Requirements for Miscellaneous Overhead and Underground Equipment."](#)
 - d. Streetlight patrols
 - e. Annual preventive maintenance for Bay Area Rapid Transit (BART) cable assets, as applicable for each division.
 - f. Distribution assets located within a substation.

2 Documentation and Record Keeping

- 2.1 Records must be accurate, auditable, and recorded in a timely manner.
- 2.2 Patrols, inspection, and maintenance records must be made available upon 30 days' notice, pursuant to CPUC rules.
- 2.3 Record retention practices must comply with Corporate Standard [GOV-7101S, "Enterprise Records and Information Management Standard,"](#) and, at a minimum, meet the following criteria:
 1. Retain at least 10 years of Patrol and Detailed Inspection activities.
 2. Retain Intrusive Inspection activities for the life of the pole.
- 2.4 Patrols and Detailed Inspections
 1. Maintain auditable records to verify that patrols are performed, and that maintenance is identified in accordance with the requirements in [TD-2301S, "Patrols and Detailed / Intrusive Inspections of Electric Overhead and Underground Distribution Facilities."](#)
 2. Refer to [TD-2301S](#) and the [EDPM Manual](#) for more details on documentation and record keeping requirements.
- 2.5 Intrusive Inspections
 1. Maintain auditable records to verify that Intrusive Inspections are performed, and that maintenance is identified in accordance with the requirements in [TD-2301S](#).

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2. Documentation for Intrusive Inspections of distribution poles must include records that identify wood poles under 15 years and wood poles over 15 years which have not been subjected to an Intrusive Inspection.
3. Maintain records for intrusive inspection activities for the life of the pole.
4. Refer to [TD-2325P-01, "Inspecting, Reinforcing, and Reusing Wood Poles,"](#) for more details on documentation and record keeping requirements.

2.6 Line Equipment Testing

1. Refer to Section 3 of TD-2302P-05, "Electric Distribution Maintenance Requirements for Miscellaneous Overhead and Underground Equipment" for details on reporting and documentation requirements.

2.7 Submit an annual report, under penalty of perjury, to the CPUC by July 1, to report maintenance activity associated with CPUC G.O. 165 for the previous year.

1. The report must include the following four categorical types of inspections:
 - a. Patrols
 - b. Overhead, Detailed
 - c. Underground, Detailed
 - d. Wood Pole Intrusive

3 Patrol and Inspection Cycles

3.1 Detailed Inspections for OH facilities shall be conducted at a minimum of every 5 years.

3.2 Detailed Inspections for UG and pad-mounted facilities shall be conducted at a minimum of every 3 years.

3.3 Some areas or equipment may require additional testing or more frequent inspections and patrols based on asset age, asset health, geographic area, risk category, or other asset attributes.

3.4 Line Equipment Testing

1. Test the following line equipment annually:
 - a. Capacitor banks (pad-mounted and OH; fixed and switched)
 - b. Line reclosers (pad-mounted and OH; hydraulic, electronic and microprocessor)
 - c. Voltage regulators (pad-mounted and OH)

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- d. SCADA equipment
2. As part of the Line Equipment Testing, visually assess the following line equipment annually:
 - a. Capacitor banks (pad-mounted and OH; fixed and switched)
 - b. Fault indicators (OH and UG; manual-reset and automatic reset)
 - (1) Testing of fault indicators shall be performed on a 3-year cycle.
 - c. Line reclosers (pad-mounted and OH; hydraulic, electronic and microprocessor)
 - d. Sump pumps, manhole
3. Refer to TD-2302P-05, "Electric Distribution Maintenance Requirements for Miscellaneous Overhead and Underground Equipment" and TD-2302P-05 Attachment 1, "Equipment Sheets for Miscellaneous OH and UG Equipment" for details on performing annual Line Equipment Testing.
- 4 **Electric Distribution Preventive Maintenance (EDPM) Manual**

END of Requirements

DEFINITIONS

Auditable records: Documentation by paper or electronic records that verifies that a patrol, Detailed/Intrusive Inspection, and/or facility condition assessment and maintenance was performed. Typically, these records include timely, legible, completed, dated, and signed logs; records indicating the status of required work; and signed facilities maps with Detailed Inspections or patrols.

Detailed Inspection: A thorough examination of individual components, structures, and equipment through visual observation. This type of inspection includes an exterior visual examination of OH facilities, an interior examination of UG primary enclosures, and a visible examination of UG secondary/service substructures. The condition of each is rated and recorded.

Distribution facilities: Conductors, structures, and associated equipment that operate at voltages up to 50,000 volts (V).

Electric Control Center Operations (ECCO): The control center for the operation of the electric distribution and transmission system.

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Definitions (continued)

Electric Corrective (EC) Notification: A form or electronic record used as a checklist to identify and record a rating for specific abnormal maintenance condition(s) that impacts safety or service reliability. Separate forms are available for OH and UG conditions.

Equipment assessment: A determination by a qualified employee of an abnormal or hazardous condition that identifies the appropriate level of response, required maintenance, and a reasonable schedule to plan, design, and complete required work.

Line Equipment Testing: Visual assessment and/or diagnostic testing of electric distribution equipment to ensure that components continue to perform within accepted parameters (See Utility Procedure TD-2302P-05)

Identified maintenance condition: A condition affecting PG&E's electric distribution system that requires maintenance.

Infrared: A special type of diagnostic test using infrared thermography.

Inspection: A visual examination of applicable utility facilities (components, equipment, and structures) to examine facilities for abnormalities or circumstances that may adversely impact safety, service reliability, or asset life. This includes only the exterior examination of equipment, components, and visible underground secondary/services substructures.

Interval: A specified, maximum time period between Detailed/Intrusive Inspections or patrols of overhead (OH) and underground (UG) electric distribution facilities.

Intrusive Inspection: An inspection involving movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument readings.

Maintenance: Preventive or corrective actions taken to ensure the safety and reliability of electric distribution facilities. Maintenance includes capital and expense expenditures for tasks associated with the inspection, repair, refurbishment, and possible replacement of existing electric distribution facilities so that they continue to perform within acceptable parameters.

Overhead (OH) facilities: Electric distribution conductors, components, structures, and associated equipment constructed above ground level.

Patrol: A simple, visual examination of applicable utility facilities (including equipment and structures) to identify obvious structural problems and hazards. Patrols may be carried out in the course of other PG&E business, provided proper documentation is completed. An emergency patrol performed at night cannot be considered or substituted for a patrol of electric distribution facilities.

Preventive maintenance: Activities that ensure facilities and their associated components continue to perform within accepted parameters. These actions may include inspections, assessments, maintenance, repairs, and replacement activities that occur before a facility fails.

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Definitions (continued)

Rural: Those areas with a population of less than 1,000 persons per square mile, as determined by the United States Bureau of the Census.

Testing: A method or process used to conduct an examination or trial to obtain an indicator, along with recording data from the event.

Underground (UG) facilities: Electric distribution components, structures, and associated equipment constructed at or below ground level, including pad-mounted equipment.

Urban: Those areas with a population of more than 1,000 persons per square mile, as determined by the United States Bureau of the Census.

IMPLEMENTATION RESPONSIBILITIES

The director in charge of Electric Distribution Standards and Work Methods is responsible for approving, reviewing, and distributing this standard.

The director in charge of Distribution Engineering and Mapping is responsible for approving, reviewing, and distributing this standard. The director is also responsible for ensuring that area line organizations have sufficient funding at agreed to annual productivity and financial targets to achieve the requirements of this standard.

The director in charge of Electric Distribution Standards and Strategy is responsible for developing the maintenance requirements for electric distribution equipment and for approving changes to those requirements.

The director in charge of Electric Distribution Maintenance has the following responsibilities:

- Developing annual preventive maintenance plans that identify the division-specific requirements of this standard.
- Developing and overseeing a process that meets the requirements of this standard. The process includes developing performance measures and establishing schedules for reporting the progress of the system-wide annual plan.
- Implementing an effective quality assurance (QA) program to assess compliance with the requirements of this standard and supporting its continuous improvement.
- Developing and overseeing funding and forecasting, monitoring progress, and verifying compliance with and recommending changes to this standard.

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Implementation Responsibilities (continued)

The senior director in charge of Restoration has the following responsibilities:

- Ensuring line organizations have sufficient and properly allocated resources to achieve the requirements of this standard.
- Completing equipment tests at agreed to financial and productivity targets.

Distribution Line Technician supervisors are responsible for checking all test reports to verify accuracy and completeness.

Area and restoration directors are responsible for ensuring maintenance and construction (M&C) personnel follow the requirements of this standard.

M&C superintendents and restoration managers are responsible for ensuring that employees are aware of and accountable for consistent and uniform compliance with the requirements of this standard.

Directors, superintendents, and supervisors who direct electric distribution equipment testing and inspections are responsible for the safe, efficient, and timely performance of the work necessary to ensure compliance with this standard.

Directors and superintendents are responsible for accurately tracking and reporting work progress.

Supervisors are responsible for ensuring that employees who perform equipment testing and inspections are qualified to perform their assigned tasks. Supervisors are also responsible for periodically checking employees' work to verify accuracy, completeness, proper record keeping, and that auditable records are current, accurate, and readily accessible.

Employees assigned equipment testing and inspection tasks are responsible for performing their assignments effectively and efficiently. For their own safety and that of the general public, employees are responsible for performing only tasks for which they are qualified. When necessary, employees must notify their supervisors of any additional training, equipment, or resources they need to perform those tasks.

The director in charge of T-Line Maintenance is responsible for:

- Developing and managing annual preventive maintenance plans for BART cable assets.
- Ensuring that resources are available to complete required maintenance and that all test documentation is complete, accurate, and available for review for BART cable assets.
- Completing facility testing and preventive maintenance tasks, completing required test documentation, and work verification of BART cables.

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Implementation Responsibilities (continued)

The Troublemakers are responsible for performing Line Equipment Testing.

The Distribution Line Technicians are responsible for performing testing on the BART ATS switches.

Appropriate distribution personnel inspect and maintain distribution line equipment within the substation fence.

GOVERNING DOCUMENT

- [GOV-1038S, "Inspection and Corrective Maintenance Governance"](#)
- [TD-8123S, "Electric System \(T/S/D\) Patrol, Inspection, and Maintenance Program"](#)

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

This standard sets forth requirements to ensure compliance with the following California Public Utilities Commission (CPUC) General Orders (G.O.s):

- [G.O. 95, "Rules for Overhead Electric Line Construction"](#)
- [G.O. 128, "Rules for Construction of Underground Electric Supply and Communication Systems."](#)
- [G.O. 165, "Public Utilities Commission of the State of California Inspection Cycles for Electric Distribution Facilities"](#)

REFERENCE DOCUMENTS

Developmental References:

[TD-2301S, "Patrols and Detailed / Intrusive Inspections of Electric Overhead and Underground Distribution Facilities."](#)

[TD-2302S, "Electric Distribution Maintenance Requirements for Overhead and Underground Equipment"](#)

[TD-2305M, "Electric Distribution Preventive Maintenance Manual"](#)

[TD-2022P-01, "Infrared \(IR\) Inspection of Electric Distribution Facilities"](#)

[TD-2325S, "Inspecting, Testing, and Maintaining Wood Poles"](#)

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Reference Documents (continued)

Supplemental References:

NA

DOCUMENT APPROVER

██████████ Director, Standards and Work Methods

DOCUMENT OWNER

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REVISION NOTES

Where?	What Changed?
Entire document	This is a new document