

Detailed System Inspections Framework

SUMMARY

This utility standard describes the roles and responsibilities for each PG&E department that ensures, maintains, operates, and validates the Detailed Inspection Program. For the purposes of this program, inspections used to be known to as “enhanced” or “supplemental,” are now referred to as “detailed” inspections. The Detailed System Inspections Governance documentation describes the roles, responsibilities, processes, and documents used for executing detailed system inspections. Additionally, this standard establishes shared responsibilities.

All operational changes which may impact wildfire risk/consequence should be brought to the Wildfire Risk Governance Steering Committee (WRGSC).

TARGET AUDIENCE

- PG&E’s system inspections and asset strategy leadership
- New senior leadership members and current distribution, substation, transmission, power generation (PG), and asset registry leaders

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REQUIREMENTS

1 Background Information

- 1.1 PG&E places public and co-worker safety among its top priorities. To help ensure PG&E’s stand of “Everyone and everything is always safe,” detailed inspections aim to reduce the risk and consequence of wildfire events.
- 1.2 Through a combination of ground inspections, climbing inspections, aerial inspections, and infrared (IR) assessments, PG&E seeks to identify conditions which may play a part in safety hazards, asset failure, or creating an ignition point.

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- 1.3 Detailed inspections include evaluation steps specifically designed to focus on components of the electrical system that could fail or come in contact with surrounding structures and vegetation, causing an ignition point that could result in a catastrophic wildfire.
- 1.4 Detailed inspections are intended for PG&E maintained poles, structures, and stations within PG&E service territory, including High Fire Threat Districts (HFTDs) and High Fire Risk Areas (HFRAs).

2 Scope

2.1 Regulatory Requirements

1. PG&E and other investor-owned utilities are required to inspect and maintain their distribution, transmission, substation, power generation, and information technology (IT) assets, according to the following rules and regulations:
 - Wildfire Mitigation Plan (WMP) – annual filing, starting in 2019
 - [California Public Utilities Commission \(CPUC\) General Order \(G.O.\) 95, “Rules for Overhead Electric Line Construction”](#)
 - [CPUC G.O. 165, “Inspection Requirements for Electric Distribution and Transmission Facilities”](#)
 - [CPUC G.O. 174, “Rules for Electric Utility Substations”](#)
 - California Independent System Operator (CAISO) Filed Maintenance Practices (FMPs) for Power Generation Substation Assets
 - Federal Energy Regulatory Commission (FERC)
2. [Table 1](#) below explains the application of regulation by asset class.

Table 1. Application of Regulation by Asset Class

Regulation	Transmission	Distribution	Substation	Power Generation	IT
WMP	×	×	×	×	×
G.O. 165	×	×			
G.O. 95	×	×			×
G.O. 174			×		
CAISO (FMPs)	×			×	
FERC	×		×	×	

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2.2 [Table 2](#) below summarizes the Detailed Inspection Program criteria by asset class and specifies required frequencies and inspection types.

Table 2. Detailed Inspection Program by Asset Class

Asset Class	Criterion	Frequency of Inspection	Type of Inspection
Electric Transmission Structure	Base Cycles by HFTD	TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines"	Ground and aerial for all transmission voltages, and climbing; generally where 500 kilovolt (kV)
	HTFD/HFRA High Risk and/or High Consequence		
	Areas of Concern		
	Western Electricity Coordinating Council (WECC)/Diablo Canyon Power Plant (DCPP)/Morro Bay		
	By HFTD, electric transmission line (ETL)	TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines"	Infrared aerial patrol (from substation to substation)
Electric Distribution Pole	Tier 3 and Zone 1	Annually, by 7/31	Ground (visual checklist and photos)
	Tier 2 and non-HFTD HFRA	Every 3 years, by 7/31	Ground (visual checklist and photos)
Electric Substation	HFTD/HFRA	At least once every 3 years, by 7/31	Ground, aerial, and infrared *
	HTFD/HFRA High Risk and/or High Consequence	Annually, by 7/31	
	Remainder of Tier 3 + <100% Def Space + PSS recommendation to include	Annually, by 7/31	
Power Generation Substation Substations	HFTD/HFRA	At least once every 3 years, by 7/31	Ground, aerial, and infrared *
	HTFD/HFRA High Risk and/or High Consequence	Annually, by 7/31	
	Remainder of Tier 3 + <100% Def Space + PSS recommendation to include	Annually, by 7/31	
IT Equipment	Located on in-scope transmission assets	Aligned with transmission asset frequency	Aligned with transmission required inspection

* Detailed inspections are supplemental to routine inspections. Detailed inspections occur once year in addition to routine inspections. The goal of detailed inspections is to detect asset and component risks related to wildfire ignitions.

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3 Detailed Inspections Process Overview

3.1 Inspection Planning

1. Regulatory Requirements

- a. PG&E and other investor-owned utilities are required to inspect and maintain their distribution, transmission, substation, power generation, and information technology (IT) assets, according to the rules listed in [Table 2](#) on Page 3.

2. Reviewing Efficacy of Plan Methodology

- a. The Asset Family Owner at PG&E confirms that inspection programs align with the intent and requirements outlined in rules and regulations governing inspection and maintenance practices (see [Section 2.1](#) on Page 2) and effectively mitigate wildfire risk.
- b. The Asset Family Owner must evaluate and update methodologies used to determine the frequency and type of required inspection, as well as data collection protocol for each asset, based on the following sources and factors:
 - Technical basis documents
 - Failure mode effect analysis (FMEA)
 - Engineering specifications
 - Historical inspection quality and performance trends
 - Risk-informed models
 - Weather conditions
 - Geographical conditions
 - Feedback from external stakeholders
 - Other sources deemed to inform the evaluation of risks avoidable through the inspection and data gathering of each asset

3. Defining Plan Criterion and Providing Plan

- a. Asset strategy personnel use the following resources to develop and provide an enterprise-wide plan for inspections (including detailed inspections):
 - Risk-informed models
 - Technical basis documents

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3.1 (continued)

- Engineering specifications
 - Historical inspection and inspection quality trend
 - Previous years' Quality Control and Quality Assurance (QC/QA) findings
 - Feedback from external stakeholders
- b. Dependent on the asset class, the Asset Family Owner applies methodologies and oversight directly to an asset class or to system inspection personnel, resulting in the development of a "by asset" plan that can be used to schedule and conduct asset inspections.

3.2 Inspection Execution

1. Training

- a. Personnel accountable for performing inspections must possess qualifications and receive training relevant to inspection requirements and procedures.
- b. Inspectors must receive training relevant to the specific asset class they inspect and the type of inspection they perform, as well as general training on the inspection process.
- c. To be recognized as qualified personnel, inspectors must meet minimum requirements which may include, but are not limited to, understanding of the following subjects:
- Safety work practices
 - Qualified electrical work
 - Clearance for site access
 - Equipment training
 - Inspection documents
- d. A worker can be assigned inspection work orders only upon achieving the qualifications and completing the training.

2. Planning and Work Allocation

- a. Based on the inspection plan or the criteria that is used to generate a "by asset" plan provided by asset strategy personnel, system inspection personnel assign and schedule assigned orders to ensure completion by designated due dates.

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3.2 (continued)

- b. The System Inspection team ensures appropriate resourcing through the work resource scheduling of internal personnel, or through the development and implementation of requests for proposal (RFPs) for contracted personnel.
- c. Work orders are assigned to individual resources through the various tools used for inspections.

3. Execution

- a. Inspectors perform inspections described in technical basis documents in a safe, efficient, and timely manner.
- b. Inspectors capture all relevant information on checklists and review it for completeness of inspection.
- c. Before assigning work, ensure that personnel possess the appropriate qualifications for the inspection type, and understand procedures.
- d. Update tools, programs, and forms used to perform an inspection, as changes occur before or during an inspection period. Provide additional qualification and training to all inspectors, as needed.
- e. Inspectors must document any additional assets, missing assets, or changes to assets that materially impact the asset registry in accordance with map correction processes for electric distribution (see [Utility Procedure TD-9001P-01, "Map Correction Request for Work \(RW\) Notification Procedure"](#)) and electric transmission (see [Utility Procedure TD-3330P-30, "Electric Transmission Geographic Information System RW Notification Process"](#)).
- f. Inspect any newly identified assets added to the base inspection program by **July 31st** of the relevant year.
 - (1) IF assets are found near OR after July 31st,
THEN inspect them **within 90 days** of identification.

4. Quality Work Verification

- a. Inspection Review Specialists (IRS) and supervisors must conduct quality control checks and provide feedback to both employee and contracted inspectors.
 - (1) Target the feedback to practices that ensure safe, timely, and accurate completion of inspections.

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3.2 (continued)

- b. Following work verification or quality assurance audits, the System Inspection team incorporates feedback into qualifications and training, inspection tools, programs, forms, and direct communication to inspectors. This helps ensure quality improvements for subsequent inspections.
 - c. Some reviews and feedback may include areas that require re-inspection of assets that were not initially inspected correctly.
 5. Maintaining Records
 - a. Records uploaded to SAP should include checklists and digital photos.
 6. Monitoring Execution
 - a. The SAP Attainment Report is used to perform the following analytical tasks:
 - Monitor units being completed.
 - Forecast completion of unit inspections and track units being completed in comparison to the forecast.
 - Monitor the personnel performance by reviewing data specific to the inspection or the inspector, to identify errors in the inspection quality or inspection process.
 - Confirm that tools and equipment are working as defined.
 - Monitor training and qualification conformance.

3.3 Asset Ownership, Registry, and Tracking

1. Synchronization Between Systems
 - a. Use up-to-date asset registry information for inspection planning.
 - b. Review for changes to the asset registry that can affect inspection planning.
 - c. Develop inspection planning at the asset level.
 - d. SAP is the system of record for completed inspections.
2. Provision of Asset Registry
 - a. Asset Registry information housed in GIS and exported to SAP is used to create the overall inspection program plan. This information is also distributed to the various applications used by inspection teams.

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3.3 (continued)

- b. Ensure timely and accurate provision of the asset registry data.
 - (1) Asset registry data must include any feedback from key internal stakeholders, as it helps determine inspection schedules and ensure minimum risk objectives, regulatory compliance, and adherence to Company commitments.

3.4 Quality

- 1. Quality checks are integral to the inspection process, with three major layers:
 - a. Work Verification (WV): Review and verify the inspection and/or inspection documentation.
 - b. Quality Assurance: Validate the inspection and the end-to-end process for inspecting assets (internal audit teams typically perform this task).
 - c. External Regulator Oversight: External regulators validate and provide feedback to verify whether inspections are meeting regulatory requirements.
- 2. Work Verification
 - a. Conduct work verification or quality control through desktop review, field work verification, and data analysis to identify trends.
 - (1) Execute these activities on either sampled or entire populations of inspections and/or inspection documents.
 - b. Work verification teams are responsible for the following tasks:
 - Providing feedback to execution teams with specific criteria for improvements.
 - Collection and dissemination to third-party internal or external quality review.
- 3. CIRT Review and Notification Dissemination
 - a. Centralized Inspection Review Team (CIRT) validates 100% of the findings for each asset class. It corrects, or works with the inspection team to correct, issues which may differ from the photographic and/or other inspection evidence.
 - b. Upon completion of the review process, the findings are converted to Electric Corrective (EC)/Line Corrective (LC) notifications, which are predominantly assigned to electric maintenance and construction team for the necessary corrective work.

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3.4 (continued)

- c. For power generation notifications:
 - (1) Priority A-tags – the power generation maintenance teams receive notifications and perform the emergency work.
 - (2) All other tags – the power generation team conducts another round of reviews before converting the tags to H1 notifications and assigning them to power generation maintenance.
 - (3) CIRT provides feedback to the inspectors for clarification and process adjustments.
- d. IT does an additional review following the CIRT review, through their own process (the IT CIRT). This review aims to provide specific expertise that is not available within the electric CIRT review process. Following this final review, notifications are generated for work, either through electric M&C or IT M&C.

4. Quality Assurance (QA)

- a. External parties or the internal audit group conduct periodic quality assurance audits to validate the following aspects:
 - Inspection plan progress compared to the forecast
 - End-to-end process
 - Inspection performance
 - Completion of documentation
- b. Teams performing quality assurance checks validate the work verification and CIRT review findings. These findings are used for direct feedback to the inspection teams.
- c. Quality assurance teams provide feedback to all operation teams on all aspects of the program (training, reporting, execution, quality control, asset strategy, etc.)

5. Performance Verification and Validation

- a. External parties or the internal audit group conduct audits to validate the following:
 - Regulation compliance
 - Inspection of all assets in the inspection plan
 - Completion of WMP commitments by the appropriate deadlines

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3.4 (continued)

6. External Stakeholder Oversight
 - a. External stakeholders independently review the following aspects of the inspection plan:
 - End-to-end process
 - Performance of the inspections
 - Documentation of the process
 - b. The review helps verify that all aspects of the inspections comply with the regulations set forth by regulatory parties.

3.5 Tracking and Reporting

1. Operational Execution Reporting
 - a. Capture and report internal team performance measures and schedules to provide insight to operational execution management. This information is provided via scorecard at leadership's weekly meetings.
2. Management Reporting
 - a. Capture and report team performance measures and schedules to provide insight to senior and executive management. The information is used to track progress against operational and financial commitments made at the executive level.
3. External Program Reporting
 - a. PG&E tracks performance measures and commitments based on the established rules and regulations. It provides reports to the following regulatory agencies (not an exhaustive list):
 - California Public Utilities Commission
 - Federal monitor
 - Office of Energy Infrastructure Security
 - Operational observer
 - Wildfire OII

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4 Roles and Responsibilities

- 4.1 Appendices [A](#), [B](#), and [C](#) list roles and responsibilities associated with inspection planning, inspection execution, and asset strategy.

END of Requirements

DEFINITIONS

Detailed Inspections: Detailed inspections include additional risk evaluations targeting ignition risk of components, potential failure resulting in contact, or vegetation growth, and include a more frequent calendar, than routine inspections, for evaluation. Detailed inspections are intended for poles/structures/stations within High Fire Threat Districts and High Fire Risk Areas.

FBI – Technosylva’s Fire Behavior Index: A scale of 1–5 that captures fire severity as a function of flame length (intensity of burn) and rate of spread. FBI of 3 or greater is expected to require aggressive suppression.

IMPLEMENTATION RESPONSIBILITIES

Asset Strategy:

- Update this standard annually.
- Ensure that this standard and the associated annual inspection plan are approved by the Electric Risk and Compliance Committee (RCC) and Wildfire Risk Governance Committee and routed for approvals in Electronic Document Routing System (EDRS).

New senior leadership members and current distribution, substation, transmission, power generation, and asset registry leaders create clear line of sight to maintain and potentially enact improvement to the program.

GOVERNING DOCUMENT

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

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

[California Public Utilities Commission \(CPUC\) General Order \(G.O.\) 95, “Rule for Overhead Line Construction”](#)

[CPUC G.O. 165, “Inspection Requirements for Electric Distribution and Transmission Facilities”](#)

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COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT (continued)

Records and Information Management:

PG&E records are Company assets that must be managed with integrity to ensure authenticity and reliability. Each line of business (LOB) must manage records and information in accordance with the Enterprise Records and Information Management (ERIM) policy, standards, and Enterprise Records Retention Schedule (ERRS). Each LOB is also responsible for ensuring that records are complete, accurate, verifiable, and can be retrieved upon request. Refer to [GOV-7101S, "Enterprise Records and Information Management Standard,"](#) for further records management guidance or contact ERIM at Enterprise_RIM@pge.com.

REFERENCE DOCUMENTS

Developmental References:

- [TD-2305M, "Electric Distribution Preventative Maintenance Standards"](#)
 - [TD-2305M-B006, "Revised Electric Distribution Inspection Guidelines"](#)
 - [TD-2305M-JA02, "Electric Distribution Overhead Inspection Job Aid"](#)
 - [TD-2305S, "Electric Distribution Inspection and Maintenance Requirements"](#)
- [TD-8123M, "Distribution Failure Mode Effect Analysis \(FMEA\)"](#)
- [TD-8123S, "Electric System \(T/S/D\) Patrol, Inspection, and Maintenance Program"](#)

Supplemental References:

[CPUC G.O. 174, "Rules for Electric Utility Substations"](#)

Manuals:

- [TD-1001M, "Electric Transmission Preventive Maintenance \(ETPM\) Manual"](#)
- [TD-3322M, "Substation Maintenance and Construction \(SM&C\) Manual"](#)
 - [TD-3322B-066-JA11, "Substation Infrared Inspection Job Aid"](#)
 - [TD-3322M-F80, "Substation Infrared Inspection Form"](#)
 - [TD-3322M, "\(SM&C\) Manual" – "Infrared Inspections"](#)
- [TD-8123M, "Electric System Inspections and Preventative Maintenance Program"](#)

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REFERENCE DOCUMENTS (continued)

Utility Procedures:

- [TD-1001P-14, "Infrared \(IR\) Inspection Procedures"](#)
- [TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines"](#)
- [TD-9001P-01, "Map Correction Request for Work \(RW\) Notification Procedure"](#)

APPENDICES

[Appendix A, "Inspection Planning – Roles and Responsibilities"](#)

[Appendix B, "Inspection Execution – Roles and Responsibilities"](#)

[Appendix C, "Asset Registry – Roles and Responsibilities"](#)

ATTACHMENTS

NA

DOCUMENT REVISION

NA

DOCUMENT APPROVER

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REVISION NOTES

Where?	What Changed?
NA	This is a new standard.

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Appendix A, Inspection Planning – Roles and Responsibilities

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R = Responsible, A = Accountable, C = Consulted, I = Informed

Asset Family Owner	Responsibilities	Asset Strategy	Standards	System Inspections (SI)	IT	Power Generation	Reference Document
Transmission & Distribution	Ensure that internal requirements are in compliance with regulatory requirements.	R, A	C	C			CPUC G.O. 165.
	Transmission: Update CAISO Filed Maintenance Practices.	R, A	C	C			CAISO Filed Maintenance Practices
	Review engineering specifications to ensure appropriate levels of safety and reliability.	C	R, A	C			CPUC G.O. 95
	Review and update FMEA.	C	R, A	C			FMEA document TD-8123M
	Review efficacy of the inspection methods (visual, ground, aerial, IR, etc.)	R	R, A	C			TD-1001M, "ETPM Manual"
	Reviewing efficacy of overall plan.	R, A	C	C			TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines"
	Define inspection criteria.	R, A	C	C			TD-8123P-100, "Transmission Patrols and Enhanced Inspection Frequency Guidelines"
	Define changes in technical guidance, job aids, and training documents.	R	R, A	C			TD-1001M, "ETPM Manual"
	Develop risk-informed inspection plan and validate it against asset inventory.	R, A	C	C			TD-8123M, "Electric System Inspections and Preventative Maintenance Program" (High Level Framework) TD-8123P-102 Draft (Playbook)
	Plan budget for the annual inspection plan.	R, A		R		I	

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Appendix A, Inspection Planning – Roles and Responsibilities

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	Substation Work Methods	SI	IT	Power Generation	Reference Document
Substation	Understand, analyze, and ensure implementation of requirements in CPUC G.O. 174.	R, A	C		C			CPUC G.O. 174
	Review engineering specifications to ensure appropriate levels of safety and reliability.	C	R, A	C	C			TD-3322M, "Substation Maintenance and Construction (SM&C) Manual" TD-3328S, "Substation Supplemental Inspection Program"
	Review and analyze inspection result trends and adjust methodology accordingly.	R, A		R	I			
	Review and analyze failures.	R, A	I	C				
	Facilitate annual cross-department reviews to reassess FMEA, inspection methods, and strategy and work plans for the following year(s).	R, A	I	R	C			
	Analyze against Substation Composite Model.	R, A		C	R			
	Provide technical guidance, job aids, and training material content.	R, A	C	R	R			
	Develop risk-informed inspection plans.	R, A		C	I		C	

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Reference Document
Power Generation	Design, own, and maintain inspection requirements for transmission, distribution, and substation assets within appropriate guidance documents.	R, A		C		I	MOU Between Power Generation and the Electric Line of Business for Enhanced (Supplemental) System Inspections and Substation Equipment Ownership - Effective Date 5/28/2021
	Ensure that the design of inspections meet all regulatory requirements.	R, A		C		I	
	Ensure that inspection criteria and tag prioritization are consistently applied across all PG&E assets, including those owned by Power Generation.	R, A		C		I	
	Ensure that risk prioritization and risk model used to determine annual scope of inspections are consistent with regulatory and enterprise requirements.	R, A		I		C	
	Ensure that all contracted resources used for inspection activities are coordinated and managed.	I		R, A		I	
	Provide adequate funding to EO for inspection tasks, including inspections of substations, PG interconnection, and station service distribution and transmission towers/poles, when forecasts of costs are available sufficiently in advance for budgeting and payment.	I		I		R, A	
	Update any IT tools used for inspections with changes to inspections and procedure requirements.	R, A		C		I	
	Substations Only: Develop and maintain inspection checklists and training for unique power generation equipment.	C		I		R, A	
	Substations Only: Provide detailed budget estimate for the execution of all detailed inspection (air/drone, ground, and IR)	I		R, A		C	
	Substations Only: Provide detailed work plan including schedule, crews, and their scope to stakeholders to ensure field visits are coordinated and organized. For aerial inspections, provide the forecasted flight dates and the detailed desktop inspection dates.	I		R, A		C	

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Reference Document
Power Generation (continued)	For transmission and distribution assets: Provide charge back estimate on transmission and distribution inspections based on the percentage of assets that are owned by Power Generation.	I		R, A		C	
	Substations Only: Provide training material and training classes for PG inspectors to conduct substation inspections between system inspections (SIs)	R, A				C	
	Substations Only: Coordinate and schedule inspections with power generation personnel.			R, A		C	

Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Reference Document
IT	Ensure implementation of regulatory requirements.	R, A			C, I	C	IT Transmission Line Aerial MOU
	Review engineering specifications to ensure appropriate levels of safety and reliability.	R, A			C, I		
	Review efficacy of plan methodology.				C, I		
	Define inspection criteria.				C, I		
	Define changes in technical guidance, job aids, and training.						
	Develop risk-informed inspection plan.	R, A		R	C, I		
	Update applications and technical tools.			R	R, A		
	Identify assets in the IT asset registry that align with the transmission inspection cycle.				R, A		

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Appendix B, Inspection Execution – Roles and Responsibilities

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R = Responsible, A = Accountable, C = Consulted, I = Informed

Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	T/D M&C	Power Generation	Reference Document
Transmission & Distribution	Develop and refresh training material content annually, or as needed, to inspect all known asset types.	C	C	R, A				TD-2305M-JA02, "Electric Distribution Overhead Inspection Job Aid"
	Train the personnel who are accountable for complying with this standard.	C	C	R, A				
	Verify qualifications of inspectors.	C	C	R, A				
	Validate inspection plan from Asset Strategy.	C	C	R, A				
	Update maintenance plans.	C	C	R, A				
	Upload work plans to inspection applications.	C	C	R, A				
	Identify inspection resources.	C	C	R, A				
	Assign inspection plans to qualified resources.	C	C	R, A				
	Capture inspection data through photographs, IR, and inspection checklist information.	C	C	R, A				
	Provide quality work verification and support to contractors in the field and give direct feedback to personnel on inspection quality.	C	C	R, A				
	Implement improvements to inspection execution resulting from quality work verification and CIRT.	C	C	R, A				
	Supervisors approve ground, climbing, and aerial inspections.	C	C	R, A				
	Provide ground, climbing, and aerial inspection data to SAP and photographic images to AWS.	C	C	R, A	R, A			
	Provide IR patrol to SAP and photographic images to PG&E SharePoint.	C	C	R, A	R, A			
	Ensure that inspections are documented and traceable to the asset inspected.	C	C	R, A				
	Ensure that map corrections are submitted.							
	Ensure documentation that planned units are complete.	C	C	R, A				
	Update applications and technical tools.	C	C	A	R			
	Update unit cost and drive efficiency of inspection execution.	C	C	R, A				

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Asset Family Owner	Responsibilities	Asset Strategy	Substation Work Methods	SI	IT	T/D M&C	Power Generation	Reference Document
Substation	Develop and refresh training material content annually.	C	C	C				<ul style="list-style-type: none"> TD-3322M-F80, "Substation Infrared Inspection Form"
	Train the personnel who are accountable for complying with this standard.	C	R, A	C				<ul style="list-style-type: none"> TD-3322B-066-JA11, "Substation Infrared Inspection Job Aid"
	Ensure that personnel who perform the inspection activities described in this standard are qualified	C	R, A	C				
	Update asset maintenance plans based on findings from the previous years' results or investigation into the asset registry.	C	R, A	C				<ul style="list-style-type: none"> TD-3322M, "Substation Maintenance and Construction (SM&C) Manual" – "Infrared Inspections"
	Create and push work orders to the Pronto App (includes SAP data).	C	R, A	C				
	Ensure implementation of the requirements.	R		R, A				<ul style="list-style-type: none"> TD-1001P-14, "Infrared (IR) Inspection Procedures"
	Aerial and ground Inspection: Update the Pronto App with the provided criteria for inspections, new procedures, and/or new data that must be collected during the inspection process.	C	R, A	C				
	Update Inspect App and Pronto with changes to inspections and procedures.			R, A				
	Update TD-3322M-F80, "Substation Infrared Inspection," with changes to inspection procedures.			R, A				

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	T/D M&C	Power Generation	Reference Document
Power Generation (PG)	Ensure that personnel who perform the inspection activities described in the transmission, distribution, or substation inspection standards are qualified.	I		R, A			I	MOU Between Power Generation and the Electric Line of Business for Enhanced (Supplemental) System Inspections and Substation Equipment Ownership - Effective Date 5/28/2021
	Conduct all required inspection on transmission and distribution equipment and structures on all PG&E assets, including those owned by power generation.	I		R, A			I	
	Track and report completion of inspection work.	I		R, A			I	
	Substations Only: Follow PG-specific procedures and processes including, but not limited to, job safety/hazard analysis, contractor safety, and site safety.	I		R, A			C	
	Substations Only: When required, provide access and local escort to inspection teams on PGEN-owned assets.			C			R, A	
	Substations Only: Perform aerial, ground, and IR inspections of all electrical devices owned and maintained by PG inside the facility (both powerhouses and substations) consistent with Detailed Inspection procedures, including isophase or segregated bus duct, dry-type transformers, and transformer depressurization systems.	I		R, A			C	
	Substations Only: Review, analyze, track, and report out on inspection results, including the use of Facility Damage Action forms for non-conformance findings.	I		R, A			C	
	Substations Only: Mitigate deficiencies and perform work activities to close out notifications that are found during detailed inspections.	I		I			R, A	
	Transmission and Distribution: Mitigate deficiencies and perform work activities to close out notifications that are found during detailed inspections.			I		R, A	I	

Detailed System Inspections Framework

Appendix B, Inspection Execution – Roles and Responsibilities

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	T/D M&C	Power Generation
IT	Develop and maintain inspection checklists and training for unique IT equipment.				R, A		
	Train the personnel who are accountable for complying with this standard.			R, A			
	Ensure qualifications of inspection personnel.			R, A			
	Identify the overlay IT assets from the IT GIS system with electric transmission assets in the Electric Operations asset registry.			R, A	R		
	Assign inspection work.			R, A	R		
	Validate inspection plan from Asset Strategy.			R, A	R		
	Update maintenance plans.			R, A	R		
	Upload work plans to inspection applications.			R, A	R		
	Identify inspection resources.			R, A			
	Assign inspection plans to qualified resources.			R, A			
	Capture inspection data through photographs, IR, and inspection checklist information.			R, A			
	Provide quality work verification and support to contractors in the field and give direct feedback to personnel on inspection quality.			R, A	C		
	Inspect IT assets on distribution or communication only structures.			R, A	C		
	Where equipment or asset types are unrecognized, jointly assess the equipment and/or condition type before completion of the inspection.			R, A	C		
	Where conditions result in an A or B classification for the corrective action that is not easily verifiable, jointly assess the corrective action priority before completion of the inspection.			R, A	C		
	Supervisors approve ground, climbing, and aerial inspections.			R, A	C		
	Provide ground, climbing, and aerial inspection data to SAP and photographic images to AWS.			R, A	C		
	Provide IR patrol to SAP and photographic images to PG&E SharePoint.			R, A	C		
	Ensure that inspections are documented and traceable to the asset inspected.			R, A	C		
	Ensure documentation that planned units are complete.			R, A	C		
	Use Remedy Workorders to store the inspection checklist data for IT assets and SharePoint to store the inspection and repair photographs.			R, A	C		

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Appendix C, Asset Registry – Roles and Responsibilities

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R = Responsible, A = Accountable, C = Consulted, I = Informed

Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Asset Knowledge Management	Reference Document
Transmission & Distribution	Maintain an asset registry of overhead transmission and distribution assets.	C					R, A	TD-9001P-01, "Map Correction Request for Work (RW) Notification Procedure"
	Update GIS with completed as-built package information.	C					R, A	
	Update GIS following investigation and resolution of received map corrections.						R, A	
	Submit map corrections for removed/changed/added assets in the field which do not match the system of record, in accordance with T&D map corrections processes.			R			A	
	Provide feedback on data errors that require a correction.	A		R			R	
	Provide guidance on new use cases and/or data requirements.	A		R			I	
	Make adjustments or changes to accommodate new end-user use cases and data requirements.			R			A	
	When inconsistencies are identified, provide feedback to Asset Knowledge Management team.	R, A		R			I	
	Where there is a difference identified, ensure that all assets are accounted for in the inspection plan.	R, A		R			I	
	Ensure that GIS asset records and attributes maintain synchronization in alignment with the GIS-SAP interface rules.						R, A	
	Access asset registry data of overhead transmission assets to determine the appropriate schedule and type of inspection that must be completed.	R					A	

Detailed System Inspections Framework

Appendix C, Asset Registry – Roles and Responsibilities

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Asset Knowledge Management	Transmission Substation M&C	Reference Document
Substation	Transmission Asset Strategy is the Asset Family Owner for substations in HFTD and adjacent areas.	R, A	I	C					TD-9001P-01, "Map Correction Request for Work (RW) Notification Procedure"
	Maintain an asset registry of substation assets to determine the appropriate schedule and type of inspection that must be completed based on each asset's risk profile.	R, A		C				R, A	
	Validate and incorporate information received from system inspections and other personnel regarding corrections for removed/changed/added assets in the field which do not match the system of record.							R, A	
	When observed, system inspections and pole test treat provide corrections for removed/changed/added assets in the field which do not match the system of record.							R, A	
	Handle end-user requests regarding data corrections, different use case needs, and new data requirements.							R, A	
	Improve data based on end-user needs (i.e., data corrections, different use cases for the data, new data requests).							R, A	
	Provide asset registry data of substation assets to determine the appropriate schedule and type of inspection that must be completed.							R, A	

Detailed System Inspections Framework

Appendix C, Asset Registry – Roles and Responsibilities

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Asset Knowledge Management	Reference Document
Power Generation	Maintain an asset registry of Power Generation transmission line and distribution line assets.	C		C		C	R, A	
	Ensure that all structures associated with PG-owned transmission and distribution interconnections are entered and maintained in EO's SAP and GIS databases with a unique identifier and records, based on information provided by the Asset Family Owner.	R, A		I		C		TD-9001P-01, "Map Correction Request for Work (RW) Notification Procedure" MOU Between Power Generation and the Electric Line of Business for Enhanced (Supplemental) System Inspections and Substation Equipment Ownership - Effective Date 5/28/2021
	Send completion of inspections for transmission, distribution, and substation assets into a system of record (SAP, Foundry, etc.).	I		R, A		I		
	Substation Only: Maintain list of PG-owned facilities that are subject to Detailed inspection.	C		I		R, A		
	Substation Only: Maintain asset data hierarchy for substation assets in PG SAP, consistent with EO asset data hierarchy and data quality requirements.	I		I		R, A		
	Substation Only: Maintain PG asset registry in PG SAP.	I				R, A		
	Substation Only: Use SAP work management system to create appropriate notifications for recurring SI ("H3s") and corrective work ("H1s").	I		I		R, A		
	Substation Only: Provide SAP equipment IDs for all assets to be inspected to EO for the calendar year, by the end of the previous year.	I		C		R, A		

Detailed System Inspections Framework

Appendix C, Asset Registry – Roles and Responsibilities

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Asset Family Owner	Responsibilities	Asset Strategy	Standards	SI	IT	Power Generation	Asset Knowledge Management	Reference Document
IT	Maintain an asset registry of IT assets that can be linked to transmission assets to determine the appropriate schedule and type of inspection that must be completed based on each asset's risk profile related to detailed inspection regulatory requirements and Company commitments.				R, A		R	
	Validate and incorporate asset registry information received from electric asset registry, system inspections, and other personnel regarding corrections for removed/changed/added assets in the field which do not match the system of record.				R, A		R	
	When observed, system inspections personnel provide map corrections for removed/changed/added assets in the field which do not match the system of record.			R, A				
	Provide feedback on data errors that require corrections.	R, A		R				
	Provide guidance on new use cases and/or data requirements.	R, A		R				
	Make data corrections based on end-user feedback and make changes across entire data set to prevent recurrence.	R, A		R				
	Make adjustments or changes to accommodate new end-user use cases and data requirements.	R, A		R				
	When inconsistencies are identified, provide feedback to IT.	R, A		R				
	Where there is a difference identified, ensure that all assets are accounted for in the inspection plan.	R, A		R				
	Provide asset registry data of IT assets that can be linked to transmission assets to determine the appropriate schedule and type of inspection that must be completed.				R, A			