Company: San Diego Gas & Electric Company (U 902 M)
Proceeding: 2024 General Rate Case – Track 3
Application: A.22-05-016
Exhibit: SDG&E-T3-WMPMA-07-E

ERRATA SUPPLEMENTAL WORKPAPERS OF

JENNIFER KAMINSKY

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

(TRACK 3 - WILDFIRE)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

April 2026

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Workpaper	Drone Assessments
Category	Asset Management & Inspections
WMP Tracking ID	WMP.552 (Capital and O&M)

Description	**Drone Assessments**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
Capital Expenditures Labor	18	370	369	515	**1,272**
Capital Expenditures Non-Labor	255	15,775	12,520	31,752	**60,302**
Capital Direct Costs Subtotal	**274**	**16,145**	**12,890**	**32,266**	**61,574**
Capital Expenditures Indirect Costs	72	9,071	6,027	5,597	**20,767**
Capital Total	**345**	**25,216**	**18,917**	**37,863**	**82,341**
O&M Labor	216	915	543	1,259	**2,933**
O&M Non-Labor	13,341	45,049	32,627	43,496	**134,513**
O&M Direct Costs Subtotal	**13,557**	**45,964**	**33,170**	**44,755**	**137,446**
O&M Indirect Costs	211	1,907	879	1,862	**4,859**
O&M Total	**13,768**	**47,871**	**34,049**	**46,617**	**142,305**
Units					
# of Inspections	10,524	26,787	23,081	25,976	**86,368**
Unit Cost per Inspection (Direct $,0)	$1,281	$652	$678	$510	**$693**
# Capital Repairs	8	329	339	448	**1,124**
Unit Cost per Capital Repair Job (Direct $,0)	$34,204	$39,398	$25,221	$57,119	**$42,149**
# O&M Repairs	65	4,173	2,667	3,979	**10,884**
Unit Cost per O&M Repair Job (Direct $,0)	$1,185	$6,651	$3,961	$7,710	**$6,346**
WMP Target Direct Capital ($)	N/A	3,600	13,595	26,402	**43,597**
WMP Target Direct O&M ($)	N/A	50,500	35,358	52,000	**137,858**
WMP Target (Units)	N/A	33,000	22,000	22,000	**77,000**
FTE*	1.9	10.2	7.0	13.1	**32.2**
Imputed Authorized Capital Direct $	-	-	-	-	**-**
Imputed Authorized O&M Direct $	-	-	-	-	**-**

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
Inspections					
O&M	**13,479**	**17,452**	**15,658**	**13,242**	**59,831**
Labor	166	301	354	441	**1,262**
Non-Labor	13,313	17,151	15,304	12,801	**58,569**
Repairs					
Capital	**274**	**12,962**	**8,550**	**25,589**	**47,375**
Labor	18	365	309	469	**1,161**
Non-Labor	255	12,597	8,241	25,121	**46,214**
O&M	**77**	**27,756**	**10,564**	**30,677**	**69,074**
Labor	50	614	189	818	**1,671**
Non-Labor	27	27,142	10,375	29,859	**67,403**
Technology (AI, Data & Software)					
Capital	**-**	**3,183**	**4,340**	**6,677**	**14,199**
Labor	-	5	60	46	**111**
Non-Labor	-	3,178	4,279	6,631	**14,088**
O&M	**-**	**756**	**6,949**	**837**	**8,542**
Labor	-	-	-	-	**-**
Non-Labor	-	756	6,949	837	**8,542**
Total	**13,830**	**62,109**	**46,061**	**77,022**	**199,021**

Business Purpose:

From 2019-2022, SDG&E's Drone Investigation Assessment and Repair (DIAR) program consisted of the following: (1) Collecting imagery of overhead distribution electric facilities in the Tier 2 and Tier 3 HFTD (2) having Qualified Electric Workers (QEW) perform inspections of overhead distribution facilities using both imagery and field observations (3) Repairing any issues observed during inspections (4) Utilizing the images collected and damages identified by the QEWs to develop Intelligent Image Processing (IIP) capabilities in the form of machine learning (ML) models that could perform automated asset identification and damage detection and (5) Operationalizing those damage detection models to perform QA/QC of drone inspections performed. This Program includes O&M costs to perform image capture and inspections, develop the technology and software needed to perform and manage the work and data, and costs to perform the O&M repairs associated with infractions found during these inspections. The Program also includes capital costs to develop the technology and software needed to perform and manage the work, develop the ML models, and perform the capital repair work associated with infractions found during these inspections.

Project Justification:

Compared to traditional inspection programs, the use of drone technology offered the potential to obtain high-resolution, close-range, and top-down imagery that traditional ground or patrol inspections cannot consistently achieve. This is especially relevant for certain types of overhead electric components such as insulators and arresters, crossarm and pole-top damage, exposed or loose connections, improper splices and armor rod issues, and damaged conductors and hardware. Additionally, drone inspections also allow safer inspection of infrastructure in locations where traditional inspections are constrained by steep or rugged terrain, dense vegetation and remote or limited-access. Use of drone photography has also allowed for development of IIP capabilities and ML to identify and detect damaged equipment to support improved quality and efficiency.

Project Scope:

Drone inspections in the Tier 3 HFTD began in 2019. Within the first few months of flights, 24 emergency issues were identified and the infraction rate was at 30% and the program was expanded to the entire Tier 3 HFTD. At the same time SDG&E was beginning its drone program in 2019, SG&E's digital innovation team had completed an initial pilot project which determined that advancements in image recognition capabilities would enable machine learning models to identify assets and detect damages on overhead electric facilities.

From 2019-2020, the Program scope included image collection, identification of potential fire/safety hazards and repair of issues identified through inspections for SDG&E's overhead distribution poles located within Tier 3 of the HFTD, or approximately 39,000 poles. Approximately 2,000 poles were removed from the scope of inspections since they were recently replaced through other programs and were deemed not to have equivalent risk. The images collected by the drone pilots were reviewed by Qualified Electrical Workers via desktop to identify potential fire and safety hazards, which then initiated work orders to remediate the hazards identified. All work necessary to manage, engineer and construct the repairs identified was included in the scope of the program. Finally, images collected and the labeling of damages by the inspectors was used to develop machine learning models to create 30+ asset identification and damage detection models.

From 2021-2022, the inspection methodology was modified and Qualified Electrical Workers worked as a team with the drone pilots to perform image collection and identification of potential fire/safety hazards of approximately 50,000 overhead electric distribution poles in the Tier 2 HFTD and coastal canyons within the higher risk wildland urban interface (WUI) areas. Again, some poles were descoped from inspections due to age or overlap with other projects. With Qualified Electrical Workers in the field with the drone pilots, the inspections included both traditional ground observations along with the use of images taken by the pilot to identify potential hazards. Again, all of the work necessary to manage, engineer and construct the repair of issues identified in both Tier 2, Tier 3 and coastal canyons was ongoing during this timeframe and included in the scope of the Program. Finally, SDG&E operationalized the 30+ machine learning models developed from 2019-2020 to perform quality checks on the images to identify any potential damages missed by the inspector and continued to develop and refine an additional 30+ models. By the end of 2022, SDG&E had developed 60+ asset identification and damage detection models that were being used to QA/QC the drone inspections performed by Qualified Inspectors.

Cost Drivers:

Inspections Cost drivers in 2019 for inspections included significant program set-up costs related to development of a shot sheet, drone vendor training and ramp-up, development of a safety and security protocol for flights, scoping and flight planning, customer notification and outreach plan and implementation, and obtaining various permits and permissions from local agencies and governments. In 2019, pilots had less experience flying around high voltage electric facilities, meaning they averaged ~7 poles/day with a cost of ~$1000 per pole. The lower flight numbers were also tied to the drone technology available at the time. Accordingly, as noted, the per pole inspection costs were higher because it included a significant amount of start up costs. In 2020, the teams were averaging approximately 12 poles/day and we were able to negotiate a fixed rate with the drone vendors of $385/pole. In addition to the image capture costs, were costs for the inspectors that were subject to union labor rates and were averaging 20-25 poles a day for inspection. In 2021, following several bid events for vendors to provide drone services and a change in inspection methodology, we saw inspection costs increase slightly with the ramp-up of new vendors and then decrease in 2022, as pilot and inspector teams increased production and process improvements were implemented. Overall, inspection costs from 2019-2022 were driven by the external contractor costs related to drone pilots, visual observers, inspectors (Qualified Electrical Workers), field safety and security personnel, and flight support services (e.g. access protocol, environmental and land).

Repairs Repair costs that resulted from the program included internal and external costs related to engineering, project management and controls, environmental, land, permitting, access protocol, materials, vehicles, equipment, tools and labor needed to perform the construction work and finally, quality control and quality assurance to ensure that the repairs were done in compliance with General Order (GO) 95 and SDG&E standards. Depending on the nature of the resulting repair, the costs are either charged to O&M or capital. In general, capital repairs are significant life extension projects such as transformer or pole replacements, while O&M repairs involve minor units like insulators, arrestors, guys, connections and hardware. While capital projects tend to be more complex and therefore more expensive, the timing is also different from O&M repairs, where capital projects have significant upfront engineering and planning costs (e.g. securing permits or performing environmental surveys) that are incurred prior to the completion of the construction work. This is evident in looking at the average capital repair cost in 2022 where costs were incurred related to repair jobs that were not completed until 2023 and are included in the now combined Track 3 request. Accordingly, while the number of repairs is tied to the number of inspection findings identified in prior years, there is a delay between the inspection finding and the repair being completed, as well as the costs associated with completion of the repair.

ML & Data Costs drivers related to (1) the development of 60+ machine learning models trained in asset identification and damage detection (2) development of a centralized image repository that displays all imagery collected through the drone inspections, shows the results of the ML models and allows qualified inspectors to provide model performance feedback (3) development and configuration of third party software to perform flight planning, image upload and inspections and (4) development of a work management system to track and manage the issues identified, track the status of work orders through engineering, design, and permitting (includes environmental and land), construction and closure. Cost drivers were a combination of labor and nonlabor costs. Labor costs were driven by internal employees managing the development and implementation of these efforts, including providing subject matter expertise on how to identify assets, damages and provide feedback on ML model performance. Non-labor costs were associated with the vendor labor to develop these systems/models, cloud storage and cloud processing costs (i.e. AWS data storage and processing), software licensing and purchases and software enhancements.

Project Timing and Phases:

August 2019: Established program scope and benchmarked with PG&E and SCE on their drone inspection programs for transmission structures (PG&E began its drone program in 2015 on transmission inspections and SCE began its drone inspections of transmission structures in 2019.)
September-October 2019: Contracting and procurement process, pilot vetting and flight logistics, establish program execution plan involving SDG&E Stakeholder Input, Imagery Collection and Inspection Manual, Established safety security and training protocols, create communication and reporting standards, public outreach, develop data management and imagery review platform, establish imagery review process, create repair process and workflow. Perform test flights to formalize shot sheets and safety procedures during flight operations.
November 2019: Mobilize resources including pilots and visual observers, safety observers, security personnel, outreach staff, Qualified Inspectors, engineering and design, IT and system support, and environmental and land resources. Begin flight operations to collect imagery of distribution structures in the HFTD.
December 2019: 60 pilot teams deployed to collect imagery, over 20 inspectors performing inspections of imagery, completing emergency repairs, begin engineering/design for issues identified.
January 2020-December 2020: Completion of Tier 3 inspections and continue repair execution. Refined design and repair workflow, and identify efficiencies. Develop machine learning models and centralized image repository and user interface to visualize and provide feedback on model performance.
January 2021-May 2021: Continue performing repairs to Tier 3 poles with issues identified from 2019-2020. Complete RFP bid process to secure new Project Management support, Drone and Inspection vendor, and Aviation Safety Support. Continue refining machine learning models and prepare to operationalize the use of the damage detection models during inspections in Tier 2.
June 2021- December 2022: Complete flights and inspections for overhead distribution electric poles in Tier 2 HFTD and wildland urban interface areas (i.e. coastal canyons). Use machine learning models to support QA/QC of inspections and continued to develop and refine models, this included further development of a central repository for imagery that can be utilized by the entire organization to view inspection images and where the machine learning model results could be visualized and feedback from inspectors could be inputted. Continue performing repairs for the approximately 23,000 issues identified during inspections from 2019-2022 in both Tier 2 and Tier 3.

Approval Process/Procurement Process:

This program was approved in accordance with SDG&E's Approval and Commitment Policy.

In 2019, SDG&E utilized an existing master service agreement (MSA) for Program Management services that had negotiated rates and the requisite insurance requirements (including aviation liability insurance) to start the drone program. The drone vendors, engineering and other inspections and repair support contractors were subcontractors to the prime under this existing MSA. Existing agreements with SDG&E's Aviation Services group were also utilized to support drone pilot teams and ensure that drone inspections were performed safely and in compliance with all Federal Aviation Administration requirements. Multiple vendors were also engaged to identify a platform that would support flight planning, image capture/upload, and inspections. The procurement strategy allowed SDG&E to established workflows and processes and develop a project execution plan that was then used to develop Scopes of Work for the next phase of inspections in Tier 2 starting in 2021.

In 2021, SDG&E utilized a new Project Management Organization (PMO) that was a selected through a competitively bid request for proposal effort. The PMO provided support related to, overall program management, flight planning and management, public outreach, environmental and permitting, technology and data management, project controls and reporting, issue repair tracking, management and support, engineering and construction coordination, close-out.

SDG&E also competitively bid the image capture and inspection work and field aviation safety/security support in 2021.

Construction services performed by external contractors throughout this timeframe was subject to competitively bid MSAs with SDG&E's Construction Management department. Material procurement used for repairs also goes through the Supply Management department and is competitively bid on a regular basis, as well as undergoing a robust quality assurance inspection process.

Finally, SDG&E used an MSA that was competitively bid in 2017 to perform the work related to IIP and developing the ML models and the centralized image repository.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Drone Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how drone-based inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for drone activities. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to ignition drivers, terrain complexity, vegetation density, asset criticality, and time-based inspection cycles. This ensures that drone deployments are aligned with both environmental hazards, system needs, and operational constraints. Mitigation strategies include pre-flight planning, operator qualification and training, automated flight-safety checks, and integration of drone imagery into advanced analytics platforms. These analytics tools detect abnormalities earlier and with greater precision than traditional ground-based inspections, enabling SDG&E to identify assets that require repair or replacement before they pose a safety, reliability, or wildfire risk.

The following table summarizes key program metrics to demonstrate how drone-enabled inspections contribute to measurable wildfire-risk reduction. Note that for methodological consistency and accuracy, units located outside the HFTD—but in close proximity to HFTD boundaries or within the WUI—were excluded from RSE calculations in this filing. For these locations, cross-boundary exposure and contextual factors can introduce modeling complexities that are not fully accommodated by the current RSE workbooks, making risk-reduction estimates less reliable. Accordingly, the table below reports RSE results only for units located within Tier 2 and Tier 3 HFTD areas, where the existing methodology most accurately reflects risk and benefits.

HFTD	Inspections 2019	Ignitions Avoided 2019	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	10,524	0.68	26,787	1.70	0	0.00	0	0.00	1,118	14.30
Tier 2	-	0.00	-	0.00	23,081	1.19	22,604	2.96	863	6.81
Non - HFTD / WUI	-	--	-	--	-	--	3,372	--	--	--

Consideration of Alternative Solutions:

1. Do not perform drone inspections - Ability to identify issues that are not visible from the ground would not be possible or would require additional costs, impacts to resources and/or greater environmental impacts. These unidentified issues could result in ignition, safety or reliability events. In addition, high resolution imagery would not be available, reducing situational awareness during PSPS events and extreme weather events.

2. Perform top-down inspections via climbing, helicopters, fixed wing planes, or bucket trucks - While helicopters and fixed wing planes can capture a large number of assets quickly, the resolution of the imagery collected is not as detailed as what can be obtained from drones. Helicopters or fixed wing planes can only capture a top down shot and not the equipment level images that can be obtained from drones. Also, even if helicopters or fixed wing planes operate at lower altitudes, vegetation encroachment, houses and other objects present obstacles that prevent high quality image capture of distribution facilities. In addition, helicopters create additional noise impacts for nearby communities. The use of bucket trucks or climbing present increase safety risks to workers and require physical access to each individual pole. Most of SDG&E's distribution poles are not located along maintained roads and would require additional vegetation clearing. Overall, these alternatives are resource-intensive, time-consuming, and operationally impractical. This conclusion is support by PG&E's public filings: See https://efiling.energysafety.ca.gov/EFiling/GetPublicDocument.aspx?documentId=53644 and https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/021325-2023-2025-wmp-r8.pdf.

3. Combining drone inspections with existing Detailed Inspections programs - adding the use of drones to Detailed inspections would have delayed complete drone coverage of SDG&E's HFTD areas to a five year period instead of completing all HFTD inspections in approximately 3 years. Also, adding drone image capture to Detailed inspections would slow down inspections and increase costs since it would require pilots to be paired with inspectors since the inspectors performing that work are not qualified drone pilots. Finally, because Detailed Inspections are performed by in-house crews, significant changes to the scheduling and dispatch of inspectors performing those inspections would be required, potentially also requiring union labor negotiations.

Coordination with Similar Programs

For Tier 3 inspections performed from 2019-2020, approximately 1,785 poles that were previously replaced in 2019 or that were planned for replacement in 2019 and 2020 were descoped from the new drone inspections program.

For Tier 2 inspections performed from 2021-2022, poles that met the following criteria were removed from scope of inspections: poles replaced or constructed as part of the Cleveland National Forest project, poles constructed or replaced within the last 24 months or that underwent QA/QC post-construction review within the last 24 months and poles scheduled to be constructed or replaced in the next 6 months. In addition, any repair overlap with other programs was coordinated to reduce redundancy of construction work. For example, 96 poles identified for repair were descoped due to overlap with SDG&E's strategic undergrounding program.

Because drone inspections from 2019-2022 were focused on only identifying potential fire and safety conditions, they could not replace Detailed Inspections of Distribution Equipment that require identification of other types of compliance issues such as high voltage signs. Those conditions were not included in the scope of drone inspections.

Stakeholder Impact and Engagement:

Drone inspections could not be performed unilaterally on non-SDG&E land. When facilities were located within federal, Tribal, state, or local agency jurisdictions, SDG&E was required to complete pre-authorization, operational coordination, environmental compliance, and on-site oversight before any flights could occur. This coordination was mandatory, jurisdiction-specific, and often resource-intensive, directly affecting scheduling, labor needs, and program cost.

Department of Defense: Drone operations required submission of a formal unmanned aircraft use application through local base commanders, regional base commanders, and the Department of the Navy in Washington, D.C.. Approval by the Navy Board was also required prior to flight authorization and daily coordination with base operations, range operations to clear restricted airspace and there was a mandatory military approved escort required to accompany drone crews during inspections. Finally, photos required review by the local base commander before they could be uploaded for inspection.
Tribal Lands: Tribal lands required sovereign-to-sovereign respect and direct coordination with each Tribe including advance notification (typically 10–17 days depending on Tribe) and submission of maps identifying SDG&E facilities, inspection schedules, public outreach materials for distribution to Tribal members, positive confirmation of approval before entering the Reservation, daily check-in with Tribal offices or Tribal Law Enforcement, mandatory Tribal monitors or escorts accompanying inspection crews and coordination of other SDG&E activities (inspection, vegetation, construction) to minimize repeat access.
California State Parks: Drone inspections within California State Parks and state-managed lands required agency-specific permissions and operational controls. Coordination steps included: Obtaining a Drone Use Permit where required, providing facility location maps, flight schedules, Naming County or State Parks as additional insured, providing 72-hour advance notice to park rangers and coordinating on-site presence or agency monitors, when requested.
California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS): Drone inspections on land owned by these agencies required Formal notification, Facility mapping, Demonstration flights, Compliance with environmental and wildlife constraints, and Agency-approved monitors when necessary.
Federal Land Agencies (USFS and BLM): BLM granted access within SDG&E rights-of-way with no notification required, once standing permission was in place. U.S. Forest Service / Cleveland National Forest required annual notification of flights, ongoing coordination through standing meetings, compliance with eagle buffer zones and other environmental restrictions.
Local jurisdictions: County Parks required drone Use Permits, Proof of insurance listing the County as additionally insured, Facility maps and inspection schedules and 72-hour notice to park rangers. City Parks required 24-hour advance notice prior to inspections.

Finally, because drone inspections were new to the public and drone pilots experienced negative customer interactions early in the program, such as shooting down drones, SDG&E implemented multiple layers of proactive public engagement, security resources, and customer notification. Field resources were deployed to provide security support for areas with known safety concerns. Postcard mailers were sent in advance of flights to customers in areas scheduled for inspections that explained the program, described what customers could expect during drone flights, provided links for additional information and included a Public Affairs Hotline phone number for questions or concerns. SDG&E also used its internal customer notification systems to issue pre-recorded voice calls to all customers potentially impacted by scheduled drone flights. Notifications were typically issued within the week prior to the scheduled flight. Customers identified as sensitive or red-flag (e.g., livestock owners, privacy concerns, prior complaints) received direct outreach through phone calls, emails and text messages. Outreach was typically performed no more than one week and no less than 24 hours prior to the scheduled drone flight. All correspondence was tracked and documented. Inspection teams also conducted in-person outreach through door-hangers or outreach materials left at residences. Fact sheets were made available in multiple languages and were also made available online at https://www.sdge.com/diar-fact-sheet. A dedicated Public Affairs Hotline was maintained throughout the program and information videos were made available to the public found here: https://youtu.be/fzmI6iXIlE4 and https://youtu.be/_ep5oaRAO-o and https://youtu.be/9EQjUj68Vs8. Notifications were not limited to the inspection phase. Additional outreach (postcards and direct contact) continued during design, construction and repair activities resulting from drone inspection findings.

Metrics:

Images collected from 2019-2022 > 2.3M, 94 machine learning capabilities developed. Investment in IIP enabled automated damage detection with upwards of ~85% accuracy, supporting QA/QC and prioritization of issues found in 2022 inspections.

Year	Drone Inspection Fire/Safety Hazard Find Rate	Traditional CMP Detailed Distribution Inspection Fire/Safety Hazard Find Rate
2019	11%	3%
2020	30%	3%
2021	38%	3%
2022	35%	3%
2023	28%	3%

Issue Severity	Tier 2 & WUI	Tier 3	Total
Level 1 - Emergency	226	113	339
Level 2 - Moderate Severity	16049	9056	25,105

Program	Avg Annual poles Inspected (2019-22)	Avg Poles with Fire Infractions (2019-22)	Avg Fire Hazard Find Rate
Corrective Maintenance Program - Overhead Detailed Inspections	18,675	522	2.8%
Drone	21,540	4,834	21%

Other Program Benefits

Collecting photos helps minimize the number of visits to a pole by different teams – construction, design, engineering, environmental, survey and land services.

The use of IIP and creation of ML models can be used in the future to reduce the need for follow-up field visits by Qualified Inspectors or other personnel to every facility and only review images/field poles with potential issues or confirm asset data. In addition, the ML models have been used to reduce costs related to other initiatives. For example, IIP was used to support engineering's porcelain arrestor replacement initiative, by using imagery collected from drones to identify the location of porcelain arrestors in the HFTD. This saved ~$500,000 in fielding costs.

Development of a robust drone program enhanced SDG&E's use and technical capabilities related to Unmanned Aircraft Systems laying the foundation for the Company to obtain a Beyond Visual Line of Sight authorization, perform stringing operations, reduce outages through use of drones during inspections and in combination with the early fault detection program, support emergency events both informing SDG&E of impacts to its facilities, but providing emergency responders with greater situational awareness during and after the event.

Utility Benchmarking:

Prior to starting its drone operations in 2019, SDG&E met with PG&E and SCE personnel to discuss their transmission drone programs. Both utilities shared copies of their "shot sheets" and discussed program structure. Additional benchmarking sessions occurred, both in person, in the field and virtually to discuss aerial vs. ground inspection approaches, field processes (planning/scheduling, data collection, QC gatekeeping), safety and QA/QC practices, roles/qualifications, and how unit costs are defined and reported in WMP/GRC contexts. SDG&E also benchmarked inspection strategy elements such as inspection horizons, inspection/patrol frequency in HFTD/HFRA, aerial methods (drone-only vs. drone+inspector vs. helicopter blends), and whether aerial inspections count toward GO-165 compliance. These comparisons were used to identify opportunities to streamline staffing, scale outreach, refine scope, and align reporting.

Pictures:

See Testimony SDG&E-T3-WMPMA-06.

WMP Track 2 Asset Management & Inspections

O&M Inspection Costs[1]	Direct Dollars ($ Thousands)					Inspections					Cost Per Unit				
	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022
Drone Assessments of Dist. Infrastructure	13,479	17,452	15,658	13,242	**59,831**	10,524	26,787	23,081	25,976	**86,368**	$1,281	$652	$678	$510	**$693**
Detailed Inspections of Dist. Equip.	0	179	362	344	**885**	N/A	17,977	22,354	17,935	**58,266**	N/A	$10	$16	$19	**$15**
Transmission Inspections of Dist. Underbuild*	N/A	N/A	N/A	N/A	**N/A**	N/A	N/A	N/A	N/A	**N/A**	N/A	N/A	N/A	N/A	**N/A**
HFTD Tier 3 Inspections	568	401	352	409	**1,729**	15,176	11,864	11,535	12,263	**50,838**	$37	$34	$30	$33	**$34**
Intrusive Pole Inspections	1,256	886	806	39	**2,987**	19,729	14,450	8,721	967	**43,867**	$64	$61	$92	$41	**$68**
IR Inspections of Dist. Infrastructure	98	175	146	159	**577**	0	13,077	17,068	12,264	**42,409**	N/A	$13	$9	$13	**$14**
Patrol Inspections of Dist. Equip.	0	295	287	287	**868**	N/A	86,075	86,490	86,821	**259,386**	N/A	$3	$3	$3	**$3**
Total	15,401	19,388	17,610	14,480	**66,878**	45,429	170,230	169,249	156,226	**541,134**					

*Inspection costs are FERC Only

Capital Repair Costs[2]	Direct Dollars ($ Thousands)					# of Pole Replacements					Cost per Job				
	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022
Drone Assessments of Dist. Infrastructure	274	12,962	8,550	25,589	**47,375**	8	329	339	448	**1,124**	$34,204	$39,398	$25,221	$57,119	**$42,149**
All Other Repairs Related to Inspections	12,727	12,431	16,835	15,621	**57,614**	755	681	730	631	**2,797**	$16,857	$18,254	$23,061	$24,757	**$20,599**
Total	13,001	25,393	25,385	41,211	**104,990**	763	1,010	1,069	1,079	**3,921**					

O&M Repair Costs[3]	Direct Dollars ($ Thousands)					# of Jobs					Cost per Job				
	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022	2019	2020	2021	2022	2019-2022
Drone Assessments of Dist. Infrastructure	77	27,756	10,564	30,677	**69,074**	65	4,173	2,667	3,979	**10,884**	$1,185	$6,651	$3,961	$7,710	**$6,346**
All Other Repairs Related to Inspections	0	22	744	381	**1,147**	0	5	97	127	**229**	N/A	$4,473	$7,666	$3,000	**$5,009**
Total	77	27,778	11,308	31,058	**70,221**	65	4,178	2,764	4,106	**11,113**					

In this supplemental exhibit, inspection costs are reported within their applicable inspection program. Repair work has been combined to one workpaper, "combined repairs", which reflects how work is performed in the field. Grouping findings together allowed for work to be organized more efficiently, reducing multiple mobilizations to a single location or area and reducing outages and other customer impacts.

1 - Inspection costs from each inspection workpaper

2- See "Combined Repairs" tab for direct capital repairs costs

3 - See "Combined Repairs" tab for direct O&M repairs costs

Workpaper	Detailed Inspections of Distribution Equipment
Category	Asset Management & Inspections
WMP Tracking ID	WMP.478

Description	**Detailed Inspections of Distribution Equipment**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
O&M Inspection Labor	-	125	39	184	**348**
O&M Inspection Non-Labor	-	54	323	160	**537**
O&M Direct Costs Subtotal[1]	**-**	**179**	**362**	**344**	**885**
O&M Indirect Costs	-	67	21	116	**203**
O&M Inspection Total	**-**	**246**	**383**	**459**	**1,089**
Units					
# of Inspections	N/A	17,977	22,354	17,935	**58,266**
Unit Cost per Inspection (Direct $,0)	N/A	$ 10	$ 16	$ 19	**$ 15.19**
WMP Target Direct O&M ($)*	N/A	$ 1,257	$ 2,852	$ 1,155	**$ 5,264**
WMP Target (Units)*	N/A	17,500	22,269	18,177	**57,946**
FTE Calculation**	-	1.0	0.3	1.4	**2.7**

[1] See Summary Section

*Targets are included within the Detailed Corrective Maintenance Program Inspections in the Wildfire Mitigation Plan for 2020 and 2021

**Based on average cost per hour/available annual work hours)

Business Purpose:

Distribution overhead detailed inspections are mandated by are mandated by General Order (GO) 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP) and are intended to identify equipment conditions and infractions on overhead distribution structures that do not meet GO 95 requirements or internal standards and specifications. By identifying nonconformances, corrective repairs can be made to resolve compliance conditions and reduce the likelihood of a fire, safety, or reliability event from happening.

Only O&M Inspection costs are included.

Project Justification:

Distribution overhead detailed inspections are mandated by GO 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP) and support maintaining compliance and mitigating conditions that have the potential to result in a fire hazard, safety hazard, or reliability event.

Project Scope:

Distribution overhead detailed inspections were performed by Qualified Electrical Workers, typically from the ground, and include a thorough visual assessment of the pole, attachments, and conductor and cables. Where appropriate, individual pieces of equipment may be opened, tested, or operated to assess their condition. In addition, if warranted, the use of infrared or other tools (e.g. drones, binoculars, measurement devices) may be utilized. Inspection records are maintained that include the circuit, area, facility or equipment inspected, the inspector's name, the date of the inspection, and any issues (items requiring corrective action) identified during each inspection, the severity of the condition, as well as the compliance deadline for corrective action as mandated by GO 95, Rule 18. The severity of the issue considers the component identified, the location of the structure and surrounding terrain, and the potential risk (e.g. fire hazard, safety hazard, reliability or compliance) posed if the issue resulted in a failure and the severity of the condition. The performed of Detailed inspections also required support, as needed, from drone pilots, traffic control, safety, security, and customer support personnel that may be internal or external employees. Quality control and assurance audits are also performed on the inspections to ensure the inspections are being performed in compliance with GO 165 and SDG&E standards.

Cost Drivers:

The inspections and audits of inspections were performed by internal qualified electrical workers and O&M costs were primarily driven by labor costs along with vehicles and equipment needed to perform these inspections. Other O&M costs included inspection support services such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services may be provided by internal or external employees and sometimes require permit or other fees, all of which are included the O&M inspection costs.

Project Timing and Phases:

Inspections are performed on a 5-year routine schedule as mandated by GO 165. Structures are grouped into functional locations to support efficiency of inspections and compliance deadlines are tracked to ensure inspections are completed as required. Accordingly, the number of inspections fluctuates from year to year based on the number of overhead structures due within that inspection interval.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Detailed Inspections of Distribution Equipment Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

Tier	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	9,078	0.14	10,162	0.057	6,443	0.052	116.69	301.47
Tier 2	8,899	0.203	13,194	0.117	11,492	0.121	91.65	171.62

Coordination with Similar Programs

Strict timelines imposed by GO 165 related to the definition of year and inspection interval create challenges when trying to implement a more risk-informed approach to the timing and frequency of inspections. Accordingly, satisfying detailed inspection requirements of GO 165 with other inspection efforts is challenging. However, where possible SDG&E canceled patrols or HFTD Tier 3 inspections that were satisfied through the completion of a detailed inspection.

Workpaper	HFTD Tier 3 Inspections
Category	Asset Management & Inspections
WMP Tracking ID	WMP .551

Description	**HFTD Tier 3 Inspections**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
O&M Inspection Labor	410	312	289	370	**1,381**
O&M Inspection Non-Labor	158	89	62	39	**349**
O&M Direct Costs Subtotal[1]	**568**	**401**	**352**	**409**	**1,729**
O&M Indirect Costs	243	165	147	240	**794**
O&M Inspection Total	**810**	**565**	**498**	**649**	**2,523**
Units					
# of Inspections	15,176	11,864	11,535	12,263	**50,838**
Unit Cost per Inspection (Direct $,0)	$ 37	$ 34	$ 30	$ 33	**$ 34.01**
WMP Target Direct O&M ($)	N/A	$ 368	$ 381	$ 384	**$ 1,133**
WMP Target (Units)	N/A	11,500	10,815	12,268	**34,583**
FTE Calculation*	3.4	2.5	2.2	2.7	**10.8**

[1] See Summary Section

*Based on average cost per hour/available annual work hours)

Business Purpose:

HFTD Tier 3 inspections were originally performed from 2010 through 2016 as a result of a settlement agreement adopted in Decision D.10-04-047. After those requirements expired, SDG&E proactively chose to continue HFTD Tier 3 inspections starting in 2017 as part of its normal inspection program to maintain enhanced oversight in high-risk areas. By adding another inspection layer in Tier 3, the program sought to identify and support the remediation of hazardous conditions sooner, thereby reducing the likelihood that undetected defects could lead to wildfire ignition.

Only inspection costs from HFTD Tier 3 inspections are included.

Project Justification:

From 2019-2022, HFTD Tier 3 Inspections were part of SDG&E's Corrective Maintenance Program (CMP), which is a requirement of GO 165. Accordingly, this was a compliance program targeting the identification of potential fire hazards in the highest wildfire-risk areas of the HFTD. In 2023, SDG&E replaced this program with Risk-Informed Drone Inspections program.

Project Scope:

The project covered all overhead distribution electric facilities within the Tier 3 HFTD.

Cost Drivers:

The inspections were performed by internal qualified electrical workers and O&M costs were primarily driven by labor costs along with vehicles and equipment needed to perform these inspections. Other O&M costs included inspection support services such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services may be provided by internal or external employees and sometimes require permit or other fees, all of which are O&M costs.

Project Timing and Phases:

HFTD Tier 3 inspections were designed to identify potential fire and safety hazards and were performed on a three year cycle on all overhead electric facilities within the Tier 3 HFTD with a goal of completing all HFTD Tier 3 inspections by June 1 to allow higher risk repairs to be completed prior to peak fire season, which generally occurs between September - December in SDG&E's service territory.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's HFTD Tier 3 Inspections Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

Tier	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	11,844	0.093	11,533	0.069	12,245	0.273	204.59	117.06
Tier 2	20	0	2	-	18	0	0.12	63.55

Coordination with Similar Programs

HFTD Tier 3 inspections were satisfied by detailed inspections. Since these inspections are not required by GO 165, there was greater flexibility in performing the inspections at any time during the calendar year and redundancy of inspections between HFTD Tier 3 and detailed inspections was realized.

Workpaper	Intrusive Pole Inspections
Category	Asset Management & Inspections
WMP Tracking ID	WMP.483

Description	**Intrusive Pole Inspections**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
O&M Inspection Labor	13	27	19	18	**76**
O&M Inspection Non-Labor	1,243	860	787	22	**2,911**
O&M Direct Costs Subtotal[1]	**1,256**	**886**	**806**	**39**	**2,987**
O&M Indirect Costs	193	152	97	17	**459**
O&M Inspection Total	**1,449**	**1,039**	**903**	**56**	**3,446**
Units					
# of Inspections	19,729	14,450	8,721	967	**43,867**
Unit Cost per Inspection (Direct $,0)	$ 64	$ 61	$ 92	$ 41	**$ 68.10**
WMP Target Direct O&M ($)**	N/A	N/A	N/A	$ 24	**$ 24**
WMP Target (Units)	N/A	18,000	9,796	350	**28,146**
FTE Calculation*	0.1	0.2	0.1	0.1	**0.6**

[1] See Summary Section

*Based on average cost per hour/available annual work hours)

**WMP targets are within the Pole Replacement and Reinforcement Program

Business Purpose:

Distribution wood pole intrusive inspections are mandated by General Order (GO) 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP) and are specifically intended to identify wood pole deterioration interior to the pole (within approximately 6 feet of the ground line) and below the ground line before it leads to equipment failure, outages, or wildfire risk. To ensure that these inspections are performed in compliance with GO 165 and SDG&E standards, QA/QC audits of up to 10% of the inspections was also performed. Finally, with an increase in steel poles being used in the HFTD, SDG&E sought to investigate below groundline corrosion of steel poles with a limited study that took place in 2021. In 2021, SDG&E performed enhanced inspections of 1001 steel poles to evaluate the potential impact of corrosive attributes on steel pole life expectancy and establish a potential cadence for steel pole below grade inspections.

Only costs related to the Intrusive Pole Inspections, QA/QC audits, and the steel pole inspections are included.

Project Justification:

Performance of distribution wood pole intrusive inspections satisfies the compliance obligations of GO 165 and focuses on assessing internal decay, shell loss, rot, fungus, and structural compromise that could result in safety and wildfire-related incidents if left unchecked. Industry research collectively demonstrates that testing (inspections) and treating (remedial preservatives / restoration) of wood poles improves the safety and reliability of utility infrastructure. QA/QC audits help to ensure that these inspections are performed in compliance with GO 165 and SDG&E standards. For the steel poles, it is known that steel corrodes in acidic environments and slowly or not at all as alkalinity PH is increased. While observing aboveground corrosion can be done during routine inspections, below ground corrosion is less understood with relation to steel utility poles. The intent of the limited study performed in 2021 was to evaluate the condition of steel poles in certain areas to better understand any environmental factors that would impact their anticipated life expectancy.

Project Scope:

A wood pole intrusive inspection typically involves a visual assessment of the pole for any structural damage or deterioration, a sound and bore of the pole to identify internal cavities, and an excavation at the pole base below the ground line. Below-ground excavation may be limited where the pole is encased in concrete or where there are other obstacles, such as fences, walls, landscaping, or rock. The pole is chemically treated to help extend the life of the pole by inhibiting unwanted biological growth that could reduce the integrity of the pole. Poles recommended for replacement would not be treated with the chemical since they will be scheduled for removal. Inspection results are used to calculate the remaining pole strength utilizing industry standards. The pole passes inspection if the calculated remaining strength is greater than 80 percent. If the calculated remaining strength is less than 79 percent, the pole is recommended for replacement. If there is any obvious deterioration to the exterior of the pole (e.g. potential motor vehicle collision damage), the pole would also be recommended for replacement.

For the steel pole inspections that were performed in 2021, 1001 steel poles were sampled using Magnetostrictive Sensing (MsS) testing, along with collecting data on the environmental and soil conditions. Poles were selected if they were in areas known to occasionally collect water during the rainy season, were located in corrosive soil as mapped by the United States Department of Agriculture or with the coastal contamination zone (where the ocean is known to increase corrosion). A control group was also established of steel poles located in areas free from these corrosive attributes.

Cost Drivers:

The wood and steel pole inspections were performed by an external contractor and O&M costs were primarily driven by labor costs and the costs for chemical treatments (for wood poles) used during the inspections, along with vehicles, tools and equipment needed to perform these inspections. Other O&M costs included inspection support services such as permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services were provided by internal or external employees and sometimes require permit or other fees, all of which are O&M costs. QA/QC audits of the wood pole inspections were also performed by an external contractor. The costs for those audits were primarily driven by labor along with vehicles, tools and equipment needed to perform the audits.

Project Timing and Phases:

SDG&E performs wood pole intrusive inspections on a 10-year cycle, except for a small number of off-cycle inspections that occur in accordance with GO 95, Rule 44 requirements. In those situations, a wood pole inspection may be performed at a greater frequency than 10 years and/or may alter the subsequent inspection period to a maximum of 15 years. So, with the 10-year cycle of these inspections we see dramatic differences in the year over year inspection numbers in different areas, since inspections are grouped by areas to improve efficiency and reduce costs. Quality control and assurance audits are performed within 1-2 months after the inspection is completed. Steel pole inspections were performed as a pilot effort only in 2021.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Intrusive Pole Inspections Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

Tier	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	6,606	0.011	3,830	0.018	-	0	13.76	17.68
Tier 2	7,844	0	4,891	0.022	967	0.012	7.18	7.2

Coordination with Similar Programs

There are no other programs that perform intrusive investigations of wood poles supporting electric infrastructure to identify decay or deterioration interior to the pole. In addition, the personnel that perform these inspections are not qualified to perform detailed, drone or patrol inspections. Detailed inspections of steel poles identify only corrosion above the ground.

Workpaper	Infrared Inspections of Distribution Infrastructure
Category	Asset Management & Inspections
WMP Tracking ID	WMP.481

Description	**Infrared Inspections of Distribution Infrastructure**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
O&M Inspection Labor	39	155	135	115	**444**
O&M Inspection Non-Labor	59	19	10	44	**133**
O&M Direct Costs Subtotal[1]	**98**	**175**	**146**	**159**	**577**
O&M Indirect Costs	19	94	74	71	**258**
O&M Inspection Total	**118**	**269**	**220**	**230**	**836**
Units					
# of Inspections	-	13,077	17,068	12,264	**42,409**
Unit Cost per Inspection (Direct $,0)	N/A	$13	$9	$13	**$13.61**
WMP Target Direct O&M ($)	N/A	$ 245	$ 175	$ 175	**$ 175**
WMP Target (Units)	N/A	8,500	18,000	12,000	**38,500**
FTE Calculation*	0.3	1.2	1.0	0.9	**3.4**

[1] See Summary Section

*Based on average cost per hour/available annual work hours)

Business Purpose:

Infrared inspections use non-invasive thermal imaging to detect excessive or differential heat emitted by energized components such as connectors, arresters, and hardware. Elevated temperatures can indicate loose connections, corrosion, overloading, or material degradation that are not visible through standard visual inspections. Thermal anomalies on distribution equipment can pose fire ignition, public safety, and service reliability risks, particularly under high load conditions. Infrared inspections support risk reduction by identifying overheating components that could fail and enabling corrective repairs that reduce the probability of fire, safety, or reliability events.

Only costs related to the Infrared Inspections is included.

Project Justification:

Infrared inspections are supplemental to required visual, ground, and aerial inspections conducted under GO 95 and GO 165. While those programs identify visible non-conformances, infrared inspections can reveal hidden thermal conditions that may not be observable during routine inspections, particularly when equipment is energized and under load.

Project Scope:

From 2020 through 2022, SDG&E selected distribution circuits for infrared inspections as part of its Wildfire Mitigation Plan . Generally, targeting approximately 15% of the overhead distribution poles in the HFTD areas. Circuit selection was determined annually by based on risk-mitigation objectives, with inspections focused on higher risk circuits from a wildfire consequence perspectives.

Cost Drivers:

While a formal routine infrared inspection program did not start for distribution facilities until 2020, in 2019 two thermal imaging cameras were purchased and some limited inspections were performed of overhead distribution equipment of higher risk circuits, locations where undetermined outages had occurred and where irregular power fluctuations were recorded. The cost of the equipment represents the nonlabor costs in 2019; however, the number of infrared inspections performed in 2019 was not documented. From 2020-2022, the costs were associated with labor, equipment, vehicle and helicopter utilization expenses to perform the inspections in the HFTD.

Project Timing and Phases:

Inspections were performed annually with the scope determined at the beginning of the year and completion of inspections targeted prior to October of each year.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Infrared Inspections of Distribution Infrastructure Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

Tier	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	13,077	-	-	-	-	-	-	-
Tier 2	-	-	17,068	-	12,264	0.005	0.98	2.77

Coordination with Similar Programs

SDG&E worked with internal department to determine whether other continuous monitoring sensors could identify the same anomalies identified during infrared inspections. We also monitored developments in technology that would enable collection of infrared imagery contemporaneously with drone inspections. Note that many of SDG&E's personnel are equipped with thermal imaging cameras and will utilize them to investigate undetermined outages or other system irregularities. Those "non-routine" inspections are not included in the costs for this program.

Workpaper	Patrol Inspections of Distribution Equipment
Category	Asset Management & Inspections
WMP Tracking ID	WMP.488

Description	**Patrol Inspections of Distribution Equipment**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
O&M Inspection Labor	-	197	190	221	**609**
O&M Inspection Non-Labor	-	98	97	65	**260**
O&M Direct Costs Subtotal[1]	**-**	**295**	**287**	**287**	**868**
O&M Indirect Costs	-	96	97	141	**334**
O&M Inspection Total	**-**	**391**	**384**	**428**	**1,202**
Units					
# of Inspections	N/A	86,075	86,490	86,821	**259,386**
Unit Cost per Inspection (Direct $,0)	N/A	$ 3	$ 3	$ 3	**$ 3**
WMP Target Direct O&M ($)	N/A	295	277	279	**851**
WMP Target (Units)	N/A	86,000	86,000	86,490	**258,490**
FTE Calculation*	-	1.6	1.5	1.6	**4.2**

[1] See Summary Section

*Based on average cost per hour/available annual work hours)

Business Purpose:

Overhead patrol inspections are mandated by General Order (GO) 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP) and are intended to identify obvious structural problems and hazards on overhead electric facilities before failures occur. Patrols are designed as simple visual inspections to detect conditions that may pose an immediate risk to public safety, employee safety, system reliability, or wildfire ignition.

Only O&M Inspection costs are included.

Project Justification:

Overhead patrols are a compliance-driven inspection activity mandated by GO 165 and supported by GO 95. GO 165 defines a patrol as a visual inspection intended to identify obvious hazards and requires utilities to patrol overhead distribution facilities on prescribed intervals. GO 165 was revised in December 2017 to require patrol inspections in rural areas to be performed once per year in Tier 2 and Tier 3 of the HFTD. Accordingly, starting in 2018, SDG&E performed patrols annually across its service territory, exceeding the minimum GO 165 requirements in some areas, to ensure consistent compliance and documentation.

Project Scope:

Overhead patrols are performed on all overhead electric facilities annually. While 100% coverage is targeted, the number of overhead facilities fluctuates with facilities being added or removed from service during the year. In addition, poles undergoing inspection through another inspection program, such as detailed inspections, satisfy the patrol inspection if performed within the same interval. Accordingly, the number of inspections fluctuate slightly each year.

Cost Drivers:

In 2019, patrols in the HFTD were performed, however, costs were not split between HFTD and non-HFTD patrols, so no O&M inspection costs were included in the Track 2 request. Inspections were performed by internal qualified electrical workers and O&M costs were primarily driven by labor costs along with vehicles and equipment needed to perform these inspections. Other O&M costs included inspection support services such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services may be provided by internal or external employees and sometimes require permit or other fees, all of which are O&M costs.

Project Timing and Phases:

Patrols are required to be performed within 12 consecutive calendar months, starting with the first full calendar month after the prior patrol, plus an allowable grace period of up to three additional full calendar months, but not to exceed the end of the calendar year in which the next patrol is due. This definition ensures compliance with GO 165's inspection interval requirements while allowing limited scheduling flexibility.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Patrol Inspections of Distribution Equipment Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

Tier	Inspections 2020	Ignitions Avoided 2020	Inspections 2021	Ignitions Avoided 2021	Inspections 2022	Ignitions Avoided 2022	Risk Reduction	Risk Spend Efficiency (per million)
Tier 3	39,350	0.019	39,550	0.019	39,701	0.018	26.44	72.15
Tier 2	46,725	0.096	46,940	0.013	47,120	0.049	32.96	75.78

Coordination with Similar Programs

While overhead patrol requirements may be satisfied by another qualifying inspection—such as a detailed overhead inspection or a drone inspection—provided the inspection occurs within the applicable patrol interval, the inspection interval prescribed under GO 165 affords limited scheduling flexibility, and as a result, in 2019-2022, patrols were performed in addition to other inspection activities. However, patrols are typically conducted by Electric Trouble Shooters as part of their routine field duties and are frequently completed contemporaneously with those activities which achieves efficiencies and a low cost per inspection.

Workpaper	AM&I Repairs
Category	Asset Management & Inspections
WMP Tracking ID	WMP.478, WMP.479, WMP.483, WMP 488, WMP .551

Description	**AM&I Repairs**				
($ in thousands)	**Track 2**				
	2019	**2020**	**2021**	**2022**	**Track 2 Total**
Capital Expenditures Labor	4,292	3,484	4,426	4,123	**16,325**
Capital Expenditures Non-Labor	8,435	8,947	12,409	11,498	**41,289**
Capital Direct Costs Subtotal[2]	**12,727**	**12,431**	**16,835**	**15,621**	**57,614**
Capital Expenditures Indirect Costs	11,869	8,538	12,341	14,732	**47,480**
Capital Total	**24,596**	**20,969**	**29,176**	**30,353**	**105,094**
O&M Labor		10	50	152	**212**
O&M Non-Labor		13	694	510	**1,217**
O&M Direct Costs Subtotal[3]	**-**	**22**	**744**	**662**	**1,428**
O&M Indirect Costs	-	-	36	72	**108**
O&M Total	**-**	**22**	**780**	**734**	**1,536**
Units					
# Capital Repairs	755	681	730	631	**2,797**
Unit Cost per Capital Repair Job (Direct $,0)	$ 16,857	$ 18,254	$ 23,061	$ 24,757	**$ 20,599**
# O&M Repairs	-	5	97	127	**229**
Unit Cost per O&M Repair Job (Direct $,0)	$ -	$ 4,473	$ 7,666	$ 5,215	**$ 6,237**
FTE Calculation*	35.2	27.7	34.3	31.7	**32.2**

[2] See Summary Section

*Based on average cost per hour/available annual work hours)

Business Purpose:

While GO 165 governs the inspection requirements related to electric distribution facilities, including a mandate to perform Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, and Intrusive Pole Inspections on a specific interval schedule, corrective repairs identified through a utility's auditable maintenance program are governed by GO 95 Rule 18B. GO95, Rule 18B requires utilities to establish and implement an auditable maintenance program for its facilities and lines and implement corrective actions resulting within specified timeframes. From 2019-2022, the following programs were described in SDG&E's auditable maintenance program, known as the Corrective Maintenance Program (CMP): Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, Intrusive Pole Inspections, and HFTD Tier 3 Inspections. The CMP Program also includes the compliance requirements related to repairs of inspection findings from CMP inspections. In addition, findings from Infrared inspections of distribution equipment were tracked and managed with other CMP repairs. Costs related to infrared inspection corrective work is included in the Track 3 costs.
Collectively, these repairs resolve damage conditions and reduce the likelihood of a fire, safety, or reliability event from happening.

O&M costs are associated with repairs performed in the HFTD and identified through the following inspection efforts: Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, HFTD Tier 3 Inspections, Infrared Inspections, plus repairs made to distribution underbuild on a transmission facility identified through a Detailed Inspection of Transmission Equipment (Distribution Underbuild). O&M costs related to the WMP mitigation programs were not tracked separately until 2020.

Capital costs are associated with repairs performed in the HFTD identified through the same inspection efforts as O&M costs (Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, HFTD Tier 3 Inspections, Infrared Inspections and Detailed Inspection of Transmission Equipment (Distribution Underbuild)).

Project Justification:

GO 95 Rule 18B and SDG&E's CMP program requires that corrective actions necessary to resolve field conditions that violate GO 95 or present a safety, fire risk or reliability risk completed with specified timeframes. Emergency issues require immediate action, whereas potential fire risks within Tier 3 HFTD should be remediated within 6 months and for Tier 2 HFTD 12 months. From 2019-2022, SDG&E's CMP required that in additional to remediating potential fire risks within these timeframes, potential safety risks also had to be remediated within 6 or 12 months depending on the HFTD area. Capital repairs included primarily pole replacements, while O&M repairs included pole components such as damaged insulators, arrestors, loose hardware or damaged guys.

The number of repairs, type of work, cost, and scope fluctuates from year to year based on the number of inspections performed, environmental factors (e.g. severe weather events), health of the assets (e.g. equipment age) and compliance due date. As such, the number of repairs and costs associated with the repairs fluctuates from year to year.

Project Scope:

Findings from SDG&E's inspection programs that require distribution poles and equipment to be repaired or replaced are combined and tracked in SDG&E's work management system and are processed through initiation, review, prioritization, and completion of corrective work orders. Grouping findings together allowed for work to be organized more efficiently, reducing multiple mobilizations to a single location or area and reducing outages and other customer impacts. SDG&E adheres to all GO regulations for addressing corrective maintenance within required timeframes and, when applicable, exceeds requirements based on severity level, risk posed, and location, such as the HFTD Tier as described above. O&M repairs are generally a result of normal wear, deterioration or damage that restores the asset to original condition and does not materially extend the useful life of the asset. Capital repairs extend the useful life of the asset and were primarily related to pole replacements during this period of time.

Cost Drivers:

O&M costs are associated with repairs of inspection findings collectively from multiple inspection programs including Detailed Inspections of Distribution Equipment, Infrared Inspections of Distribution Equipment, HFTD Tier 3 Inspections, Intrusive Pole Inspections, Patrol Inspections of Distribution Equipment and Detailed Inspection of Transmission Equipment (Distribution Underbuild). O&M repairs restore the asset to original condition and do not materially extend the useful life of the asset. O&M repair costs were driven by the number and scope of repairs due from 2020-2022 and the labor for both engineering and construction, vehicles, equipment, materials and support services. Support services include costs such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support.

Capital costs are associated with repairs that materially extend the useful life of the asset and were primarily related to pole replacements during this period of time. Capital repair costs were driven by the number and scope of repairs due from 2019-2022 and the labor for both engineering and construction, vehicles, equipment, materials and support services. Support services include costs for scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support. Construction support may be performed by either internal or external personnel and therefore include both labor and nonlabor costs. Please note that while capital repair costs can be tracked back to the specific inspection program that identified the issue, repairs from all inspection programs are managed collectively in SDG&E's work management system and repairs performed in the HFTD in support of SDG&E's WMP were managed under one budget to support construction efficiency, reduce duplication, and reduce customer impacts.

Project Timing and Phases:

Repairs are completed within the timeframes prescribed by GO 95, Rule 18B and SDG&E's CMP requirements. Repairs generally fluctuate based on the number of inspections performed in the prior year, so there is a delay between the inspection and the repair being completed, as well as the costs associated with each.

Approval Process/Procurement Process:

Repairs were primarily managed by internal employees and performed by internal construction crews. However, depending on resource needs, SDG&E utilized external contractors to provide engineering services, construction services and some support services, such as land, environmental, Tribal monitoring, safety and security. The services performed by external contractors throughout this timeframe were subject to competitively bid MSAs with SDG&E's Engineering Department, Construction Management department, Environmental Services, Contractor Safety Services and Land Services. Material procurement used for repairs also goes through the Supply Management department and is competitively bid on a regular basis, as well as undergoing a robust quality assurance inspection process.

Coordination with Similar Programs

Findings from Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, Intrusive Pole Inspections, Infrared Inspections, and HFTD Tier 3 Inspections are combined and tracked together in SDG&E's work management system. Grouping findings together allowed for work to be organized more efficiently, reducing multiple mobilizations to a single location or area and reducing outages and other customer impacts. In addition, while findings from Detailed Inspections of Transmission Equipment is tracked in a separate system, the transmission and distribution teams coordinate on any overlap with the same structures to minimize duplication of work, multiple mobilizations and impact to customers.

Workpaper	Grid Design, Operations, and Maintenance
Category	Drone Assessments
WMP Tracking ID	WMP.552

Description	**Drone Assessments**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	18	370	369	515	2,188
Capital Expenditures Non-Labor	255	15,775	12,520	31,752	58,478
Capital Expenditures Direct Costs Subtotal	**274**	**16,145**	**12,890**	**32,266**	**60,666**
Capital Expenditures Indirect Costs	72	9,071	6,027	5,597	7,699
Capital Total	**345**	**25,216**	**18,917**	**37,863**	**68,365**
O&M Labor	216	915	543	1,259	2,390
O&M Non-Labor	13,341	45,049	32,627	43,496	50,911
O&M Direct Costs Subtotal	**13,557**	**45,964**	**33,170**	**44,755**	**53,301**
O&M Indirect Costs	211	1,907	879	1,862	3,742
O&M Total	**13,768**	**47,871**	**34,049**	**46,617**	**57,043**
Units					
# Inspections	10,524	26,787	23,081	25,976	**15,234**
Unit Cost per Inspection (Direct $,0)*	$ 1,281	$ 652	$ 678	$ 510	**$ 486**
# Capital Repairs	8	329	339	448	**1,786**
Unit Cost per Capital Repair Job (Direct $,0)	$ 34,204	$ 39,398	$ 25,221	$ 57,119	**32,003**
# O&M Repairs	65	4,173	2,667	3,979	**7,238**
Unit Cost per O&M Repair	$ 1,185	$ 6,651	$ 3,961	$ 7,710	**$ 6,160**
FTE**	1.9	10.2	7.0	13.1	**31.7**
Imputed Authorized Direct Capital $					-
Imputed Authorized Direct O&M $					-

*Average cost per inspection for 2019-2023 is approximately $662.

**Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	Prior Years Spend				Track 3
	2019	2020	2021	2022	2023
Drone Inspections (O&M)					
DIAR Inspections	**13,479**	**17,452**	**15,658**	**13,242**	**-**
Labor	166	301	354	441	-
Non-Labor	13,313	17,151	15,304	12,801	-
RIDI Inspections	**-**	**-**	**-**	**-**	**7,399**
Labor					192
Non-Labor					7,207
Drone Inspections (O&M) Total	**13,479**	**17,452**	**15,658**	**13,242**	**7,399**
DIAR Repairs					
Capital	**274**	**12,962**	**8,550**	**25,589**	**50,146**
Labor	18	365	309	469	686
Non-Labor	255	12,597	8,241	25,121	49,460
O&M	**77**	**27,756**	**10,564**	**30,677**	**44,082**
Labor	50	614	189	818	2,034
Non-Labor	27	27,142	10,375	29,859	42,049
DIAR Repairs Total	**351**	**40,718**	**19,114**	**56,266**	**94,228**
RIDI Repairs					
Capital	**-**	**-**	**-**	**-**	**7,011**
Labor	-	-	-	-	826
Non-Labor	-	-	-	-	6,185
O&M	**-**	**-**	**-**	**-**	**502**
Labor	-	-	-	-	164
Non-Labor	-	-	-	-	338
RIDI Repairs Total	**-**	**-**	**-**	**-**	**7,513**
Technology (AI, Data & Software)					
Capital	**-**	**3,183**	**4,340**	**6,677**	**3,510**
Labor	-	5	60	46	37
Non-Labor	-	3,178	4,279	6,631	3,473
O&M	**-**	**756**	**6,949**	**837**	**1,318**
Labor	-	-	-	-	-
Non-Labor	-	756	6,949	837	1,318
Technology (AI, Data & Software) Total	**-**	**3,939**	**11,289**	**7,514**	**4,827**
Total	**13,830**	**62,109**	**46,061**	**77,022**	**113,968**

Business Purpose:

In 2023, SDG&E's Drone Program consisted of ongoing repair work of potential fire hazards identified through the Drone Investigation Assessment and Repair (DIAR) program and implementation of a new Risk-Informed Drone Inspection (RIDI) Program.

RIDI involved the following: (1) Used risk data to identify the highest risk assets for inspection (2) Collecting imagery of overhead distribution electric facilities using drones in the Tier 2, Tier 3 High Fire Threat District (HFTD) and Wildland Urban Interface (WUI) areas using a risk informed inspection prioritization model (3) having Qualified Electric Workers (QEWs) paired with drone pilots to perform inspections of overhead distribution facilities using both imagery and field observations (4) Repairing any issues observed during inspections (5) Utilizing the images collected and damages identified by the QEWs to enhance our Intelligent Image Processing (IIP) capabilities in the form of machine learning (ML) models that perform automated asset identification and damage detection and (6) Operationalizing those damage detection models to perform QA/QC of drone inspections performed.

This Program includes O&M costs to perform image capture and inspections, and maintain the technology and software needed to perform and manage the work, and costs to perform the O&M repairs associated with infractions found during RIDI and DIAR inspections. The Program also includes capital costs for repairs of issues found during RIDI and DIAR inspections and funds needed to continue to develop and enhance machine learning models capable of automatically performing asset identification and damage detection.

Project Justification:

The drone program was included in SDG&E's 2023 WMP and included mandatory inspection targets. Compared to traditional inspection programs, the use of drone technology offered the potential to obtain high-resolution, close-range, and top-down imagery that traditional ground or patrol inspections cannot achieve. This is especially relevant for certain types of overhead electric components such as insulators and arresters, crossarm and pole-top damage, exposed or loose connections, improper splices and armor rod issues, and damaged conductors and hardware. Additionally, drone inspections also allow safer inspection of infrastructure in locations where traditional inspections are constrained by steep or rugged terrain, dense vegetation and remote or limited-access. Use of drone photography also allowed for IIP capabilities and ML to identify and detect damaged equipment in a more streamlined manner than traditional inspection methods. Overall, drone inspections identified emergency damages on average 29 months earlier than traditional detailed inspections and more potential fire hazards.

Project Scope:

In 2023, SDG&E's continued the repair work resulting from DIAR inspections. At the beginning of 2023, there were over 9,000 repairs in the backlog from DIAR inspections. As SDG&E had performed a comprehensive review of nearly all structures i the HFTD from 2019-2022, SDG&E replaced the HFTD Tier 3 Inspection program with the Risk Informed Drone Inspection (RIDI) Program, targeting fewer poles annually on a risk informed basis. Because the HFTD Tier 3 Inspections generally targeted 13,500 overhead poles each year, SDG&E elected to use that as the target for its RIDI program in the first year. At the same time, RIDI replaced the Tier 3 Inspection Program. This equated to a target of approximately 15% of poles in the HFTD and higher risk WUI areas.

SDG&E's RIDI program consisted of drone-based assessments of overhead electric distribution structures, but expanded the scope of the inspections beyond just potential fire and safety hazards to include a complete inspection. This change allowed inspections performed under RIDI to meet the requirements for an Overhead Detailed Inspection, further reducing redundancy of inspections and finding cost efficiencies. The poles selected for inspection were not fixed or purely time-based like traditional inspection efforts. Instead, a model was developed that incorporated consequence of wildfire risk data, asset data (e.g. age, location, material, height, elevation, number of attachments), environmental considerations, such as higher wind areas and soil types, as well as damage predictions from machine learning models run on imagery from prior years. For example, a machine learning model may identify minor crossarm damage that did not require repair at that time, but that information was used to inform our inspection prioritization model of the higher potential risk related to that facility because of the minor damage previously observed. Once all of the poles received a risk score, the scope of inspections was reviewed to take into account navigation efficiency that would help decrease per pole inspection costs by selecting poles in similar areas. This also supported more cost effective repair work, because work orders can include multiple pole repairs, increase crew utilization and reducing costs related to repairs.

Inspections were performed using drone imagery and field observations from qualified inspectors working as a team with the drone pilots. The imagery was also processed through SDG&E's intelligent image processing platform, with 100 percent of assessments subject to QA/QC review by both an inspection supervisor and the 90+ machine learning models. Inspection results were used to create work orders and perform corrective maintenance repairs and enhance and improve the risk informed inspection prioritization model.

Finally, the scope of RIDI included O&M and capital repairs resulting from RIDI inspections. However, the program was modified to utilize SDG&E's enterprise work management systems and incorporate RIDI repair work orders with work orders from other Corrective Maintenance Program inspection efforts. While the costs for RIDI repairs was tracked separately internally, the work was combined in order to improve efficiency in grouping work together.

Cost Drivers:

Inspection costs in 2023 were driven by the external contractor costs related to drone pilots, inspectors (Qualified Electrical Workers) working in the field with the pilots, field safety and security personnel, and flight support services (e.g. flight planning, access protocol, environmental and land).

Repair cost drivers included internal and external costs related to engineering, project management and controls, environmental, land, permitting, access protocol, materials, vehicles, equipment, tools and labor needed to perform the construction work and finally, quality control and review to ensure that the repairs were done in compliance with GO 95 and SDG&E standards. Depending on the nature of the repair, the costs are either charged to O&M or capital. In general, capital repairs are significant life extension projects such as transformer or pole replacements, while O&M repairs involve minor units like insulators, arrestors, guys, connections and hardware. While capital projects tend to be more complex and therefore more expensive, the timing is also different from O&M repairs, where capital projects have significant upfront engineering and planning costs (e.g. securing permits or performing environmental surveys) that are incurred prior to the completion of the construction work. This is evident in looking at the average capital repair cost in 2022 where costs were incurred related to repair jobs that were not completed until 2023. Accordingly, while the number of repairs is tied to the number of inspection findings identified in prior years, there is a delay between the inspection finding and the repair being completed, as well as the costs associated with completion of the repair.

ML & Data costs drivers were related to (1) continued enhancement and upkeep of the 90+ machine learning models trained in asset identification and damage detection (2) improvements to the centralized image repository that displays all imagery collected through the drone inspections, shows the results of the ML models, and allows qualified inspectors to provide model performance feedback and (3) licensing costs and enhancements to the third party software used to perform flight planning, image upload and inspections. Cost drivers were a combination of labor and nonlabor costs. Labor costs were driven by internal employees managing the development and implementation of these efforts, including providing subject matter expertise on how to identify assets and damages and provide feedback on ML model performance. Non-labor costs were associated with the vendor labor to develop these systems/models, cloud storage and cloud processing costs (i.e. AWS data storage and processing), software licensing and purchases and software enhancements.

Project Timing and Phases:

In 2023, SDG&E continued performing repairs for the over 9,000 potential fire and safety hazards still open at the beginning of the year that were identified through DIAR inspections. SDG&E also began RIDI by identifying approximately 15,000 of its highest risk poles using a risk informed inspection prioritization model (or 15% of the HFTD and higher risk WUI areas). Once the poles were scoped, the poles were reviewed for overlap with Detailed Inspections planned for that same year and the Detailed Inspection orders were cancelled to reduce duplication of efforts. The poles were also reviewed for permitting or additional authorization requirements and grouped accordingly. Poles that did not require additional agency or government coordination were released to the pilot and inspector teams first and poles requiring additional authorizations were delayed until those permissions could be obtained. Affected customers were analyzed to begin our customer notification process.

As inspections were completed on poles, the inspection results were reviewed by both inspection supervisors and the machine learning models for 100% QA/QC. Once the QA/QC process was complete, the results of the inspections were automatically sent to SDG&E work management system where the results were recorded and the repair process could begin with SDG&E's internal construction and operations teams. The repair process generally consists of a construction supervisor reviewing the inspection finding, or issue, which may require review of the images or fielding. If the construction supervisor agrees that a repair or remediation action is needed, a work order is created that will go through engineering, design, planning, permitting, land, environmental, customer coordination, vegetation management or our joint use group depending on the nature of the issue and complexity of the work. Once the job is designed, it is issued to scheduling and dispatch for work either by an internal or external construction crew. Once the repair is complete, QA/QC of the repair is performed as prescribed by SDG&E's internal standards. And finally, the inspection finding is closed.

Approval Process/Procurement Process:

In 2023, SDG&E continued to use an external PMO to manage the DIAR repair work. External engineering groups and construction contractors were also used for the majority of DIAR repairs, as well as RIDI repairs where internal resources were not available or had limited capacity. SDG&E's PMO for DIAR was selected as a result of a competitively bid PMO Request for Proposal process. Similarly, the drone vendor and inspection contractor that was selected in 2021 as a result of a competitive Request for Proposal process continued to be utilized for the 2023 inspection work. However, the vendor did reduce the per pole unit rate for inspections starting in 2023. This was the result of continued efficiencies realized by the vendor because of pilot experience, improved customer coordination that facilitated improved inspection production, and other process improvements resulting from lessons learned over the 2019-2022 period.

Construction services performed by external contractors used for RIDI and DIAR were subject to competitively bid MSAs with SDG&E's Construction Management department. Material procurement used for repairs also goes through the Supply Management department and is competitively bid on a regular basis, as well as undergoing a robust quality assurance inspection process.

Finally, SDG&E continued to use an MSA that was competitively bid in 2017 to perform the work related to IIP and developing the ML models and the centralized image repository.

Approved 2023 WMP Annual Targets (units and spending explanation, as needed):

The 2023 WMP target for drone inspections was 13,692 Poles.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Drone Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how drone-based inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for drone activities. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to ignition drivers, terrain complexity, vegetation density, asset criticality, and time-based inspection cycles. This supports drone deployments that are aligned with both environmental hazards, system needs, and operational constraints. Mitigation strategies include pre-flight planning, operator qualification and training, automated flight-safety checks, and integration of drone imagery into advanced analytics platforms. These analytics tools detect abnormalities earlier and with greater precision than traditional ground-based inspections, enabling SDG&E to identify assets that require repair or replacement before they pose a safety, reliability, or wildfire risk.

The following table summarizes key program metrics to demonstrate how drone-enabled inspections contribute to measurable wildfire-risk reduction. Note that for methodological consistency, units located outside the HFTD—but in close proximity to HFTD boundaries or within the WUI—were excluded from RSE calculations in this filing. For these locations, cross-boundary exposure and contextual factors can introduce modeling complexities that are not fully accommodated by the current RSE workbooks, making risk-reduction estimates less reliable. Accordingly, the table below reports RSE results only for units located within Tier 2 and Tier 3 HFTD areas, where the existing methodology most accurately reflects risk and benefits.

HFTD	2023 Actual Units	Ignitions Avoided	Risk Reduction	Risk Reduction (%)	RSE (per million)
Tier 3	5408	0.345	539.88	5.57%	14.24
Tier 2	8391	3.568	3,407.82	61.52%	57.94
Non - HFTD / WUI	1,435	---	---	---	---

Consideration of Alternative Solutions:

1. Do not perform drone inspections - Ability to identify issues that are not visible from the ground would not be possible or would require additional costs, impacts to resources and/or greater environmental impacts. These unidentified issues could result in ignition, safety or reliability events. In addition, high resolution imagery would not be available, reducing situational awareness during PSPS events and extreme weather events.

2. Perform top-down inspections via climbing, helicopters, fixed wing planes, or bucket trucks - While helicopters and fixed wing planes can capture a large number of assets, the resolution of the imagery collected is not as detailed as what can be obtained from drones. Helicopters or fixed wing planes can only capture a top down shot and not the equipment level images that can be obtained from drones. Also, even if helicopters or fixed wing planes operate at lower altitudes, vegetation encroachment, houses and other objects present obstacles that prevent high quality image capture of distribution facilities. In addition, helicopters create additional noise impacts for nearby communities. The use of bucket trucks or climbing present increase safety risks to workers and require physical access to each individual pole. Many of SDG&E's distribution poles are not located along maintained roads and would require additional vegetation clearing. Overall, these alternatives are resource-intensive, time-consuming, and operationally impractical. This conclusion is supported by PG&E's public filings: See https://efiling.energysafety.ca.gov/EFiling/GetPublicDocument.aspx?documentId=53644 and https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/120524-pge-2023-2025-wmp-r7-public.pdf (pages 1085-1098).

3. Combining drone inspections with existing Detailed Inspections programs - adding drone image capture to these other programs would significantly slow down inspections and increase costs. Detailed Inspections are performed by internal Qualified Inspectors without drone pilot licenses or experience, therefore a drone pilot would need to be added to inspection teams to perform drone flights with Detailed inspections. This would also result in significant changes to the scheduling and dispatch of inspectors to add a pilot requirement, which could impact resource availability and SDG&E's existing contractual agreements. Plus, this would limit drone inspections to the same time-based requirements, instead of being able to evolve to a risk-informed implementation strategy.

Coordination with Similar Programs

RIDI expanded the scope of inspection beyond identification of potential fire and safety hazards to include conditions required to be identified during Detailed Inspections. With this change, Detailed inspections were cancelled on poles within the scope of RIDI in 2023 and the RIDI inspection was used to satisfy the Detailed inspection compliance requirement. This resulted in approximately 2,000 Detailed Inspections being removed from scope, reducing redundancy of inspections and generating cost savings.

From 2019-2023, SDG&E coordinated drone inspection repairs to eliminate or reduce drone inspections performed on poles that had recently been replaced or were scheduled for replacement in the near term through other construction projects.

Stakeholder Impact and Engagement:

Drone inspections could not be performed unilaterally on non-SDG&E land. When facilities were located within federal, Tribal, state, or local agency jurisdictions, SDG&E was required to complete pre-authorization, operational coordination, environmental compliance, and on-site oversight before any flights could occur. This coordination was mandatory, jurisdiction-specific, and often resource-intensive, directly affecting scheduling, labor needs, and program cost.

Department of Defense: Drone operations required the highest level of coordination and approval, including submission of a formal unmanned aircraft use application through local base commanders, regional base commanders, and the Department of the Navy in Washington, D.C.. Approval by the Navy Board was also required prior to flight authorization and daily coordination with base operations, range operations to clear restricted airspace and there was a mandatory military approved escort required to accompany drone crews during inspections. Finally, photos required review by the local base commander before they could be uploaded for inspection.

Tribal Lands: Tribal lands required sovereign-to-sovereign respect and direct coordination with each Tribe including advance notification (typically 10–17 days depending on Tribe) and submission of maps identifying SDG&E facilities, inspection schedules, public outreach materials for distribution to Tribal members, positive confirmation of approval before entering the Reservation, daily check-in with Tribal offices or Tribal Law Enforcement, mandatory Tribal monitors or escorts accompanying inspection crews and coordination of other SDG&E activities (inspection, vegetation, construction) to minimize repeat access.

California State Parks: Drone inspections within California State Parks and state-managed lands required agency-specific permissions and operational controls. Coordination steps included: Obtaining a Drone Use Permit where required, providing facility location maps, flight schedules, Naming County or State Parks as additional insured, providing 72-hour advance notice to park rangers and coordinating on-site presence or agency monitors, when requested.

California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS): Drone inspections on land owned by these agencies required Formal notification, Facility mapping, Demonstration flights, Compliance with environmental and wildlife constraints, and Agency-approved monitors when necessary.

Federal Land Agencies (USFS and BLM): BLM granted access within SDG&E rights-of-way with no notification required, once standing permission was in place. U.S. Forest Service / Cleveland National Forest (USFS/CNF) required annual notification of flights, ongoing coordination through standing meetings, compliance with eagle buffer zones and other environmental restrictions.

Local jurisdictions: County Parks required drone Use Permits, Proof of insurance listing the County as additionally insured, Facility maps and inspection schedules and 72-hour notice to park rangers. City Parks required 24-hour advance notice prior to inspections.

Finally, because drone inspections were new to the public and drone pilots experienced negative customer interactions early in the program, such as shooting down drones, SDG&E implemented multiple layers of proactive public engagement, security resources, and customer notification. Field resources were deployed to provide security support for areas with known safety concerns. Postcard mailers were sent in advance of flights to customers in areas scheduled for inspections that explained the program, described what customers could expect during drone flights, provided links for additional information and included a Public Affairs Hotline phone number for questions or concerns. SDG&E also used its internal customer notification systems to issue pre-recorded voice calls to all customers potentially impacted by scheduled drone flights. Notifications were typically issued within the week prior to the scheduled flight. Customers identified as sensitive or red-flag (e.g., livestock owners, privacy concerns, prior complaints) received direct outreach through phone calls, emails and text messages. Outreach was typically performed no more than one week and no less than 24 hours prior to the scheduled drone flight. All correspondence was tracked and documented. Inspection teams also conducted in-person outreach through door-hangers or outreach materials left at residences. Fact sheets were made available in multiple languages and were also made available online at https://www.sdge.com/diar-fact-sheet. A dedicated Public Affairs Hotline was maintained throughout the program and information videos were made available to the public found here: https://youtu.be/fzmI6iXIlE4 and https://youtu.be/_ep5oaRAO-o and https://youtu.be/9EQjUj68Vs8. Notifications were not limited to the inspection phase. Additional outreach (postcards and direct contact) continued during design, construction and repair activities resulting from drone inspection findings.

Metrics:

Metrics on Fire hazard find rates and severity of issues were used to evaluate the effectiveness of the program. Images collected from 2019-2023 exceeded 2.8M, resulted in 90+ machine learning capabilities developed. Investment in Intelligent Image Processing (IIP) enabled automated damage detection with upwards of ~87% accuracy, supporting QA/QC and prioritization of issues found in 2023 inspections.

Year	Drone Inspection Fire/Safety Hazard Find Rate	Traditional CMP Detailed Distribution Inspection Fire/Safety Hazard Find Rate
2019	11%	3%
2020	30%	3%
2021	38%	3%
2022	35%	3%
2023	49%	3%

Issue Severity	RIDI (2023)	Tier 2 & WUI	Tier 3 (2019-	Total
Level 1 - Emergency	26	226	113	365
Level 2 - Moderate Severity	7452	16,049	9,056	32,557

Program	Avg Annual poles Inspected (2019-2022)	Avg Poles with Fire Infractions (2019-2022)	Avg Fire Hazard Find Rate
CMP - OHVI	18,675	522	2.8%
Drone	21,540	4,834	21%

Utility Benchmarking:

SDG&E, PG&E and SCE met on multiple occasions in 2023 to discuss various aspects of their drone inspection programs. SDG&E also participated in the Office of Energy Infrastructure Safety Workshops held on July 13-14,2023 to discuss recommendations on potential revisions to General Orders related to the implementation of a more risk-informed inspection approach rather than time-based as prescribed by GO 165. These recommendations were intended to be brought to the CPUC through the Climate Adaptation OIR (R.18-04-019). Discussions with the other California IOUs included aerial vs. ground inspection approaches, field processes (planning/scheduling, data collection), safety and QA/QC practices, roles/qualifications, and how unit costs are defined and reported in WMP contexts. We also discussed inspection/patrol frequency in HFTD, aerial methods (drone-only vs. drone inspector vs. helicopter blends), and whether aerial inspections count toward GO-165 compliance. SDG&E also initiated a machine learning model study, where we requested images of distribution poles from SCE and PG&E to run our models and provide damage and asset predictions for analysis by SCE and PG&E. The intent of this study was to determine whether our ML models would be effective on imagery acquired by the other utilities and on their assets and to evaluate whether model sharing would be valuable to the other utilities. Ultimately, reducing the costs to PG&E and SCE in having to develop this technology from scratch and provide some potential cost recovery to SDG&E ratepayers.

Pictures:

N/A

Workpaper	Grid Design, Operations, and Maintenance
Category	Distribution Overhead Detailed Inspections
WMP Tracking ID	WMP.478

Description	**Distribution Overhead Detailed Inspections**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	-	-	-	-	-
Capital Expenditures Non-Labor	-	-	-	-	-
Capital Expenditures Direct Costs Subtotal	**-**	**-**	**-**	**-**	**-**
Capital Expenditures Indirect Costs	-	-	-	-	-
Capital Total	**-**	**-**	**-**	**-**	**-**
O&M Labor	-	125	39	184	203
O&M Non-Labor	-	54	323	160	171
O&M Direct Costs Subtotal	**-**	**179**	**362**	**344**	**374**
O&M Indirect Costs	-	67	21	116	64
O&M Total	**-**	**246**	**383**	**459**	**437**
Units					
# of Inspections	N/A	17,977	22,354	17,935	**11,755**
Unit Cost per Inspection (Direct $,0)	N/A	$ 10	$ 16	$ 19	**$ 32**
FTE*	-	1.0	0.3	1.4	**1.4**
Imputed Authorized Direct Capital $					1,398
Imputed Authorized Direct O&M $					13,379

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Inspections					
Capital	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
O&M	**-**	**179**	**362**	**344**	**374**
Labor	-	125	39	184	203
Non-Labor	-	54	323	160	171
Inspections Total	**-**	**179**	**362**	**344**	**374**

Business Purpose:

Distribution overhead detailed inspections (Detailed Inspections) are mandated by General Order (GO) 165, GO 95 and are consistent with SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP). They are intended to identify equipment conditions and infractions on overhead distribution structures that do not meet GO 95 requirements or internal standards and specifications. By identifying nonconformances, corrective repairs can be made to resolve compliance conditions and reduce the likelihood of a fire, safety, or reliability event from happening.

Only O&M Inspection costs for overhead poles in the Tier 2 and Tier 3 High Fire Threat Districts (HFTD) are included.

Project Justification:

Detailed Inspections are a mandated compliance program under GO 165, GO 95, SDG&E's CMP and WMP and support maintaining compliance and mitigating conditions that have the potential to result in a fire hazard, safety hazard, or reliability event.

Project Scope:

Distribution overhead detailed inspections were performed by qualified inspectors, typically from the ground, and include a thorough visual assessment of the pole, attachments, and conductor and cables. Where appropriate, individual pieces of equipment may be opened, tested, or operated to assess their condition. If warranted, the use of other tools (e.g. infrared device, binoculars, measurement devices) may be utilized. Inspection records are maintained that include the circuit, area, facility or equipment inspected, the inspector's name, the date of the inspection, and any issues (items requiring corrective action) identified during each inspection, the severity of the condition, as well as the compliance deadline for corrective action as mandated by GO 95, Rule 18. The severity of the issue considers the condition of the equipment, the component identified, the location of the structure and surrounding terrain, and the potential risk (e.g. fire hazard, safety hazard, reliability or compliance) posed if the issue resulted in a failure. Detailed inspections are primarily performed by qualified internal inspectors with support from scheduling and dispatch personnel and, as needed, by traffic control, permitting, environmental, land, safety, security, and customer support personnel that may be internal or external employees. Quality control and quality assurance (QA/QC) audits are also performed on the inspections to validate the inspections are being performed in compliance with GO 165, GO 95 and SDG&E standards.

Cost Drivers:

The inspections and audits of inspections were performed primarily by internal qualified electrical workers and O&M costs were driven by labor costs along with vehicles and equipment needed to perform these inspections. Other O&M costs included inspection support services such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services may be provided by internal or external employees and sometimes require permits or other fees, all of which are included the O&M inspection costs.

Project Timing and Phases:

Inspections are performed on a 5-year routine schedule as mandated by GO 165. Structures are grouped into functional locations to support efficiency of inspections and compliance deadlines are tracked to validate inspections are completed as required. Accordingly, the number of inspections fluctuates from year to year based on the number of overhead structures due within that inspection interval.

Approval Process/Procurement Process:

Inspections are performed by internal qualified inspection personnel.

Approved 2023 WMP Annual Targets (units and spending explanation, as needed):

The 2023 annual WMP target for Detailed Overhead Detailed Inspections was 11,100. Planned O&M spend was $940,000.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Detailed Inspections of Distribution Equipment Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics that demonstrate how the Distribution Overhead Detailed Inspections program contributes to measurable wildfire-risk reduction and reliability improvement:

HFTD	2023 Actual Units	Ignitions Avoided	Risk Reduction	Risk Reduction (%)	RSE (per million)
Tier 3	4001	0.171	267.4	2.76%	2,039.39
Tier 2	7754	0.096	91.98	1.66%	361.98
Non - HFTD / WUI	0	---	---	---	---

Consideration of Alternative Solutions:

1. Do nothing. Result: Distribution Details Overhead Inspections are required by GO 165, GO 95. In addition, the risk of an ignition, safety or reliability event would be increased as discussed in the risk identification and mitigation section above.

Coordination with Similar Programs

Strict timelines imposed by GO 165 related to the definition of year and inspection interval create challenges when trying to implement a more risk-informed approach to the timing and frequency of inspections. Accordingly, satisfying Detailed Inspection requirements of GO 165 with other inspection efforts is challenging. But in 2023 SDG&E satisfied approximately 2,000 detailed inspections with Risk-Informed Drone Inspections, where SDG&E coordinated these inspections for potential fire hazards with other inspections looking for reliability and compliance issues.

Stakeholder Impact and Engagement:

Communication with customers impacted by inspections occurs on an as-needed basis to assist with access to the property, the safety of SDG&E workers, and reduce impacts to customers or local businesses where possible.

Metrics:

Completion of all detailed inspections within the 5-year interval requirements of GO 165, internal SDG&E standards and the WMP is used to measure success of this inspection program.

Utility Benchmarking:

SDG&E started meeting with SCE and PG&E in 2022 to discuss detailed inspections and benchmark on how they are performed, who performs them and how advancements in technology could make this inspections more efficient in the future. All three IOUs met on multiple occasions in 2023 to discuss various aspects of their inspection programs. SDG&E also participated in the Office of Energy Infrastructure Safety Workshops held on July 13-14,2023 to discuss recommendations on potential revisions to General Orders related to the implementation of a more risk-informed inspection approach rather than time-based as prescribed by GO 165. These recommendations were intended to be brought to the CPUC through the Climate Adaptation OIR (R.18-04-019)

Pictures:

N/A

Workpaper	Grid Design, Operations, and Maintenance
Category	Distribution Infrared Inspections
WMP Tracking ID	WMP.481

Description	**Distribution Infrared Inspections**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	-	-	-	-	-
Capital Expenditures Non-Labor	-	-	-	-	-
Capital Expenditures Direct Costs Subtotal	**-**	**-**	**-**	**-**	**-**
Capital Expenditures Indirect Costs	-	-	-	-	-
Capital Total	**-**	**-**	**-**	**-**	**-**
O&M Labor	39	155	135	115	240
O&M Non-Labor	59	19	10	44	90
O&M Direct Costs Subtotal	**98**	**175**	**146**	**159**	**330**
O&M Indirect Costs	19	94	74	71	72
O&M Total	**118**	**269**	**220**	**230**	**401**
Units					
# of Inspections	N/A	13,077	17,068	12,264	**11,900**
Unit Cost per Inspection (Direct $,0)	N/A	$13	$9	$13	**$28**
FTE*	0.0	0.0	0.0	0.0	**1.7**
Imputed Authorized Direct Capital $					-
Imputed Authorized Direct O&M $					-

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Distribution Infrared Inspections					
Capital	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
O&M	**98**	**175**	**146**	**159**	**330**
Labor	39	155	135	115	240
Non-Labor	59	19	10	44	90
Inspections Total	**98**	**175**	**146**	**159**	**330**

Business Purpose:

The Infrared inspection program was developed to address wildfire risk after the enactment of Senate Bill (SB) 901 and Assembly Bill (AB) 1054 and supplement SDG&E's existing inspection programs. Infrared inspections use non-invasive thermal imaging to detect excessive or differential heat emitted by energized components such as connectors, arresters, and hardware. Elevated temperatures can indicate loose connections, corrosion, overloading, or material degradation that are not visible through standard visual inspections. Thermal anomalies on distribution equipment can pose fire ignition, public safety, and service reliability risks, particularly under high load conditions. Infrared inspections support risk reduction by identifying overheating components that could fail and enabling corrective repairs that reduce the probability of fire, safety, or reliability events.

Only costs related to Infrared Inspections performed in the High Fire Threat District (HFTD) and higher risk Wildland Urban Interface (WUI) areas is included.

Project Justification:

Infrared inspections were included in SDG&E's 2023 WMP requirements and are supplemental to required visual, ground, and aerial inspections conducted under GO 95 and GO 165. While those programs identify obvious visible non-conformances, infrared inspections can reveal hidden thermal conditions that may not be observable during routine inspections, particularly when equipment is energized and under load.

Project Scope:

In 2023, SDG&E applied an added risk-informed overlay to the program using analytics to identify higher risk structures and circuit segments for inspection, aligning with the continuous improvement culture. This approach did not reduce planned inspections, but rather modified and added inspections in an attempt to identify whether data analytics could improve the identification of structures where thermal anomalies may be more prevalent. The find rate from 2020-2023 had remained at approximately 0.2%, with no thermal findings resulting from inspections performed in 2023.

Cost Drivers:

For 2023, the costs were associated with labor, equipment, vehicle and helicopter utilization expenses to perform the inspections.

Project Timing and Phases:

Inspections were performed annually with the scope determined at the beginning of the year and completion of inspections targeted prior to October of each year.

Approval Process/Procurement Process:

Internal qualified thermographers were utilized to perform the inspections.

Approved WMP Annual Targets (units and spending explanation, as needed):

The 2023 annual WMP target for Infrared inspections was 9,578 inspections. Planned O&M spend was $175,000.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Infrared Inspections of Distribution Infrastructure Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program contribute to measurable wildfire-risk reduction.

HFTD	2023 Actual Units	Ignitions Avoided	Risk Reduction	Risk Reduction (%)	RSE (per million)
Tier 3	6,215	0	-	0.00%	-
Tier 2	5,685	0.102	97.44	1.76%	600.03
Non - HFTD / WUI	0	---	---	---	---

Consideration of Alternative Solutions:

1. Do nothing. Result: In 2023, Infrared Inspections were a required WMP initiative with a required annual target. Eliminating or not performing these inspections would be a nonconformance with SDG&E's approved WMP.

Coordination with Similar Programs

SDG&E worked with internal department to determine whether other continuous monitoring sensors could identify the same anomalies identified during IR inspections. We also monitored developments in technology that would enable collection of infrared imagery contemporaneously with drone inspections. Note that many of SDG&E's personnel are equipped with thermal imaging cameras and utilize them to investigate undetermined outages or other system irregularities. Those "non-routine" inspections are not included in the costs for this program. SDG&E began steps with its 2023 change order to modify the program to better evaluate its value and effectiveness and subsequently requested approval from OEIS to discontinue the program.

Stakeholder Impact and Engagement:

Communication with customers impacted by inspections occurs on an as-needed basis to enable access to the property, the safety of SDG&E workers, and to reduce impacts to customers or local businesses where possible.

Metrics:

Completion of infrared inspections as required by SDG&E's WMP is used to measure success of this inspection program.

Utility Benchmarking:

All three IOUs met on multiple occasions in 2023 to discuss how inspections are performed, the effectiveness of routine infrared inspections on distribution equipment, who performs the inspections and how advancements in technology could improve these inspections in the future.

Pictures:

N/A

Workpaper	Grid Design, Operations, and Maintenance
Category	Distribution Wood Pole Intrusive Inspections
WMP Tracking ID	WMP.483

Description	**Distribution Wood Pole Intrusive Inspections**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	-	-	-	-	-
Capital Expenditures Non-Labor	-	-	-	-	-
Capital Expenditures Direct Costs Subtotal	**-**	**-**	**-**	**-**	**-**
Capital Expenditures Indirect Costs	-	-	-	-	-
Capital Total	**-**	**-**	**-**	**-**	**-**
O&M Labor	13	27	19	18	88
O&M Non-Labor	1,243	860	787	22	20
O&M Direct Costs Subtotal	**1,256**	**886**	**806**	**39**	**108**
O&M Indirect Costs	193	152	97	17	33
O&M Total	**1,449**	**1,039**	**903**	**56**	**141**
Units					
# of Inspections	19,729	14,450	8,721	967	**1,038**
Unit Cost per Inspection (Direct $,0)	$ 64	$ 61	$ 92	$ 41	**$ 104**
FTE*	0.1	0.2	0.1	0.1	**0.6**
Imputed Authorized Direct Capital $					123
Imputed Authorized Direct O&M $					-

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Inspections					
Capital	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
O&M	**1,256**	**886**	**806**	**39**	**108**
Labor	13	27	19	18	88
Non-Labor	1,243	860	787	22	20
Inspections Total	**1,256**	**886**	**806**	**39**	**108**

Business Purpose:

Distribution wood pole intrusive inspections are mandated by General Order (GO) 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP) and are intended to identify wood pole deterioration interior to the pole (within approximately 6 feet of the ground line) and below the ground line before it leads to wildfire risk. These inspections were performed in compliance with GO 165 and SDG&E standards, quality assurance and quality control (QA/QC) audits of up to 10% of the inspections was also performed.

Only costs related to the Intrusive Pole Inspections and audits are included for overhead electric wood distribution poles in the HFTD Tier 2 and Tier 3.

Project Justification:

Performance of distribution wood pole intrusive inspections satisfied the compliance obligations of GO 165, GO 95, Rule 44 and SDG&E's standards and focused on assessing internal decay, shell loss, rot, fungus, and structural compromise that could result in wildfire-related and/or other safety incidents if left unchecked. Industry research collectively demonstrates that testing (inspections) and treating (remedial preservatives / restoration) of wood poles improves the utility infrastructure. QA/QC audits help these inspections are performed in compliance with GO 165 and SDG&E standards. See the following for additional information in industry research: USDA. 2013. Rural Utilities Service Bulletin 1730B 121 – Wood Pole Inspection & Maintenance. Available at: https://www.rd.usda.gov/files/UEP_Bulletin_1730B-121.pdf, Grid Deployment Office, Berkeley Lab. 2004. Utility Pole Maintenance and Upgrades, Resilience Investment Guide., and Morrell, J.J. Estimated Service Life of Wood Poles. North American Wood Pole Council Technical Bulletin, No. 16-U-101. Available at: TB_Est_Life_122721.indd.

Project Scope:

A wood pole intrusive inspection typically involves a visual assessment of the pole for any structural damage or deterioration, a sound and bore into the interior of the pole to identify internal cavities, and an excavation at the pole base below the ground line. Below-ground excavation may be limited where the pole is encased in concrete or where there are other obstacles, such as fences, walls, landscaping, or rock. The poles were treated with a fumigant that helps to extend the life of the pole by inhibiting unwanted biological growth that could reduce the integrity of the pole. Poles recommended for replacement would not be treated with the fumigant since they will be scheduled for removal. Inspection results are used to calculate the remaining pole strength utilizing industry standards. The pole passes inspection if the calculated remaining strength is greater than 80 percent. If the calculated remaining strength is less than 79 percent, the pole is recommended for replacement. If there was any obvious deterioration to the exterior of the pole (e.g. potential motor vehicle collision damage), the pole would also be recommended for replacement.

Cost Drivers:

The wood pole inspections were performed by an external contractor and O&M costs were primarily driven by labor costs and the costs for chemical treatments (for wood poles) used during the inspections, along with vehicles, tools and equipment needed to perform these inspections. Other O&M costs included inspection support services such as permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services were provided by internal or external employees and sometimes required permit or other fees, all of which are O&M costs. QA/QC audits of the wood pole inspections were also performed by an external contractor. The costs for those audits were primarily driven by labor along with vehicles, tools and equipment needed to perform the audits and are included in this request.

Project Timing and Phases:

In accordance with SDG&E's Corrective Maintenance Program (CMP), SDG&E performs wood pole intrusive inspections on a 10-year cycle, except for a small number of off-cycle inspections that occur in accordance with GO 95, Rule 44 requirements. In those situations, a wood pole inspection may be performed at a greater frequency than 10 years and/or may alter the subsequent inspection period to a maximum of 15 years. So, with the 10-year cycle of these inspections we see dramatic differences in the year over year inspection numbers in different areas, since inspections are grouped at a district level to improve efficiency. Quality control and assurance audits are performed within 1-2 months after the inspection is completed.

Approval Process/Procurement Process:

Intrusive inspections are performed by an external contractor. The contract for this work is competitively bid periodically to maintain competitive market rates. The contractor that performed this work changed in 2023 as a result of a competitive Request for Proposal process. The new contractor began performing these inspections in June 2023. The contractor that performed QA/QC audits of these inspections also changed in 2023 as a result of a competitive Request for Proposal process.

Approved 2023 WMP Annual Targets (units and spending explanation, as needed):

This program had an approved WMP target of 50 Inspections. Inspections performed above the target of 50 poles were performed as required by GO 95, Rule 44.2 and were related to inspections needed to perform accurate pole loading calculations. Planned O&M spend was $97,000.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Intrusive Pole Inspections Program applied the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduced wildfire, PSPS, and operational risk. Through MAVF, the program evaluated safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values were compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification began with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction:

HFTD	2023 Actual Units	Ignitions Avoided	Risk Reduction	Risk Reduction (%)	RSE (per million)
Tier 3	153	0	0.18	0.00%	11.08
Tier 2	885	0.001	0.58	0.01%	6.16
Non - HFTD / WUI	0	---	---	---	---

Consideration of Alternative Solutions:

Do nothing--wood pole intrusive inspections are a compliance obligation of GO 165 and SDG&E's Corrective Maintenance Program, meaning that SDG&E would have been out of compliance.

Coordination with Similar Programs

There are no other programs that perform intrusive investigations of wood poles supporting electric infrastructure to identify decay or deterioration interior to the pole.

Stakeholder Impact and Engagement:

Communication with customers impacted by inspections occurs on an as-needed basis to ensure access to the property, the safety of SDG&E workers, and reduce impacts to customers or local businesses where possible.

Metrics:

Completion of all wood pole intrusive inspections within the required inspection interval requirements of GO 165 and SDG&E internal standards are used to measure success of this inspection program.

Utility Benchmarking:

SDG&E, PG&E and SCE met on multiple occasions in 2023 to discuss various aspects of their wood pole inspection program, including the frequency of inspections, who performs the inspections, the type of chemical treatments used, the life cycle of steel reinforcements and new technologies that could be used to improve the effectiveness of the inspections.

Pictures:

N/A

Workpaper	Grid Design, Operations, and Maintenance
Category	Distribution Overhead Patrol Inspections
WMP Tracking ID	WMP.488

Description	**Distribution Overhead Patrol Inspections**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	-	-	-	-	-
Capital Expenditures Non-Labor	-	-	-	-	-
Capital Expenditures Direct Costs Subtotal	**-**	**-**	**-**	**-**	**-**
Capital Expenditures Indirect Costs	-	-	-	-	-
Capital Total	**-**	**-**	**-**	**-**	**-**
O&M Labor	-	197	190	221	253
O&M Non-Labor	-	98	97	65	77
O&M Direct Costs Subtotal	**-**	**295**	**287**	**287**	**331**
O&M Indirect Costs	-	96	97	141	74
O&M Total	**-**	**391**	**384**	**428**	**404**
Units					
# of Inspections	N/A	86,075	86,490	86,821	**85,847**
Unit Cost per Inspection (Direct $,0)	N/A	$ 3	$ 3	$ 3	**$ 4**
FTE*	-	1.6	1.5	1.6	**1.8**
Imputed Authorized Direct Capital $					10,208
Imputed Authorized Direct O&M $					-

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Inspections					
Capital	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
O&M	**-**	**295**	**287**	**287**	**331**
Labor	-	197	190	221	253
Non-Labor	-	98	97	65	77
Inspections Total	**-**	**295**	**287**	**287**	**331**

Business Purpose:

Overhead patrol inspections are mandated by General Order (GO) 165, GO 95, SDG&E's Corrective Maintenance Program (CMP) and SDG&E's Wildfire Mitigation Plan (WMP). They are intended to identify visually obvious structural problems and hazards on overhead electric facilities before failures occur. These simple visual inspections are performed on an annual basis and detect conditions that may pose an immediate risk to public safety, employee safety, wildfire ignition or system reliability in between more detailed inspection cycles.

Only O&M Inspection costs for overhead facilities in the HFTD Tier 2 and Tier 3 are included.

Project Justification:

Overhead patrols are a compliance-driven inspection activity mandated by GO 165, GO 95, and SDG&E standards. GO 165 defines a patrol as a visual inspection intended to identify visually obvious hazards and requires utilities to patrol overhead distribution facilities on prescribed intervals. GO 165 was revised in December 2017 to require patrol inspections in rural areas to be performed once per year in Tier 2 and Tier 3 of the High Fire Threat District (HFTD). Accordingly, starting in 2018 and continuing through 2023, SDG&E performed patrols annually across its service territory, exceeding the minimum GO 165 requirements in some areas, to ensure consistent compliance and documentation. In addition to adhering to the compliance requirements, these inspections help detect conditions that may pose an immediate risk to public safety, employee safety, wildfire ignition or system reliability in between more detailed inspection cycles.

Project Scope:

Overhead patrols are performed on all overhead electric facilities annually. While 100% coverage is targeted, the number of overhead facilities fluctuates with facilities being added or removed from service during the year. In addition, poles undergoing inspection through another inspection program, such as detailed inspections, satisfied the patrol inspection when performed within the same interval. Accordingly, the number of inspections fluctuate slightly each year.

Cost Drivers:

Inspections were performed by internal qualified inspection personnel and O&M costs were primarily driven by labor costs along with vehicles and equipment needed to perform these inspections. Other O&M costs included inspection support services such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support personnel. Support services may be provided by internal or external employees and sometimes require permit or other fees, all of which are O&M costs.

Project Timing and Phases:

Patrols are required to be performed annually within 12 consecutive calendar months, starting with the first full calendar month after the prior patrol, plus an allowable grace period of up to three additional full calendar months, but not to exceed the end of the calendar year in which the next patrol is due. This definition ensures compliance with GO 165's inspection interval requirements while allowing limited scheduling flexibility.

Approval Process/Procurement Process:

Patrols are performed by internal qualified inspectors and are primarily performed by electric trouble shooters, since electric trouble shooters can perform these inspections in conjunction with their normal patrol work and dispatch to call-outs. This reduces the cost of inspections significantly and is reflected in the per unit inspection costs for 2023.

Approved 2023 WMP Annual Targets (units and spending explanation, as needed):

The 2023 annual WMP target for patrol inspections in 2023 was 86,880 Inspections. Planned O&M spend was $285,000.

Risk Identification and Mitigation:

The Risk Identification and Mitigation approach for SDG&E's Patrol Inspections of Distribution Equipment Program applies the Risk-Spend Efficiency (RSE) framework built on the Multi-Attribute Value Function (MAVF) methodology to quantify how inspections reduce wildfire, PSPS, and operational risk. Through MAVF, the program evaluates safety, reliability, financial impacts, and ignition-risk reduction to generate a normalized risk-reduction score for this program. These risk-reduction values are compared against program costs to produce a unitless RSE score representing the efficiency of risk mitigation per dollar invested.

Risk identification begins with mapping inspection targets and operating conditions to compliance time-based inspection.

The following table summarizes key program metrics to demonstrate how the program inspections contribute to measurable wildfire-risk reduction. Note that for methodological consistency, units located outside the HFTD—but in close proximity to HFTD boundaries or within the Wildland Urban Interface (WUI)—were excluded from RSE calculations in this filing. For these locations, cross boundary exposure and contextual factors can introduce modeling complexities that are not fully accommodated by the current RSE workbooks, making risk reduction estimates less reliable. Accordingly, the table below reports RSE results only for units located within Tier 2 and Tier 3 HFTD areas, where the existing methodology most accurately reflects risk and benefits.

HFTD	2023 Units	Ignitions Avoided	Risk Reduction	Risk Reduction (%)	RSE (per million)
Tier 3	39,212	0.018	848.01	8.75%	5,446.16
Tier 2	46,635	0.035	540.66	9.76%	2,919.61
Non - HFTD / WUI	0	---	---	---	---

Consideration of Alternative Solutions:

1. Do nothing. Result: Overhead patrols are required by GO 165, SDG&E's internal standards and the WMP. SDG&E would be subject to notice of violation and fines and penalties from the CPUC for non-compliance. In addition, the risk of an ignition, safety or reliability event would be increased as discussed in the risk identification and mitigation section above.

Coordination with Similar Programs

While overhead patrol requirements may be satisfied by another qualifying inspection—such as a detailed overhead inspection or a drone inspection—provided the inspection occurs within the applicable patrol interval, the inspection interval prescribed under GO 165 affords limited scheduling flexibility. As a result, in 2023, patrols were performed in addition to other inspection activities. However, patrols are typically conducted by electric trouble shooters as part of their routine field duties and are frequently completed contemporaneously with those activities which achieves efficiencies and a lower cost per inspection.

Stakeholder Impact and Engagement:

Communication with customers impacted by inspection occurs on an as-needed basis to ensure access to the property, the safety of SDG&E workers, and to reduce impacts to customers or local businesses where possible.

Metrics:

Completion of a simple visual observation on all overhead electric facilities in the HFTD is used to measure success around this inspection program.

Utility Benchmarking:

SDG&E started meeting with SCE and PG&E in 2022 to discuss patrol inspections and benchmark on how these are tracked, how they are performed, who performs them and how advancements in technology could make these inspections more efficient in the future. All three IOUs met on multiple occasions in 2023 to discuss various aspects of their inspection programs. SDG&E also participated in the Office of Energy Infrastructure Safety Workshops held on July 13-14,2023 to discuss recommendations on potential revisions to General Orders related to the implementation of a more risk-informed inspection approach rather than time-based as prescribed by GO 165. These recommendations were intended to be brought to the CPUC through the Climate Adaptation OIR (R.18-04-019)

Pictures:

N/A

Workpaper	AM&I Repairs
Category	Asset Management & Inspections (AM&I)
WMP Tracking ID	WMP.478, WMP.479, WMP.483, WMP.488, WMP.551

Description	**AM&I Repairs**				
($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Capital Expenditures Labor	4,292	3,484	4,426	4,123	2,675
Capital Expenditures Non-Labor	8,435	8,947	12,409	11,498	8,162
Capital Expenditures Direct Costs Subtotal	**12,727**	**12,431**	**16,835**	**15,621**	**10,837**
Capital Expenditures Indirect Costs	11,869	8,538	12,341	14,732	6,752
Capital Total	**24,596**	**20,969**	**29,176**	**30,353**	**17,589**
O&M Labor	-	10	50	152	77
O&M Non-Labor	-	13	694	229	377
O&M Direct Costs Subtotal	**-**	**22**	**744**	**381**	**454**
O&M Indirect Costs	-	-	36	352	58
O&M Total	**-**	**22**	**780**	**734**	**512**
Units					
# Capital Repairs	755	681	730	631	**470**
Unit Cost per Capital Repair Job (Direct $,0)	$ 16,857	$ 18,254	$ 23,061	$ 24,757	**$ 23,058**
# O&M Repairs	-	5	97	127	**82**
Unit Cost per O&M Repair Job (Direct $,0)	-	$ 4,473	$ 7,666	$ 3,003	**$ 5,535**
FTE*	35.2	27.7	34.3	31.7	**19.0**
Imputed Authorized Direct Capital $					**12,325**
Imputed Authorized Direct O&M $					**13,379**

*Based on average cost per hour/available annual work hours.

Direct Cost Breakdown by Cost Category:

($ in thousands)	**Prior Years Spend**				**Track 3**
	2019	**2020**	**2021**	**2022**	**2023**
Inspections					
Capital	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
O&M	**-**	**-**	**-**	**-**	**-**
Labor	-	-	-	-	-
Non-Labor	-	-	-	-	-
Inspections Total	**-**	**-**	**-**	**-**	**-**
Repairs					
Capital	**12,727**	**12,431**	**16,835**	**15,621**	**10,837**
Labor	4,292	3,484	4,426	4,123	2,675
Non-Labor	8,435	8,947	12,409	11,498	8,162
O&M	**-**	**22**	**744**	**381**	**454**
Labor	-	10	50	152	77
Non-Labor	-	13	694	229	377
Repairs Total	**12,727**	**12,431**	**16,836**	**15,622**	**11,291**

Business Purpose:

While GO 165 governs the inspection requirements related to electric distribution facilities, including a mandate to perform Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, and Intrusive Pole Inspections on a specific interval schedule, corrective repairs identified through a utility's auditable maintenance program are governed by GO 95 Rule 18B. GO95, Rule 18B requires utilities to establish and implement an auditable maintenance program for its facilities and lines and implement corrective actions resulting within specified timeframes. In 2023, the following programs were described in SDG&E's auditable maintenance program, known as the Corrective Maintenance Program (CMP): Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, and Intrusive Pole Inspections, The CMP Program also includes the compliance requirements related to repairs of inspection findings from CMP inspections. In addition, findings from Infrared inspections of distribution equipment were tracked and managed with other CMP repairs. Costs related to infrared inspection corrective work is included in the Track 3 costs. Collectively, these repairs resolve damage conditions and reduce the likelihood of a fire, safety, or reliability event from happening.

O&M costs are associated with repairs identified through the following inspection efforts: Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, Intrusive Pole Inspections, and Infrared Inspections, plus repairs made to distribution underbuild on a transmission facility identified through a Detailed Inspection of Transmission Equipment (Distribution Underbuild).

Capital costs are associated with repairs identified through the same inspection efforts as O&M costs (Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, Intrusive Pole Inspections and Infrared Inspections), plus repairs made to distribution underbuild on a transmission facility identified through a Detailed Inspection of Transmission Equipment (Distribution Underbuild).

Project Justification:

GO 95 Rule 18B and SDG&E's CMP program requires that corrective actions necessary to resolve field conditions that violate GO 95 or present a safety, fire risk or reliability risk completed with specified timeframes. Emergency issues require immediate action, whereas potential fire risks within Tier 3 HFTD should be remediated within 6 months and for Tier 2 HFTD 12 months. In 2023, SDG&E's CMP required that in additional to remediating potential fire risks within these timeframes, potential safety risks also had to be remediated within 6 or 12 months depending on the HFTD area. Capital repairs included primarily pole replacements, while O&M repairs included pole components such as damaged insulators, arrestors, loose hardware or damaged guys.

The number of repairs, type of work, cost, and scope fluctuates from year to year based on the number of inspections performed, environmental factors (e.g. severe weather events), health of the assets (e.g. equipment age) and compliance due date. As such, the number of repairs fluctuates from year to year.

Project Scope:

Findings from SDG&E's inspection programs that require distribution poles and equipment to be repaired or replaced are combined and tracked in SDG&E's work management system and are processed through initiation, review, prioritization, and completion of corrective work orders. Grouping findings together allowed for work to be organized more efficiently, reducing multiple mobilizations to a single location or area and reducing outages and other customer impacts. SDG&E adheres to all GO regulations for addressing corrective maintenance within required timeframes and, when applicable, exceeds requirements based on severity level, risk posed, and location, such as the HFTD Tier as described above. O&M repairs are generally a result of normal wear, deterioration or damage that restores the asset to original condition and does not materially extend the useful life of the asset. Capital repairs extend the useful life of the asset and were primarily related to pole replacements during this period of time.

Cost Drivers:

O&M costs are associated with repairs of inspection findings collectively from multiple inspection programs including Detailed Inspections of Distribution Equipment, Infrared Inspections of Distribution Equipment, HFTD Tier 3 Inspections, Intrusive Pole Inspections, Patrol Inspections of Distribution Equipment and Detailed Inspection of Transmission Equipment (Distribution Underbuild). O&M repairs restore the asset to original condition and do not materially extend the useful life of the asset. O&M repair costs were driven by the number and scope of repairs due in 2023 and the labor for both engineering and construction, vehicles, equipment, materials and support services. Support services include costs such as scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support.

Capital costs are associated with repairs that materially extend the useful life of the asset and were primarily related to pole replacements during this period of time. Capital repair costs were driven by the number and scope of repairs due in 2023 and the labor for both engineering and construction, vehicles, equipment, materials and support services. Support services include costs for scheduling and dispatch, permitting, environmental and land, Tribal Monitors, traffic control, safety, security, and customer support. Construction support may be performed by either internal or external personnel and therefore include both labor and nonlabor costs. Please note that while capital repair costs can be tracked back to the specific inspection program that identified the issue, repairs from all inspection programs are managed collectively in SDG&E's work management system and repairs performed in the HFTD in support of SDG&E's WMP were managed under one budget to support construction efficiency, reduce duplication, and reduce customer impacts.

Project Timing and Phases:

Repairs are completed within the timeframes prescribed by GO 95, Rule 18B and SDG&E's CMP requirements. Repairs generally fluctuate based on the number of inspections performed in the prior year, so there is a delay between the inspection and the repair being completed, as well as the costs associated with each.

Approval Process/Procurement Process:

Repairs were primarily managed by internal employees and performed by internal construction crews. However, depending on resource needs, SDG&E utilizes external contractors to provide engineering services, construction services and some support services, such as land, environmental, Tribal monitoring, safety and security. The services performed by external contractors throughout this timeframe were subject to competitively bid MSAs with SDG&E's Engineering Department, Construction Management department, Environmental Services, Contractor Safety Services and Land Services. Material procurement used for repairs also goes through the Supply Management department and is competitively bid on a regular basis, as well as undergoing a robust quality assurance inspection process.

Approved WMP Annual Targets (units and spending explanation, as needed):

Planned Capital spend for AM&I repairs was:

WMP.483 Distribution Wood Pole Intrusive - $1,592,000
WMP.479 Transmission Overhead Detailed Inspections - $842,000
WMP.478 Distribution Overhead Detailed Inspections - $10,408,000
WMP.488 Distribution Overhead Patrol Inspections - $952,000

Risk Identification and Mitigation:

See workpapers related to the inspection programs that generated the findings for repair for additional information on the risk mitigation.

Consideration of Alternative Solutions:

Performance of corrective actions identified through SDG&E CMP is governed by GO 95, Rule 18B timelines and SDG&E standards. Doing nothing would have thus put SDG&E out of compliance.

Coordination with Similar Programs

Findings from Detailed Inspections of Distribution Equipment, Patrol Inspections of Distribution Equipment, Intrusive Pole Inspections, Infrared Inspections, and HFTD Tier 3 Inspections are combined and tracked together in SDG&E's work management system (SAP). Grouping findings together allows for work to be organized more efficiently, reducing multiple mobilizations to a single location or area and reducing outages and other customer impacts. In addition, while findings from Detailed Inspections of Transmission Equipment is tracked in a separate system, the transmission and distribution teams coordinate on any overlap with the same structures to minimize duplication of work, multiple mobilizations and impact to customers.

Stakeholder Impact and Engagement:

Communication with customers impacted by repairs occurs on an as-needed basis to ensure access to the property, the safety of SDG&E workers, perform outage coordination, and reduce impacts to customers or local businesses where possible.

Metrics:

Completion of repairs in compliance with GO 95, Rule 18B timeframes and SDG&E's CMP is the measure of success with the findings resulting from inspections covered by this workpaper.

Utility Benchmarking:

SDG&E has met with PG&E and SCE to discuss interpretations of GO 95, Rule 18B, repair timelines, severity identification, reassessment by supervisors, temporary fixes and other topics related to compliance with GO 95 and WMP requirements.

Pictures:

N/A