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Caroline Thomas Jacobs
Director, Office of Energy Infrastructure Safety
715 P Street, 20th Floor
Sacramento, CA 95814

RE: SDG&E 2023 WMP Annual Report on Compliance

Dear Director Thomas Jacobs:

San Diego Gas & Electric (“SDG&E”) hereby provides to The Office of Energy Infrastructure Safety (“Energy Safety”) its 2023 Wildfire Mitigation Plan Annual Report on Compliance (“ARC”) pursuant to California Public Utilities Code (PU Code) § 8386.3(c)(1). This report addresses SDG&E’s compliance with its Wildfire Mitigation Plan during the 2023 calendar year.

Respectfully submitted,

/s/ Laura M. Fulton

Attorney for
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San Diego Gas & Electric Company
**2023 WILDFIRE MITIGATION PLAN
ANNUAL REPORT ON COMPLIANCE**

April 1, 2024



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Appendix A: SDG&E 2023 ARC Summary Targets and Expenditures

List of Abbreviations

Abbreviation	Name
AAR	After-Action Review
ACI	Areas for Continued Improvement
ADS	Atmospheric Data Solutions
AFN	Access and Functional Needs
AI	Artificial intelligence
AQI	Air Quality Index
ARC	Annual Report on Compliance
ARFS	Advanced Radio Frequency Sensors
AWS	Amazon Web Services
CAL FIRE	California Department of Forestry and Fire Protection
CBO	Community Based Organization

CFSR	Climate Forecasting System Reanalysis
CMP	Corrective Maintenance Program
CNF	Cleveland National Forest
CPUC	California Public Utilities Commission
CRC	Community Resource Centers
CRI	Circuit Risk Index
CUEA	California Utilities Emergency Association
CW3E	Center for Western Weather and Water Extremes
DCRI	Distribution Communications Reliability Improvement
DFM	Dead Fuel Moisture
DWO	Dispatch Work Order
EFD	Early Fault Detection
ENS	Enterprise Notification System
EOC	Emergency Operations Center
FBP	Fixed Backup Power
FCP	Falling Conductor Protection
FERC	Federal Energy Regulatory Commission
FPI	Fire Potential Index
FSCA	Fire Science and Climate Adaptation
GAP	Generator Assistance Program
GGP	Generator Grant Program
GO	General Order
GOES	Geostationary Operational Environmental Satellite
HFE	Human Factors Engineering
HFTD	High Fire Threat District
HLC	hotline clamp
HYSPLIT	Hybrid Single-Particle Lagrangian Integrated Trajectory
ICS	Incident Command System
IIP	Intelligent Image Processing
IOU	Investor-Owned Utility
kV	Kilovolt
LEP	Limited English Proficiency
LFM	Live Fuel Moisture
LiDAR	Light detection and ranging
MBL	Medical Baseline
MMCRP	Mitigation Monitoring, Compliance, and Reporting Program

NDVI	Normalized Difference Vegetation Index
NMS	Network Management System
O&M	Operations & Maintenance
OCR	Optical Character Recognition
OEIS or Energy Safety	Office of Energy Infrastructure Safety
OMS	Outage Management System
PG&E	Pacific Gas & Electric
PMO	Portfolio Management Office
PQ	Power Quality
PRC	Public Resource Code
PSP	public safety partners
PSPS	Public Safety Power Shutoff
QA/QC	Quality Assessment/Quality Control
QDR	quarterly data reports
RFW	Red Flag Warning
SAWTI	Santa Ana Wind Threat Index
SCADA	supervisory control and data acquisition
SDG&E or Company	San Diego Gas & Electric
SDSC	San Diego Supercomputer Center
SRP	Sensitive Relay Profiles
TGR	Tree Growth Regulator
UCSD	University of California at San Diego
VMA	Vegetation Management Areas
VRI	Vegetation Risk Index
WCRC	Wildfire & Climate Resiliency Center
WFA	Wildfire Analyst
WFI	wireless fault indicator
WiNGS	Wildfire Next Generation System Planning
WMP	Wildfire Mitigation Plan
WRF	Weather Research and Forecast
WUI	Wildland Urban Interface

1 Introduction

The safety of our customers, employees, and the communities we serve is San Diego Gas & Electric's (SDG&E or Company) highest priority. Over the past decade, SDG&E has invested billions of dollars in a variety of safety measures aimed at preventing utility-related catastrophic wildfires and informing the public about emergency preparedness. SDG&E's commitment to the safety of our communities is continually demonstrated in our efforts to strengthen and protect infrastructure, improve situational awareness and data analysis, enhance weather technology, and provide community outreach.

On March 27, 2023, SDG&E submitted its 2023-2025 Wildfire Mitigation Plan in accordance with guidance from the Office of Energy Infrastructure Safety (OEIS or Energy Safety).¹ The OEIS approved SDG&E's 2023-2025 Wildfire Mitigation Plan² on October 13, 2023. The programs, initiatives, and plans described in the 2023-2025 Wildfire Mitigation Plan highlight many of SDG&E's efforts to mitigate the risk of catastrophic wildfire and the customer impacts of Public Safety Power Shutoff (PSPS) de-energizations. The Company implemented goals and objectives outlined in its 2023-2025 Wildfire Mitigation Plan for the 2023 compliance period, reducing the risk of catastrophic wildfire and mitigating the impacts of PSPS.

In 2023, SDG&E implemented and tracked the progress of 39 quantitative mitigation programs and 101 qualitative 3-year objectives outlined in its 2023-2025 Wildfire Mitigation Plan. SDG&E's mitigations involve a wide array of categories such as grid hardening, inspection and maintenance, and vegetation management programs, all aimed at mitigating the risk of ignitions related to the electric system. Additional categories include situational awareness, which informs risk models and helps prioritize infrastructure replacement and upgrades, and Emergency Planning and Preparedness, which enables strategies and tools for real time decision making during emergency response and PSPS activations. SDG&E also has mitigations aimed at reducing the impact of a wildfire should an ignition occur, including high-definition cameras, ground and aerial fire suppression resources, and a fuels management program. In addition, SDG&E has mitigations designed to minimize the customer impacts associated with PSPS de-energizations, including the installation of sectionalizing devices and customer service efforts including the Generator Grant Program (GGP), Community Resource Centers (CRC), which are operated during PSPS de-energizations, and customer outreach programs, which are aimed at wildfire and PSPS preparedness.

Pursuant to Public Utilities Code (PRC) Section 8386.3(c)(1), SDG&E submits this 2023 Annual Report on Compliance (ARC), which is SDG&E's self-assessment of compliance with its approved 2023-2025 Wildfire Mitigation Plan for the 2023 compliance period. SDG&E asserts that it met its wildfire and PSPS risk reduction intent and provides quantitative and qualitative metrics demonstrating its achieved risk reduction. Appendix A: SDG&E 2023 ARC Summary Targets and Expenditures offers an at-a-glance view of SDG&E's planned and actual targets and spend.

¹ *Office of Energy Infrastructure Safety's 2023-2025 Wildfire Mitigation Plan Technical Guidelines (December 6, 2022), OEIS Docket No 2023-2025-WMPs.*

² *2023-2025 Wildfire Mitigation Plan; <https://www.sdge.com/2023-wildfire-mitigation-plan>*

2 Update on WMP Objectives

2.1 Risk Methodology and Assessment

SDG&E continues to explore opportunities to enhance its risk models to improve its analytics capabilities and further utilize its models to inform decision-making. A risk modeling improvement plan has been developed that includes evaluation of additional factors such as social vulnerability, impacts of climate change, and further breaking out the assessment of risk drivers. Additionally, enhancement of modeling design and architecture will continue, enabling tracking and validation of various model risk components, establishing a formalized process for conducting independent reviews, and further exploring the expanded use of models to inform selection and prioritization of initiatives other than covered conductor installation and undergrounding of electric lines.

SDG&E continued to enhance its risk models to inform decision-making in 2023. Significant updates were made to the Wildfire Next Generation System Planning (WiNGS)-Planning model to improve the PSPS risk assessment and update weather station wind gust information. Research and development were also conducted to integrate social vulnerability and egress data into both the wildfire and PSPS risk assessments within WiNGS-Planning. A template-driven model validation process was also implemented, facilitating a more formalized and comprehensive review of the model.

2.2 Wildfire Mitigation Strategy

SDG&E's wildfire mitigation strategy continues to evolve with enhancements made to risk modeling and real-world lessons learned through initiative implementation. The WiNGS-Planning model incorporated additional inputs and refinements, leading to a portfolio of approximately 1,500 miles of strategic undergrounding of electric lines and 370 miles of covered conductor to be installed between 2022 and 2032. This portfolio will reduce the risk of wildfire by 83% and will significantly reduce the impacts of PSPS de-energizations to customers on frequently impacted circuits. This strategy will continue to be refined as new information including climate change, weather patterns, and mitigation effectiveness is studied and validated.

SDG&E continued to refine the inputs for the WiNGS-Planning model in 2023. Specifically, and in collaboration with other large California utilities, understanding of the effectiveness of covered conductor installation and of covered conductor installation combined with Falling Conductor Protection (FCP) and Early Fault Detection (EFD) continued to be analyzed. The outputs of this analysis were run through WiNGS-Planning to provide an update on portfolio scoping. Full details are included in the 2025 WMP Update in response to Areas for Continued Improvement (ACI) SDGE-23-06 and SDGE-23-08.

2.3 Grid Design, Operations, and Maintenance

Grid hardening programs are aimed at reducing the risk of wildfires caused by utility equipment and minimizing impacts to customers from mitigations such as PSPS de-energizations. Programs such as the Covered Conductor Program will prevent risk events from occurring across several drivers such as energized wire down and foreign object contact. Covered conductor installation and strategic undergrounding of electric line efforts will continue, and specific equipment upgrades such as expulsion

fuse replacements, installation of additional sectionalizing, and upgrading to supervisory control and data acquisition (SCADA) devices will be implemented across the system. New technologies such as Advanced Radio Frequency Sensors (ARFS), which officially kicked-off in mid-2022 after completing a 2-year demonstration, will be advanced. Additionally, by expanding the use and development of enhanced inspection technologies such as infrared inspections of overhead distribution, drone assessments, and Intelligent Image Processing (IIP), SDG&E will be able to detect damage and collect data on distribution and vegetation.

SDG&E continued the implementation of its grid hardening programs in 2023. Through the additional mileage of covered conductor installation and strategic undergrounding of electric lines accomplished in 2023, wildfire risk on the system was reduced by 2.8%. Replacement of high-risk assets, such as expulsion fuses, hotline clamps (HLCs), and lightning arresters, continued in the High Fire Threat District (HFTD). New programs, such as EFD and the Strategic Pole Replacement Program began work in 2023 and will grow and improve through lessons learned. Drone assessments and IIP continued to be utilized in 2023, and a new risk-informed approach to selecting which structures would receive drone inspections each year was implemented.

2.4 Vegetation Management and Inspections

Enhancements to the Vegetation Management Program include tracking and maintaining an asset (tree and pole) database for all activities including detailed and off-cycle inspection, trimming and removals, enhanced vegetation management, pole brushing, and auditing. Improvements to the work management system on the server side of the application (CitiWorks) and on the mobile application (Epoch) enabled the creation of specialized Dispatch Work Orders (DWOs) to support off-cycle patrol inspections and enhanced vegetation management. Additional data collection enhancements include the collection of inventory tree Genus and species names, electronic customer refusal tracking, and additional GIS mapping layers for improved situational awareness.

In 2023, SDG&E began to utilize risk analysis as an element of scheduling for annual, off-cycle HFTD patrols. Vegetation Management Areas (VMAs) with a higher frequency of historical memos and/or reliability (hazard) trees were scheduled to be patrolled closer to the fall season when fire conditions begin to peak. Several Epoch and associated Vegetation Management datasets were migrated to the Amazon Web Services (AWS) data lake, improving data capabilities. Additionally, a new environment for data management and development was implemented that seamlessly combines code repositories, programmed utilities, and database tools. This integrated environment facilitates efficient collaboration among data analysts, improves version control capabilities, and enhances the department's overall analytic capabilities.

Also in 2023, as part of the Vegetation Management off-cycle HFTD patrol, all stand-alone secondary construction was inspected, including potential hazard tree conflicts with all associated infrastructure such as poles and down-guys. In addition, a Light detection and ranging (LiDAR) strike tree analytics dashboard was developed to associate LiDAR-observed trees with current inventory trees to determine density and to potentially incorporate the data in a future enhancement of the mobile work application.

2.5 Situational Awareness and Forecasting

The Fire Science and Climate Adaptation (FSCA) business unit continues to play a critical role in wildfire mitigation efforts, responding to and strategizing for fire preparedness activities and climate resilience related programs. In the 2023-2025 Wildfire Mitigation Plan (WMP) cycle, technological advancements for fire science modeling and weather analysis will include fully automating fire detection capabilities, exploring sensor technologies for portable monitoring in field trucks, exploring smoke plume modeling technology, and building new machine learning wind speed and gust models. Additionally, the continued partnership with academia will further develop fire science for integration into Santa Ana Wind Threat Index (SAWTI) and Fire Potential Index (FPI) as well as evaluate large computational resources to include a module for impact of large eddy scale weather. The creation of a Wildfire & Climate Resiliency Center (WCRC) in 2023 will also bring together leading thinkers and problem solvers in academia, government, and the community to create forward-looking solutions to help prevent ignitions, mitigate the impacts of fires, and ultimately help build a more resilient region.

In 2023, SDG&E continued to enhance and validate the fully automatic fire detection capabilities utilizing Geostationary Operational Environmental Satellite (GOES) West satellite detection and wildfire mountain top cameras to triangulate ignition points and send a map-based product as an alert to registered users. In addition, and in collaboration with Technosylva, development continued on a smoke modeling feature that may be leveraged as an additional input to other software tools, such as the WiNGS models (WiNGS-Ops, WiNGS-Planning), in the future.

The WCRC was completed in December 2023 and opened in January 2024, welcoming Wildfire and Climate Science staff to new spaces for collaboration. The elevated education and collaboration space for public safety partners (PSP) and the community will open in April 2024. This space will be used not only to provide helpful information to protect our community, but also to serve as the hub for all things Wildfire/PSPS in the service territory, inviting safety partners, officials, and students alike to come, learn, and share ideas.

2.6 Emergency Preparedness

The well-established After-Action Review (AAR) process follows Emergency Operations Center (EOC) activations and includes workshops with both internal and external stakeholders to gather lessons learned and develop any corrective actions. Emergency Management Operations will increase staff dedicated to enhancing various emergency programs, modifying workforce training, streamlining processes and documentation management, improving collaboration by developing a software solution allowing for third-party access, and creating dashboards that incorporate Human Factors Engineering (HFE) into PSPS decision-making tools. Emergency preparedness also entails working with community partners and stakeholders by incorporating effectiveness outreach survey feedback, expanding Tribal and Access and Functional Needs (AFN) campaigns, Community Based Organizations (CBOs) and local school districts.

In 2023, SDG&E aligned response meeting cadences and weather briefings between the various response operation centers. Mutual assistance processes were refined, and 453 responders were trained in Summer Readiness to ensure full preparedness for a response. HFE was implemented in the Notifications Dashboard that is under development and was used to update the PSPS dashboard. HFE

implementation leads to more user friendly, interactive, and eye-catching dashboards, allowing for quick navigation. Once user feedback is received, HFE will continue to be used to develop and enhance dashboards.

In 2023, as part of its emergency management and preparedness efforts, SDG&E continued to work closely with internal stakeholders, Indian Councils, and local school districts. In addition, our network of more than 200 CBOs continued to connect customers with programs, resources, and solutions related to Customer Assistance, bill debt relief, PSPS resiliency, wildfire preparedness, clean energy, and conservation. Our CBOs serve individuals with Access and Functional needs, including those that are multicultural, multilingual, low income, seniors, and limited English proficient (LEP) audiences in communities of concern. In addition, the Outreach team worked closely with the Tribal Relations team to effectively engage and communicate with the 17 Federally recognized tribes in the service area. SDG&E will continue to host Tribal staff trainings, presentations, and community resource fairs in 2024 to help increase outreach efforts and expand our reach in tribal communities.

2.7 Community Outreach and Engagement

Collaboration, the sharing of best practices, and the exchange of lessons learned is of the utmost importance to protect public safety. In an effort to identify gaps in processes and outreach efforts, partners and communities are regularly solicited for feedback. Year-round safety education and communication campaigns are continually refined and augmented, enhancing mobile application and communication platforms, leveraging school communication platforms, and expanding public education to AFN, LEP populations and Tribal communities.

In 2023, partnerships with 40 HFTD-focused CBOs were optimized, which resulted in promotion and amplification of PSPS-related preparedness information to vulnerable populations. The Resiliency Audit, an online survey that engages with HFTD customers to increase resiliency, was used to survey customers, and particularly affected customers, to assess campaign effectiveness and communication preferences and help develop future campaigns.

In 2023, broader engagement was established through a series of weekly and monthly meetings with other Investor-Owned Utilities (IOUs) to strategize and align where possible on wildfire and PSPS mitigations. Broader engagement was also established through a membership with Chartwell, Inc., a national membership group for gas and electric utilities that collaborates on problem-solving opportunities and events to help utilities improve customer experience and operational efficiency. In addition, the EOC continued to host tours for other utilities, trade groups, emergency response agencies, local, state, and federal agencies, and other representatives to share information, best practices, and resources.

2.8 Public Safety Power Shutoff

Reducing the impacts of PSPS de-energizations continues to be a core goal of SDG&E. In addition to implementing grid hardening initiatives and resiliency programs to reduce the likelihood and consequences of PSPS de-energizations for customers, education and communication efforts related to wildfire safety and PSPS de-energizations are continually expanded to targeted customers throughout the service territory. In addition, assessment strategies are continually enhanced to further

opportunities to increase PSPS de-energization thresholds. WiNGS-Ops will evolve to assess wildfire risk and study customer impacts of PSPS de-energizations. As technology becomes more sophisticated, modeling efforts will be improved by increasing granularity and accuracy in PSPS risk assessments in WiNGS-Ops and integrating the FPI into the Network Management System (NMS) for future protective equipment threshold setting improvements.

SDG&E did not perform any PSPS de-energizations in 2023. However, through grid hardening and customer resiliency programs, approximately 8,700 customers had PSPS risk reduced for any future events. In addition, the PSPS risk model, WiNGS-Ops, was modified to incorporate customer impact scaling factors. These factors were devised by subject matter experts and were applied to elevate the safety risk estimates for PSPS Critical Facilities and for urgent, essential, sensitive, and AFN customers.

3 Update on 3-Year Objectives

This section provides an assessment of SDG&E’s progress towards achieving its 3-year objectives as stated in Section 8 of its 2023–2025 WMP. Table 3-1 through Table 3-6 list SDG&E’s 3-year objectives by category and provide a summary of progress made in 2023.

Table 3-1: Update on 3-Year Objectives for Grid Design, Operations, and Maintenance

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.01	Continue to provide fixed backup power solutions to residential and commercial customers who experience frequent PSPS.	Standby Power Programs, WMP.468	8.1.2.11.3, p.177	12/31/2025	Standby Power Programs will continue to be offered to customers who meet the criteria of the project scope. See Section 5.2.20 Standby Power Program (Standby Power Program (Fixed Backup Power) (WMP.468) for details on 2023 completions.
8.1.02	Continue to provide portable backup power solutions to vulnerable, electricity-dependent customers.	Generator Grant Program, WMP.466	8.1.2.11.4, p.179	12/31/2025	The GGP will continue to be offered to customers who meet the criteria of the project scope. In 2023, 805 generators were provided to qualifying residential customers.
8.1.03	Continue to provide rebates on portable backup power solutions to customers who experience PSPS.	Generator Assistance Program, WMP.467	8.1.2.8.3, p.170	12/31/2025	The Generator Assistance Program (GAP) will continue to be offered to customers who meet the criteria of the project scope. In 2023, 251 generator rebates were provided to qualifying residential customers.
8.1.04	Build 185 Base Stations to deploy a privately-owned LTE network.	Distribution Communications Reliability Improvements, WMP.549	8.1.2.10.1, p.171	12/31/2025*	To date, 58 base stations have been deployed for SDG&E’s privately-owned LTE Network, with locations focused in the HFTD Tier 2 and Tier 3. However, the objective to build 185 base stations by 2025 will not be accomplished due to several factors. See Section 5.2.9 Distribution Communications Reliability Improvements (WMP.549) for details on 2023 completions. The most significant factors are the challenges of transmission structure attachments and the use of a new distribution pole design that will use engineered mono-poles with communication equipment above the electric distribution wire. Technical details and workflow processes for scale-up are taking longer than expected for each internal stakeholder, including electric engineering, civil engineering, work methods, and telecommunications. Therefore, original design estimations have been adjusted to accommodate for these workflow activities and durations.
8.1.05	Install avian protection equipment on distribution poles in HFTD.	Avian Protection, WMP.972	8.1.4.3, p.213	12/31/2099 (Ongoing)	The Avian Protection program targeted work for 2023 was successfully completed. See Section 5.2.14 Avian Protection (WMP.972) for details on 2023 completions.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.06	Replace existing non-SCADA Capacitors with a more modern SCADA switchable Capacitor or remove non-SCADA Capacitor if not required for voltage or reactive support, to reduce potential for fire caused by faulted capacitors in the HFTD and WUI Areas	Capacitor Maintenance and Replacement Program; WMP.453	8.1.4.4, p.214	12/31/2025*	The Capacitor Maintenance and Replacement program targeted work for 2023 was successfully completed and targeted the HFTD and Wildland Urban Interface (WUI) areas. See Section 5.2.10 Capacitor Maintenance and Replacement Program (SCADA) (WMP.453) for details on 2023 completions.
8.1.07	Install new CAL FIRE-approved power fuses to replace existing expulsion fuse equipment in the HFTD.	Expulsion Fuse Replacement, WMP.459	8.1.4.5, p.216	12/31/2023*	The Expulsion Fuse Replacement program targeted work for 2023 was substantially completed and targeted HFTD and WUI areas. This objective was expected to be completed in 2023, however, there are approximately 1,000 fuses that remain to be replaced with California Department of Forestry and Fire Protection (CAL FIRE)-approved fuses. Therefore, the objective has been extended through the 2023-2025 WMP cycle. See Section 5.2.11 Expulsion Fuse Replacement (WMP.459) for details on 2023 completions.
8.1.08	Replace HLC connections that are connected directly to overhead primary conductors with compression connections.	Maintenance, repair, and replacement of connectors, including hotline clamps, WMP.464	8.1.4.6, p.218	12/31/2024*	The Hotline Clamps program targeted work for 2023 was successfully completed and targeted the HFTD and WUI areas. IIP technology identified approximately 4,000 additional HLCs that remain to be replaced, therefore work will continue through the end of the 2023-2025 WMP cycle. See Section 5.2.12 Maintenance, Repair, and Replacement of Connectors, including Hotline Clamps (WMP.464) for details on 2023 completions.
8.1.09	Install CAL FIRE-approved lightning arresters in the HFTD.	Lightning arrester removal and replacement, WMP.550	8.1.2.11.1, p.175	12/31/2099 (Ongoing)	The program targeted work for 2023 was successfully completed, and the program is expected to continue beyond the 2023-2025 WMP cycle until all lightning arresters have been replaced per CAL FIRE regulation. See Section 5.2.13 Lightning Arrester Removal and Replacement (WMP.550) for details on 2023 completions.
8.1.10	Install switches in strategic locations improving the ability to isolate high-risk areas for potential de-energizations and minimize PSPS exposure to customers.	PSPS Sectionalizing Enhancements, WMP.461	8.3.3, p. 303	12/31/2099 (Ongoing)	The PSPS Sectionalizing program targeted work for 2023 was successfully completed, installing switches in strategic locations that could potentially reduce PSPS exposure to approximately 6,000 customers. See Section 5.2.17 PSPS Sectionalizing Enhancements (WMP.461) for details on 2023 completions.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.11	Test devices that have been installed and identify the devices that do not have sufficient signals and low batteries, so they can be replaced in 2024 and 2025 by new material/WFI devices.	Wireless fault indicators, WMP.449	8.1.2.7, p.161	12/31/2025*	In 2023, the testing and installing of new wireless fault indicators (WFIs) was paused due to manufacturer upgrades to the currently used WFIs. Upgraded WFIs require different communication specifications not currently employed, therefore, the feasibility of implementing the upgraded equipment is being evaluated. In addition, WFIs from other manufacturers will be evaluated. In the interim, SCADA devices and existing WFIs will provide situational awareness and guide first responders to the likely location of a fault. For this reason, this objective will extend beyond the 2023-2025 WMP cycle.
8.1.12	Expand microgrid off-grid solutions in the new Backup Power for Resilience Program.	Microgrids, WMP.462	8.1.2.2, p.153	12/31/2099 (Ongoing)	<p>The microgrid at Cameron Corners is currently operational in its temporary configuration and a permanent renewable solution is expected to be completed in 2024. In the interim, a mobile battery is supporting any microgrid islanding events at Cameron Corners. For Butterfield and Shelter Valley microgrids, land acquisition rights were acquired in 2023 and permanent renewable microgrids are expected to be completed in 2025.</p> <p>In August 2023, SDG&E filed AL 4277-E to establish the Remote Grid Addendum Agreement, in which remote grid customers will acknowledge and accept that they are responsible for paying for all electric services for which they are being billed even if they are not directly receiving that service as a remote grid customer. The Tier 3 advice letter is currently pending with the California Public Utilities Commission (CPUC) and is expected to be resolved in the first half of 2024. During this time, basic site location preparation, such as engineering consultation with the selected vendor, and customer acceptance of the alternative method of services are expected.</p>
8.1.13	Utilize strategic undergrounding to reduce or eliminate the threat of wildfire and the use of PSPS mitigation measures during extreme weather events.	Strategic Undergrounding Program, WMP.473	8.1.4.3, p.213	12/31/2099 (Ongoing)	In 2023, the Strategic Undergrounding Program achieved 86% of its intended risk reduction. See Section 5.2.2 Strategic Undergrounding (WMP.473) for details on 2023 completions.
8.1.14	Install automation equipment on 21 circuits within the HFTD areas, with emphasis on Tier 3.	Falling Conductor Protection, Advanced Protection, WMP.463	8.1.2.8.2, p.166	12/31/2099 (Ongoing)	The Advanced Protection Program targeted work for 2023 was substantially completed by installing falling conductor automation equipment. The program is on track to complete this objective within the 2023-2025 WMP cycle. See Section 5.2.7 Advanced Protection (WMP.463) for details on 2023 completions.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.15	Complete installation of advanced radio frequency sensors (ARFS) and Power Quality (PQ) meters on 30 circuits within the HFTD areas, with emphasis on Tier 2 and Tier 3.	Early Fault Detection, WMP.1195	8.1.2.5.2, p.159	12/31/2099 (Ongoing)	In 2023, installation of 29 ARFS and Power Quality (PQ) meters was completed on 26 circuits in the HFTD Tier 2 and Tier 3. See Section 5.2.8 Early Fault Detection (WMP.1195) for more on 2023 completions.
8.1.16	Complete Tier 3 overhead hardening efforts, continue work on Tier 2 hardening.	Overhead Transmission Hardening, WMP.543 Underground Transmission Hardening, WMP.544 Distribution-Underbuild, WMP.545	8.1.5.4, p.221	12/31/2024*	In 2023, Tier 3 transmission hardening efforts were completed. Hardening in Tier 2 will continue through 2027. See Section 5.2.4 Transmission Overhead Hardening (WMP. 543) for details on 2023 completions.
8.1.17	Utilize data science methodologies to improve data integrity and develop predictive asset health analyses (Asset 360, IIP).	Asset 360, WMP.1341 IIP, WMP.1342	8.1.5.4 p.221	12/31/2099 (Ongoing)	In 2023, the Asset 360 platform was utilized to develop predictive switch failure rates utilizing historical switch failures and various switch attributes. Predictive failure analysis is planned for distribution transformers and fuses in 2024. Additionally, previously developed models for overhead structures, conductor, and capacitors will be enhanced in 2024 to improve the prediction accuracy based on 2023 field results. In 2023, drone, fleet, and mobile capture imagery was implemented through IIP technology to increase the accuracy of asset attributes. Additionally, damage detection models within IIP were enhanced and trained using 2023 drone inspection imagery.
8.1.18	Utilize models to develop, enhance, and expand risk-informed strategies for asset management.	Integrated Asset Management Systems, WMP.1332	8.1.5.4, p.221	12/31/2099 (Ongoing)	In 2023, enhancement continued for risk prioritization models that inform inspection programs such as drone inspections (WMP.552) and distribution infrared inspections (WMP.481). Over 100 asset identification and damage detection models are being utilized to date.
8.1.19	Continue development of Asset 360 data analytics foundation and integration.	Asset 360, WMP.1341	8.1.5.4, p.221	12/31/2099 (Ongoing)	In 2023, the Asset 360 data platform was migrated to AWS, six dimensions of data quality rules were standardized, and automation of the 'completeness' dimension was completed. Additionally, Optical Character Recognition (OCR) technology was leveraged to review approximately 200 transmission and distribution as-builts to identify and validate asset installation dates.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.20	Utilize LiDAR imagery and Intelligent Image Processing (IIP) for inventory of secondary conductor and services.	IIP, WMP.1342	8.1.5.4.2, p.222	12/31/2025	In 2023, it was determined that LiDAR data can be leveraged for digitizing and mapping services within the HFTD. Some challenges were identified, including classifying LiDAR data and distinguishing between secondary conductor and services, which is required in order to perform the digitization. Third-party services were evaluated to drive this effort forward and plans have been made to execute contract agreements in 2024.
8.1.21	Begin integrating digital asset imagery collected from drones, LiDAR, and other assessments into Asset 360	Integrated Asset Management Systems, WMP.1332	8.1.5.4, p.221	12/31/2099 (Ongoing)	In 2023, IIP predictions of imagery data were structured and organized to enable consumption into the Asset 360 data platform. Drone, fleet, and mobile capture imagery was also integrated into Asset 360. This data and imagery will be leveraged to enhance prescriptive and predictive asset health models. In 2024, full integration of IIP data and imagery into Asset 360 will be further investigated.
8.1.22	Begin assessing accumulated data and utilizing/adopting geospatial platform.	Integrated Asset Management Systems, WMP.1332	8.1.3.11, p.207	12/31/2099 (Ongoing)	In 2023, development and testing began on the ARCGIS Hub, a geospatial platform for data retrieval and visualization, utilizing historical quarterly data reports (QDR). Use cases for adopting a geospatial platform were identified that will enable self-service tools and provide visibility and transparency for all WMP reporting. SDG&E plans to deploy ARCGIS Hub in 2025.
8.1.23	Automate creation of corrective work orders (substation)	Substation Patrol Inspections, WMP.492	8.1.3, p. 181	12/31/2022	In late 2022, the creation of substation corrective work orders in Cascade, the system of record, was automated for frequently identified findings.
8.1.24	Continue infrastructure inspections per regulatory requirements while exceeding requirements in certain high- risk areas (HFTD and WUI).	Distribution Drone Assessments, WMP.552 Transmission 69 kV Tier 3 Visual Inspections, WMP.555 Distribution Infrared Inspections, WMP.481	8.1.3, p. 181 8.1.5.4.3, p.224	12/31/2099 (Ongoing)	In 2023, transmission and distribution inspections and maintenance were performed in compliance with General Order (GO) 165 and GO 95. These mandated inspections were supplemented with additional risk-based inspections such as drone inspections, infrared inspections, 69 kilovolt (kV) inspections in Tier 3 of the HFTD, and non-routine ad-hoc inspections for situational awareness when warranted by operational considerations.
8.1.25	Expand the use and development of enhanced inspection technologies such as Infrared inspections of overhead distribution, drone assessments, and IIP to detect damage and collect data on distribution and vegetation.	Distribution Infrared Inspections, WMP.481 Transmission Infrared Inspections, WMP.482 Distribution Drone Assessments, WMP.552	8.1.3.7, p.194	12/31/2099 (Ongoing)	In 2023, the drone inspection program was expanded to include additional structures in the WUI region, exceeding its targets. In addition, damage detection models were enhanced and trained in IIP with images collected during these inspections. In 2024, the distribution infrared inspection program is expected to evolve into a risk-based program using risk prioritization models to inform the selection of assets for inspection. 2024 will serve as a pilot year to collect results and analyze effectiveness before determining how to scope the program on an ongoing basis.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.26	Perform electric distribution drone inspections on 15% of HFTD and WUI structures prioritized on risk.	Distribution Drone Assessments, WMP.552	8.1.3.6, p.194	12/31/2099 (Ongoing)	In 2023, drone inspections were performed on 15% of the highest-risk assets in the HFTD and WUI, as verified in QDRs. See Section 5.2.27 Drone Assessments (WMP.552) for details on 2023 completions.
8.1.27	Continue the implementation of transmission wood pole intrusive inspections on an 8-year cycle (reduced from 10 years).	Transmission Wood Pole Intrusive inspections, WMP.1190	8.1.5.4.3, p.224	12/31/2099 (Ongoing)	In 2023, transmission wood pole intrusive inspections continued to be performed on an 8-year cycle, exceeding general order requirements. See Section 5.2.26 Transmission Wood Pole Intrusive Inspections (WMP.1190) for details on 2023 completions.
8.1.28	Continue intelligent image processing, utilizing artificial intelligence and innovation to detect damage to high fire risk distribution assets and vegetation.	IIP, WMP.1342	8.1.6, p. 225	12/31/2099 (Ongoing)	In 2023, IIP technology supported drone inspections by utilizing artificial intelligence to detect damage on assets. Drone inspections collect drone imagery that is then run through IIP models to detect damage. These models are continuously enhanced and trained as new images are evaluated.
8.1.29	Regularly perform internal audits of inspections.	QA/QC of Distribution Detailed Inspections, WMP.491 QA/QC of Transmission Inspections, WMP.1191 QA/QC of Distribution Drone Assessments, WMP.1192 QA/QC of Wood Pole Intrusive Inspections, WMP.1193 QA/QC of Substation Inspections, WMP.1194	8.1.9.1, p.249	12/31/2099 (Ongoing)	In 2023, Quality Assessment/Quality Control (QA/QC) activities for transmission, distribution, and substation inspection programs were completed, as verified in QDRs. See Sections 5.2.32 through 5.2.36 for details on 2023 completions. In 2024, the distribution QA/QC inspection program is expected to be enhanced in response to ACI SDGE-23-13 (see the 2025 WMP Update for details) to better track findings (pass/fails) and address how findings are used to inform inspections.
8.1.30	Explore and implement virtual reality/augmented reality around the proper operation of field and substation equipment.	Workforce Planning-Asset Inspections, WMP.1334	8.1.9.1, p.249	12/31/2025	In 2023, extended reality training was implemented to all patrollers and observers. In 2024, this training is expected to be utilized for electric troubleshooters, and the operation of critical field equipment will be incorporated in the training.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.1.31	Implement dedicated line inspector program to perform routine inspection types	Workforce Planning-Asset Inspections, WMP.1334	8.1.9.1, p.249	12/31/2023	In 2023, three dedicated line inspectors were hired to perform overhead detailed and overhead/underground patrol inspections. These inspectors are currently undergoing a 6-month training program before being authorized to perform the inspections. In 2024, the QA/QC required for these inspectors as part of their initial training in the field is expected to be further refined. It is expected that these inspectors will perform solo inspections beginning in Q2 2024.
8.1.32	Examine electric line crew field personnel and first responder training for possible improvements.	Workforce Planning-Asset Inspections, WMP.1334	8.1.2.11.2, p.175	12/31/2099 (Ongoing)	In 2023, various areas of wildfire safety training were examined and as a result ESCPS100 PSPS/Fire Outlook training was developed and deployed to all operations personnel. This training standardized ESP113.1 training and made it a requirement for all operations personnel. In addition, this training was made available to all company employees (non-operations) as optional.

*Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines³

Table 3-2: Update on 3-Year Objectives for Vegetation Management and Inspection

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.2.01	Create new attribute fields within tree inventory database to document site-specific and tree-specific risk conditions.	Vegetation Management Enterprise System, WMP.511	8.2.4, p. 279	12/31/2025	In 2023, a new 'Tree Metrics' attribute field was created at the tree record level within the inventory database (Epoch), which displays the frequency a tree has been a memo, hazard, and/or was the cause of an outage.
8.2.02	Vegetation Management Enterprise System.	Vegetation Management Enterprise System, WMP.511	8.2.4, p. 279	12/31/2025	In 2023, several Epoch and associated Vegetation Management datasets were successfully migrated to the AWS data lake. Additionally, a new environment for data management and development was implemented that combines code repositories, programmed utilities, and database tools. This integrated environment facilitates efficient collaboration among data analysts, improves version control capabilities, and enhances the department's overall analytic capabilities.

³ 2025 Wildfire Mitigation Plan Update Guidelines, <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2025-wildfire-mitigation-plans/>

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.2.03	Create system on server-side application to auto- close Dispatch Work Orders upon closure of Scheduling Work Orders.	Vegetation Management Enterprise System, WMP.511	8.2.3.5, p. 276	12/31/2025	In November 2023, development of the design criteria to auto close Dispatch Work Orders in CityWorks (the server application of PowerWorkz) was implemented. CityWorks design and testing for Epoch (field application) enhancements is expected to be completed in Q1 2024.
8.2.04	Integrate risk-analysis into annual, off-cycle HFTD and at-risk patrols	Off-Cycle Patrols, WMP.508	8.2.3.1, p. 270	12/31/2025	In 2023, risk analysis as an element of VMA scheduling for annual, off-cycle HFTD patrols was implemented. VMAs with a higher frequency of historical memos and/or reliability (hazard) trees were scheduled to be patrolled closer to the fall season when fire conditions begin to peak.
8.2.05	Continue pole clearing (brushing) including multiple, annual activities of mechanical, chemical, and re- clear activities to prevent ignitions. Continue pole brushing in areas not required by law as an added fire-prevention activity. Continue integrated TGR application during the pre-inspection process.	Pole Clearing "Brushing", WMP.512	8.2.3.1, p. 270	12/31/2025	In 2023, pole clearing activities required by PRC§4292 were continued, as well as additional discretionary fire preventative measures. The Tree Growth Regulator (TGR) program was also continued, which includes customer notification and treatment application in conjunction with detailed pre-inspection activities. See Section 5.3.7 Pole Clearing (Brushing) (WMP.512) for details on 2023 completions.
8.2.06	Continue to thin flammable vegetation around select poles subject to PRC § 4292 using risk and environmental impact criteria. Pilot alternate methods of thinning such as the cultural use of goats for sustainability goals.	Fuels Management Program, WMP.497	8.2.3.3, p. 274	12/31/2025	In 2023, a total of 514 poles were cleared as a discretionary fire prevention measure, exceeding the annual target of 500 poles. See Section 5.3.2 Fuels Management (WMP.497) for details on 2023 completions. The use of goats as an alternative, cultural means of thinning fuels was researched in 2023 and the option was determined non-viable due to over-restrictive penning of goats and the potential for environmental restrictions and/or migration.
8.2.07	Continue performing multiple inspection activities in the HFTD including "Level-2" hazard tree patrols within the entire "utility strike zone" to identify risk trees that could impact the overhead conductor.	Off-Cycle Patrols, WMP.508	8.2.3.2, p. 273	12/31/2025	In 2023, ongoing, annual off-cycle patrols were continued in the 106 VMAs that are wholly or partially in the HFTD. See Section 5.3.5 Off-Cycle Patrol (WMP.508) for details on 2023 completions. New scheduling work orders were developed in Cityworks (the server application of PowerWorkz) to improve electronic documentation and reporting for this activity. In addition, an initial model to identify the relative risk of HFTD VMAs based on the frequency of specific conditions at the tree asset level was developed for the purpose of modifying the off-cycle HFTD patrol schedule (See Objective 8.2.04).

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.2.08	Continue pursuing expanded trim clearances greater than 12 feet in the HFTD for targeted species, exceeding regulatory requirements. Update methodology for modeling and forecasting application of enhanced clearances.	Clearance, "Enhanced", WMP.501	8.2.7, p. 284	12/31/2025	In 2023, the enhanced clearances program was continued and met its target. See Section 5.3.3 Clearance (WMP.501) for details on 2023 completions. The Enhanced Clearances Joint Study, in collaboration with other large IOUs, continued studying the effectiveness of expanded trim clearances in order to meet the requirements of ACI SDGE-21-04. See the 2025 WMP Update for a report on the progress and outcomes of a third-party analysis of the effectiveness of these enhanced clearances.
8.2.09	Continue annual, required, internal contractor training for Hazard Tree, Environmental, Fire Preparedness, and Environmental Regulation. Develop and document internal training material for new Vegetation Management personnel.	Workforce Planning, WMP.506	8.2.7, p. 284	12/31/2025	Contractors performing vegetation management work met their annual training requirements in 2023. In addition, two new vendors were onboarded who are developing their training program to comply with this initiative. New training material developed by contractors is submitted to Vegetation Management, who retains copies of all annual training material.
8.2.10	Continue engagement and collaboration with California Community College of Education, UAA, local unions, and Joint IOUs on Line Clearance Tree Trimming training. Expand curriculum to include training for Certified Arborists.	Workforce Planning, WMP.506	8.2.4, p. 279	12/31/2025	In collaboration with the San Diego Continuing College of Education, two separate "Arborist" (tree trimming) training cohorts were completed in 2023. There were approximately 40 graduates from these courses, who were provided a job fair by participating contractors for potential employment opportunities. Additionally, a new "Pre-Inspector" training course was developed and provided in 2023.

Table 3-3: Update on 3-Year Objectives for Situational Awareness and Forecasting

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.01	Continue to improve the quality of AQI data and notifications.	Air Quality Management Program, WMP.970	8.3.2.3, p. 299	12/31/2025	In 2023, distribution lists were linked to particulate Air Quality Index (AQI) sensors based on locations. Supervisors can now receive notifications of elevated AQI levels for their specific work locations. Data quality from AQI sensors continues to be reviewed and compared to nearby county-operated sensors.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.02	Continue to benchmark with other IOUs on monitoring solutions.	Air Quality Management Program, WMP.970	8.3.2.3, p. 299	12/31/2099 (Ongoing)	In 2023, benchmarking with other IOUs on monitoring solutions continued. Based on this collaboration, a new portable sensor technology will be considered for field testing (see Objective 8.3.03).
8.3.03	Explore sensor technologies for portable monitoring in field/trucks.	Air Quality Management Program, WMP.970	8.3.2.3, p. 299	12/31/2025	In 2023, preliminary exploration of portable sensor technologies was completed. The portable sensor Temtop is expected to be field tested in a pilot assessment in 2024. Depending on results, portable particulate sensors would be available for use in 2025.
8.3.04	Track and adapt to regulatory changes.	Air Quality Management Program, WMP.970	8.3.2.3, p. 299	12/31/2099 (Ongoing)	In 2023, regulatory changes were tracked. There was a proposed bill to lower the AQI threshold, however, the bill was modified and currently there is no proposed change to the threshold.
8.3.05	Incorporate and publish AQI data via existing FSCA app	Air Quality Management Program; WMP.970	8.3.2.3, p. 299	12/31/2024	In 2023, data collected from particulate sensors was incorporated and published via the existing SDG&E Weather application.
8.3.06	Explore smoke plume modeling technology.	Air Quality Management Program, WMP.970	8.3.4.1.1, p. 310	12/31/2099 (Ongoing)	In 2023, development of a smoke modeling feature for software products (i.e., WFA, WiNGS-Planning, WiNGS-Ops) continued in collaboration with Technosylva. In the interim, the NWS model, Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT), was used. This model computes air parcel trajectories to determine how far and in what direction a parcel of air, and subsequently air pollutants, will travel. HYSPLIT is also capable of calculating air pollutant dispersion, chemical transformation, and deposition.
8.3.07	Develop full automation in fire detection capabilities.	Satellite Based Remote Sensing, WMP.971	8.3.4.1.1, p. 310	12/31/2025	In 2023, progress was ahead of schedule. The pilot program uses GOES West satellite detection, triangulates wildfire mountaintop cameras on an ignition point, and sends a map-based product as an alert to registered users indicating the ignition point and showing live camera feeds of the ignition. This progress has propelled this program to maturity, achieving full automation of fire detection capabilities from space.
8.3.08	Archive ignition detection information from ground sources and perform analysis to help improve algorithms.	Satellite Based Remote Sensing, WMP.971	8.3.4.1.1, p. 310	12/31/2025	In 2023, archiving ignition detection information from ground sources continued, and analyses were performed to improve algorithms. There is a draft contract with SDSC that, when finalized, will enable the continuation of this effort over the next 2 years.
8.3.09	Archive camera verification of satellite heat detections.	Satellite Based Remote Sensing, WMP.971	8.3.4.1.1, p. 310	12/31/2025	In 2023, a 2-year contract was drafted with the San Diego Supercomputer Center (SDSC) that, when finalized, will include a program to archive camera verification of satellite heat detections, provide continuous hot spot validation information to the vendor, and filter out areas of known recurring false positives such as industrial solar farms.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.10	Continuously provide feedback on validation to vendor concerning hot spot detection.	Satellite Based Remote Sensing, WMP.971	8.3.4.1.1, p. 310	12/31/2025	In 2023, a 2-year contract was drafted with SDSC that, when finalized, will include a program to archive camera verification of satellite heat detections, provide continuous hot spot validation information to the vendor, and filter out areas of known recurring false positives such as industrial solar farms.
8.3.11	Filter out areas of known recurring false positives such as industrial solar farms.	Satellite Based Remote Sensing, WMP.971	8.3.4.1.2, p. 311	12/31/2025	In 2023, a 2-year contract was drafted with SDSC that, when finalized, will include a program to archive camera verification of satellite heat detections, provide continuous hot spot validation information to the vendor, and filter out areas of known recurring false positives such as industrial solar farms.
8.3.12	2023: Harden backbone communication network for mountaintop cameras via replacement of legacy equipment and work to explore AI technology for image processing.	Cameras, WMP.1343	8.3.4.1.2, p. 311	12/31/2023	In 2023, SDG&E made numerous backbone enhancements, such as mountaintop cameras and associated infrastructure rebuilds at Cuyamaca Peak, Boucher Hill, and Birch Hill due to ice storm damage. A new relay was installed at Camp Fox and public safety access points were upgraded at Birch Hill, Boucher Hill and High Point to enable back country emergency responder connectivity. In addition, smoke detection artificial intelligence (AI) was implemented on several HPWREN sites to test AI on the network.
8.3.13	2024: Continue hardening backbone network and expand to new sites when/where broader fire community benefit can be realized. Automate smoke detection notifications leveraging AI software, if determined to add value.	Cameras, WMP.1343	8.3.4.1.2, p. 311	12/31/2024	In 2023, development of smoke detection notifications continued in collaboration with the University of California at San Diego (UCSD) and Alchera. Alchera offers internal notifications while UCSD's AlertCA offers broader fire community benefit.
8.3.14	2025: Continue to harden infrastructure to support communications via mountaintop camera network.	Cameras, WMP.1343	8.3.2.1.1, p. 297	12/31/2025	In 2023, one backbone communication site was hardened.
8.3.15	Continue to replace and/or update existing weather stations to improve weather data and ultimately provide more accurate forecasting.	Weather Stations and Normalized Difference Vegetation Index (NDVI) Cameras, WMP.447	8.3.2.3, p. 299	12/31/2025*	In 2023, the following Weather Station Network upgrades were completed: 3 Lithium battery and 65-watt solar panel installations, 30 CH200 charging regulators, and 7 AQI stations and 1 Normalized Difference Vegetation Index (NDVI) camera installations. One Alpine Wind Monitor was installed on Volcan Mountain, but it failed due to icing and will be revisited in 2024. In addition, a weather sensor dashboard modernization was completed to add better functionality and increase ease of use leveraging the cloud.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.16	Perform upgrades to the weather station network including scaling fuels monitoring with the addition of DFM sensors, NDVI cameras, communication equipment (modems), and batteries throughout the service territory.	Weather Stations and Normalized Difference Vegetation Index (NDVI) Cameras (WMP.447)	8.3.2.3, p. 299	12/31/2025	As of 2023, battery and solar upgrades were completed at 11 sites. In 2023, operating systems for CH200 charging regulators were updated and one NDVI camera was installed. In 2024, nine additional sites are expected to be completed.
8.3.17	Retrieve updated observation data to generate 95th, 99th, and max wind weather station statistics and update the historical observation statistics for all weather stations.	Weather Stations and Normalized Difference Vegetation Index (NDVI) Cameras, WMP.447	8.3.5.1, p. 317	12/31/2099 (Ongoing)	In 2023, SDG&E's 222 weather stations collected observations every 10 minutes, equating to 144 observations per station per day or a network total of 31,968 observations per day. These observations allowed for statistical analysis using a normal distribution approach. The 95th, 99th, and max wind weather station statistics were calculated for each station in Q2 using one year's worth of previously collected data.
8.3.18	Utilize high-performance computing clusters to generate higher resolution operational products.	Weather Forecasting, WMP.541	8.3.5.3, p. 319	12/31/2025	High-resolution operational products are generated daily using high-performance computing clusters followed by rigorous operational real-world testing. In 2023, the model output was upgraded from 2-kilometer grid spacing to 1.5-kilometer grid spacing. This increased resolution affords better forecasting output with higher fidelity.
8.3.19	Implement the new operational 1.5 km WRF configuration upgraded from the current 2 km resolution and update all downstream indices from the higher resolution WRF output.	Weather Forecasting SAWTI, WMP.540 FPI, WMP.450	8.3.5.3, p. 319	12/31/2025	In 2023, SDG&E initiated the contract for Atmospheric Data Solutions (ADS) to accomplish this objective. Upon execution, ADS will implement the new operational 1.5-kilometer Weather Research and Forecast (WRF) configuration, upgraded from the current 2-kilometer resolution, and by the end of 2025 will update all downstream indices from the higher resolution WRF output. WRF data visualization went live in 2023.
8.3.20	Build a new Machine Learning (ML) wind speed and gust model that will be trained with the new consistent operational and historical 30-year dataset. Use the ultra-high-resolution terrain to place corrections on the WRF domain.	Weather Forecasting, WMP.452	8.3.5, p. 317	12/31/2025	In 2023, SDG&E initiated the contract for ADS to accomplish this objective. Upon execution, ADS will implement a new machine learning wind speed and gust model, upgraded from the current 2-kilometer resolution, and by the end of 2025 this higher-resolution 1.5-kilometer grid spacing will be implemented.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.21	Upgrade Weather Visualization Portal Plots to enable 4.5 km and 1.5 km resolution for standard pressure levels and numerous meteorological and fuels variables of operational interest.	Weather Forecasting, WMP.452	8.3.5.3, p. 319 8.3.5.5.4, p. 325	12/31/2025	The new contract for SDSC has been in supply management processing since December 19, 2023. Upon execution, SDSC will upgrade weather visualization portal plots to enable 4.5-kilometer and 1.5-kilometer resolution for standard pressure levels and numerous meteorological and fuels variables of operational interest. WRF data visualization went live in 2023 with data provided by ADS and web-based GUI provided by SDSC.
8.3.22	Continue to work with academia and fire agencies to further develop fire science for integration into SAWTI. Re-code software that processes weather and fuels data when the resolution of the modeling used to generate the SAWTI is increased.	Weather Forecasting SAWTI, WMP.540	8.3.5.3, p. 319	12/31/2025	In 2023, SDG&E continued to work with academia and fire agencies. Monthly meetings with the USFS and subsequent tasks outlined in the ADS scope of work will be used to update the SAWTI by the end of December 2025.
8.3.23	Improve LFM ML model which is an input in both FPI and SAWTI models.	Weather Forecasting SAWTI, WMP.540 FPI, WMP.450	8.3.6.3, p. 331	12/31/2025	In 2023, a 2-year scope of work with San Jose State University was established to improve the Live Fuel Moisture (LFM) machine learning model, which is an input in both FPI and SAWTI models.
8.3.24	Continue partnerships with academia to work to advance fire science and weather science.	FPI, WMP.450	8.3.6.3, p. 331	12/31/2025	Partnerships with four academic partners provide cutting edge research and development with the intent on operationalizing all capabilities from each partnership, as delineated below, before the end of 2025. The Center for Western Weather and Water Extremes (CW3E) runs a version of the WRF atmospheric model that has been optimized for extreme weather prediction in the Western United States, called West-WRF. The model was developed and became operational in 2023. The San Jose State University project will develop new LFM content tools to better assess fire danger in the service territory using remote sensing data sets. These tools will be developed using new high-resolution data from various satellite products, eventually leading to a dataset and methodology to incorporate these tools into the Technosylva Wildfire Analyst (WFA) fire behavior modeling platform. In 2023 the LFM database was developed and upon execution of the 2024 contract in Q2 of 2024, the development of a predictive LFM model will begin. SDSC will ingest and store SDG&E datasets for weather forecast, the FPI, and fuels to enable findability and accessibility of these datasets for various stakeholders through web services and visual maps.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
					The University of Wisconsin continues to provide space-based hot spot detection from the GOES-18 platform with a new contract extending the term of performance to December 31, 2025.
8.3.25	Improve the inputs and outputs of the FPI, which may impact operational decision making.	FPI, WMP.450	8.3.6.3, p. 332	12/31/2025	San Jose State University has been tasked with improving the inputs and outputs of the FPI, which may impact operational decision making, by December 31, 2025. The 2024 contract has been in contractual and legal review since summer 2023. The anticipated execution of this contract is Q2 2024.
8.3.26	Continue to install DFM sensors on existing weather stations where fuel moisture data is sparse.	FPI, WMP.450	8.3.6.3, p. 331	12/31/2025	To date, six out of eight Dead Fuel Moisture (DFM) sensors have been installed and the project is on track to meet the completion deadline. Current locations are West Rancho Bernardo, Santa Isabel North, Simon Open Space, Otay Mesa Border, Mission Valley North, and Elfin Forest. These sensors measure temperature and 10-hour DFM values.
8.3.27	Implement the new operational 1.5 km WRF configuration upgraded from the current 2 km resolution and update all downstream indices (FPI, SAWTI) with the higher resolution WRF output.	FPI, WMP.450	8.3.6.3, p. 331	12/31/2025	In 2023, SDG&E initiated the contract for ADS to accomplish this objective. Upon execution, ADS will implement the new operational 1.5-kilometer WRF configuration, upgraded from the current 2-kilometer resolution, and by the end of 2025 will update all downstream indices from the higher resolution WRF output. WRF data visualization went live in 2023.
8.3.28	Re-create the 30-year downscaled NOAA's Climate Forecasting System Reanalysis (CFSR) data using higher resolution 1.5 km WRF and integrate into FPI and SAWTI. resolution 1.5 km WRF and integrate into FPI and SAWTI.	Weather Forecasting SAWTI, WMP.540 FPI, WMP.450	8.3.5.3, p. 319	12/31/2025	The 30-year Climate Forecasting System Reanalysis (CFSR)-based 1.5-kilometer historical simulation has been completed, and this new historical simulation dataset is currently being used to update the FPI and SAWTI.
8.3.29	Update the Normalized Difference Vegetation Index (NDVI) Machine Learning (ML) models by identifying grassland sites across the domain and gathering up-to-date MODIS NDVI observations for grassland sites.	FPI, WMP.450	8.3.6.3, p. 331	12/31/2025	NDVI model updates are ongoing and on-time completion is expected. Weekly reports are generated with data obtained from satellites scanning 20 areas of interest in the service territory, however, a percentage completion is not discernable at this time.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.3.30	Continue improving existing models (FPI, SAWTI) by noting and evaluating discrepancies between predictions and observed reality.	Weather Forecasting SAWTI, WMP.540 FPI, WMP.450	8.3.5.3, p. 319	12/31/2099 (Ongoing)	In 2023, new high-resolution 1.5-kilometer WRF was utilized during the single PSPS activation without de-energization, predicting areas of concern and a period of concern and culminating in the notification of approximately 1,000 potentially-affected customers. In January 2024, the 1.5-kilometer WRF accurately predicted rainfall amounts and timing for two major winter storms.
8.3.31	Partner with academia to explore and evaluate large computational resource to include a module for impact of large eddy scale weather	Weather Forecasting, WMP.452	8.3.5.1, p. 317	12/31/2099 (Ongoing)	In 2023, a search was conducted to find an appropriate partner to explore and evaluate large computational resource to include a module for impact of large eddy scale weather as an ongoing effort. To date, no partners have been found, however the search will continue with input from several experts in academia.

*Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines⁴

Table 3-4: Update on 3-Year Objectives for Emergency Preparedness

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.4.01	Modernize and enhance workforce training in the areas of storm response, process, and documentation (collab with DOC-E and ERO).	Emergency Response Wildfire/PSPS exercise and training, WMP.526	8.4.2.1.3, p. 342	6/30/2024	In 2023, response meeting cadences and weather briefings between the various response operation centers were aligned. Mutual assistance processes were also refined, and 453 responders were trained in Summer Readiness to ensure full preparedness for a response.
8.4.02	Expand Emergency Management Operations by increasing staff dedicated to enhancing various emergency programs.	Watch Command Desk, WMP.1335	8.4.2.2.1, p. 343	6/30/2023*	Resource planning work is ongoing. Discussions around full-time employee versus contractor staff continue.
8.4.03	Establish or Commission a 24/7 Watch Command Desk.	Watch Command Desk, WMP.1335	8.4.2.1.1, p. 338	12/31/2025	Research and additional planning work is ongoing to design the most efficient use of resources. Discussions around full-time employee versus contractor staff continue. In 2023, information was gathered from other

⁴ <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2025-wildfire-mitigation-plans/>

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
					IOUs, such as Pacific Gas & Electric (PG&E), who currently operate a watch desk.
8.4.04	Enhance Human Factors Engineering (HFE) into the design of current and future PSPS decision making tools.	Watch Command Desk, WMP.1335	8.4.3.1, p. 362	12/31/2099 (Ongoing)	In 2023, HFE was implemented in the Notifications Dashboard that is under development and was used to update the PSPS dashboard. HFE implementation leads to more user friendly, interactive, and eye-catching dashboards, allowing for quick navigation. Once user feedback is received, HFE will continue to be used to develop and enhanced dashboards.
8.4.05	Continue participation and support of Mutual Assistance Programs.	Preparedness and planning for service restoration, WMP.1009	8.4.3.3, p. 368	12/31/2099 (Ongoing)	In 2023, membership in multiple emergency associations continued in order to facilitate mutual assistance. Active mutual assistance agreements are maintained with the following organizations: <ul style="list-style-type: none"> • California Utilities Emergency Association (CUEA) • Western Regional Mutual Assistance Group • Edison Electric Institute • American Gas Association
8.4.06	Continue engaging Human Engineering to develop a dashboard and workflow for wildfire/PSPS notifications.	Watch Command Desk, WMP.1335	8.4.3.1, p. 362	6/30/2024	In 2023, development of dashboards continued in collaboration with Pacific Science & Engineering. Dashboards and workflows are still in the development stage, and currently feedback from subject matter experts is being gathered. User testing is expected to occur by summer 2024.
8.4.07	Continue collaboration with 211 in San Diego and Orange County to support AFN customers.	Public outreach and education awareness program, WMP.527	8.4.3.4, p. 370	12/31/2099 (Ongoing)	Partnerships with 211 San Diego and Orange County United Way continued in 2023 and were extended into June of 2024. These partnerships support Medical Baseline (MBL) and AFN customers. Collaboration with 211 was established to continue to expand services as gaps and new opportunities are identified.
8.4.08	Enhance community outreach by incorporating effectiveness outreach survey feedback, expanding Tribal and AFN campaigns, enhancing partnerships with Indian Councils, Community Based Organizations (CBOs), and local school districts.	Public outreach and education awareness program, WMP.527	8.4.4.1, p. 372	12/31/2099 (Ongoing)	In 2023, work with internal stakeholders, Indian Councils, local school districts, and SDG&E's network of more than 200 CBOs continued in order to connect customers with programs, resources, and solutions related to Customer Assistance, bill debt relief, PSPS resiliency, wildfire preparedness, clean energy, and conservation. In addition, the Outreach team worked closely with the Tribal Relations team to effectively engage and communicate with the 17 Federally recognized tribes in the service area. Tribal staff trainings, presentations, and community resource fairs will continue in 2024 to help increase outreach efforts and expand reach in tribal communities.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.4.09	Continue maintenance of emergency response plans using an ICS structure and process.	Emergency preparedness plan, WMP.1008	8.4.2.1, p. 338	12/31/2099 (Ongoing)	Maintenance of plans continued in 2023. The Incident Command System (ICS) naming convention and approval process for the ICS Standard for the Company is expected to be completed in early 2024. Plans will reflect changes as applicable.
8.4.10	Add one new state-of-the-art Tactical Mobile Command Trailer to the emergency fleet.	Watch Command Desk, WMP.1335	8.4.2.1.1, p. 338	9/30/2024*	In 2023, four vendors were engaged and narrowed down to two. Proposals for both vendors have been requested, and qualities, cost benefits, and resource availability are being evaluated.
8.4.11	Put two new state-of-the-art Incident Support Vehicles in service to support existing fleet in field incidents.	Watch Command Desk, WMP.1335	8.4.2.1.1, p. 338	12/31/2023*	In 2023, both Incident Support vehicles were received. Modifications need to be completed on the command module and radios and data link systems need to be delivered and installed. However, supply chain delays have caused modifications to be halted. An update is expected in mid-2024.
8.4.12	Create new repository (software solution) for AARs (platform to share with Safety Services). Accessible to others to interact.	Public outreach and education awareness program, WMP.527	8.4.2.1.5, p. 342	12/31/2023*	Research and additional planning work is ongoing to design the most efficient use of resources. Discussions continue with joint IOUs and internal staff on best practice for after action reviews.
8.4.13	Enhance collaboration and engagement with public safety partners and the community through the use of the new Wildfire & Climate Resiliency Center (WCRC).	Public outreach and education awareness program, WMP.527	8.4.3.2, p. 364	9/30/2024	In 2023, SDG&E designed and constructed the WCRC, which opened in January 2024. The Resilience Zone, which is housed in the WCRC, is an immersive and collaborative educational space that will be utilized to promote further engagement with public safety partners and the community. SDG&E expects to launch the Resilience Zone in Q2 2024.

*Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines⁵

⁵ <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2025-wildfire-mitigation-plans/>

Table 3-5: Update on 3-Year Objectives for Community Outreach and Engagement

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.5.01	Continue community outreach and public awareness efforts with year- round wildfire safety education and communication campaign	Weather Research and Forecast, WMP.532	8.5.2.1, p.389	12/31/2099 (Ongoing)	In 2023, partnerships with 40 HFTD-focused CBOs were optimized, which resulted in the promotion and amplification of PSPS-related preparedness information to vulnerable populations.
8.5.02	Solicit large-scale customer/ stakeholder feedback (campaign/notifications) for public education campaign	Weather Research and Forecast, WMP.532	8.5.2.4, p.394	12/31/2099 (Ongoing)	The Resiliency Audit is an online survey that engages with customers in the HFTD to help them increase overall resiliency and prepare for PSPS de-energizations. The offering launches annually and is promoted through direct customer invitations, wildfire safety fairs, and the annual wildfire newsletter. This feedback will be collected annually for the foreseeable future. In 2023, customers, and in particular affected customers, were surveyed to assess campaign effectiveness and communication preferences to help develop future campaigns.
8.5.03	Refine and augment campaign and notifications for Annual Public education; expand reach based on customer/stakeholder feedback. Expand public education to AFN, LEP populations and Tribal communities.	Weather Research and Forecast, WMP.532	8.5.2.4, p.394	12/31/2099 (Ongoing)	In 2023, partnerships with 40 HFTD-focused CBOs were optimized, which resulted in the promotion and amplification of PSPS-related preparedness information to vulnerable populations. In addition to strong tribal CBO partnerships, the dedicated Tribal Relations team has implemented culturally appropriate communications and outreach based on feedback from tribes via listening sessions, online surveys, and focus groups.
8.5.04	Promote and amplify PSPS, wildfire, and readiness messaging through CBO partnership activities.	Public Emergency Communication Strategy, WMP.563	8.5.4, p.400	12/31/2099 (Ongoing)	In 2023, partnerships with 40 HFTD-focused CBOs were optimized, which resulted in the promotion and amplification of PSPS-related preparedness information to vulnerable populations.
8.5.05	Assess and resolve any customer support and communications gaps identified through AFN stakeholders.	Engagement with Access and Functional Needs Populations, WMP.1336	8.5.3, p.398	12/31/2099 (Ongoing)	In collaboration with the AFN Collaborative Council, AFN Core Planning team, Regional PSPS Working Group, local governments, and tribal communities, SDG&E addressed the challenges of how to support individuals with AFN during a PSPS de-energization that are outlined in the AFN Plan. This objective is ongoing as SDG&E will continue to assess and address identified gaps.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
8.5.06	Establish broader engagement and deeper planning with emergency and non-emergency planning agencies.	Other – Community Engagement, WMP.1337	8.5.4, p.400	12/31/2099 (Ongoing)	In 2023, broader engagement was established through a series of weekly and monthly meetings with other IOUs to strategize and align where possible on wildfire and PSPS mitigations. Broader engagement was also established through a membership with Chartwell, Inc., a national membership group for gas and electric utilities that collaborates on problem-solving opportunities and events to help utilities improve customer experience and operational efficiency. In addition, the EOC regularly hosts tours for other utilities, trade groups, emergency response agencies, local, state, and federal agencies, and other representatives to share information, best practices, and resources. The stakeholder and contact list are updated regularly as changes occur.
8.5.07	Enhance multiple mobile apps and communication platforms including school communication platforms.	Weather Research and Forecast, WMP.532	8.5.2.4, p.394	12/31/2099 (Ongoing)	In 2023, Public Safety Portal features were enhanced to include real-time map information linked to a secure GIS portal, the ability for partners to follow the PSPS de-energization status of one or more jurisdictions of their choice, customized push notifications, sectionalizing devices listed by community, and a resource page that includes a social media tool kit, point of contact information, and community flyers. Now available in both English and Spanish, the Alerts by SDG&E mobile app allows customers to receive real-time updates on a PSPS de-energization for up to five addresses. Information includes customized notifications, CRC information with GPS directions, and other real-time updates and safety information related to PSPS activities.

Table 3-6: Update on 3-Year Objectives for Public Safety Power Shutoff

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
9.01	Continue grid hardening and customer backup resiliency initiatives to mitigate PSPS impacts for approximately 30,000 customers by 2025.	Undergrounding of electric lines and/or equipment, WMP.473	8.1.2.2, p. 153 8.1.2.11.1, p. 175 8.1.2.11.2, p. 175 8.1.2.11.3, p. 177 8.1.2.11.4, p. 179	12/31/2025	In 2023, PSPS impacts were reduced for approximately 8,700 customers through grid hardening and resiliency program completions. See Section 5.2 for more details on SDG&E’s grid hardening programs.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
		PSPS Sectionalizing Enhancements, WMP.461 GGP, WMP.466 Standby Power Programs, WMP.468 GAP, WMP.467 Microgrids, WMP.462	8.1.2.7, p. 161		
9.02	Continue improving service territory situational awareness during periods of high risk by improving existing FPI and SAWTI models and noting and evaluating discrepancies between predictions and observed reality.	Fire Potential Index, WMP.450 Santa Ana Wildfire Threat Index, WMP.540	8.3.5, p. 317 8.3.6, p. 326	12/31/2099 (Ongoing)	<p>Thresholds for SAWTI are being revamped with new higher resolution models, and, in collaboration with the United States Forest Service, visualization of the SAWTI is being aligned with the new output.</p> <p>An internal review of FPI accuracy used calculations based on 4.5 years of data that was averaged over the eight operating districts. The results showed that FPI calculations were accurate 87% of the time, with over- and under-prediction happening 2% and 11% of the time, respectively.</p> <p>Over-prediction is most often due to planning for worst-case forecast scenarios that do not verify.</p> <p>Under-prediction is found to have two main sources:</p> <ul style="list-style-type: none"> • Weather station choice for verification with extreme conditions unrepresentative of the majority of the district. • Limitations of the FPI formula, which does not account for high soil moistures immediately after rainfall that limits the fire potential before grass green-up can occur. <p>A contract with San Jose State University to evaluate the FPI is currently under review.</p>
9.1.03	Continue developing WiNGS-Ops models to assess wildfire and PSPS risk. Continue evaluating customer impacts during PSPS events.	WiNGS Ops, WMP.442	6.7, p. 91	12/31/2099 (Ongoing)	<p>In 2023, the WiNGS-Ops platform incorporated customer impact scaling factors. These factors were devised by subject matter experts and were applied to increase the PSPS de-energization impact on Critical and Vulnerable populations. Scaling factors are incorporated to artificially elevate the safety risk estimates for PSPS Critical Facilities, Urgent, Essential, Sensitive, and AFN customers.</p> <p>There were no PSPS de-energizations in 2023, however, WiNGS-Ops model findings were reviewed by subject matter experts with the Incident Commander both before and during the October PSPS activation. For more</p>

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
					information on WiNGS-Ops PSPS risk model updates, see the Post-Event Report for October 29 to October 31, 2023.**
9.1.04	Integrate FPI into OMS for future protective equipment threshold setting improvements.	FPI, WMP.450	8.3.3.3, p. 306	12/31/2024	In 2023, SDG&E enabled an FPI layer in its Outage Management System (OMS) as a visual representation of FPI values. This layer serves as a visual cue and adds an additional element of safety during unplanned outage situations to ensure that the correct operating procedure is being used for the current conditions. This layer will also assist in decision making around enabling or disabling protective equipment threshold settings. In 2024, automation of the FPI layer will be explored, building in rules to support operations during elevated and extreme FPI.
9.1.05	Continue improving customer notifications by enhancing the Enterprise Notification System (ENS).	PSPS Communication Practices, WMP.563	8.4.4 p.371	12/31/2099 (Ongoing)	In 2023, it was determined that the current Enterprise Notification System (ENS) system cannot accommodate the desired improvements to customer notifications, therefore, a proof-of-concept platform was initiated for customer notifications, with the bulk of the focus on PSPS and load curtailment notifications. The business requirements for the new platform have been gathered and technical requirements are being finalized. Currently, vendors are being vetted and a cloud platform is expected to be chosen by Q1 of 2024.
9.1.06	Prioritize CMP findings on high PSPS risk circuits.	Distribution Overhead Detailed Inspections, WMP.478	8.1.3, p. 181 8.1.7, p. 228 10.1, p. 422	12/31/2099 (Ongoing)	Currently, findings in Tier 3 of the HFTD are addressed on an accelerated timeline and in compliance with GO 95, including the circuits with the highest risk of PSPS de-energization. In addition, an enhanced open condition evaluation process is being developed for compliance conditions, which will be performed monthly. The evaluation reviews severity level, structure locations, wind speeds, vegetation and circuit risk, and other factors to evaluate conditions which may have impacts to PSPS de-energization decisions. Possible outcomes of this evaluation may include accelerating performance of corrective work, prioritizing additional patrol inspections, or providing additional information to further inform PSPS de-energization decisions. In addition, utilization of circuit risk scores to prioritize all findings, including those on circuits with the highest risk of PSPS de-energization, is being considered. Implementation will require process changes and work management system enhancements to enable these capabilities. For this reason, this is an ongoing objective.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section/Page #	Completion Date	Summary of Progress
9.1.07	Supplant VRI with a predictive model for the likelihood of vegetation related failures.	Risk Assessment Improvement Plan, WMP.1339	6.7, p. 91	12/31/2023*	In 2023, evaluation of transitioning the current Vegetation Risk Index (VRI) to a predictive model was begun. A machine learning model was created, in collaboration with UCSD, aimed at assessing the probability of vegetation-related outages given forecasted weather conditions. In addition, a Vegetation model was created in the WiNGS-Ops suite of models to assess the probability of vegetation contact with assets. Currently, both models are in the process of being evaluated, potential consolidation into a unified model is being examined, and future enhancements for this consolidated model are being discussed. In addition, the potential replacement of the existing VRI model is being investigated based on insights derived from these assessments.
9.1.08	Continue benchmarking with IOUs on best practices.	Best Practice Sharing with Other Electrical Corporations, WMP.1340	8.5.5, p. 402	12/31/2099 (Ongoing)	Benchmarking with other IOUs is ongoing.

*Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines⁶

**Source: San Diego Gas & Electric Company (U 902-E) Public Safety Power Shutoff Post-Event Group Report for October 29-October, 2023;
https://www.sdge.com/sites/default/files/r1812005_sdge_psp_s_post-event_report_oct_29-31_2023.pdf

⁶ <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2025-wildfire-mitigation-plans/>

4 Assessment of Completed 3-Year Objectives

This section provides an assessment of SDG&E’s completion of its 3-year objectives as stated in Section 8 of its 2023–2025 WMP. Table 4-1 through Table 4-6 list objectives that were completed in 2023 regardless of their projected completion dates and those that were projected to be completed in 2023 but are now postponed. Postponed objectives are also reported in SDG&E’s 2025 WMP Update.

Table 4-1: Completion of 3-Year Objectives for Grid Design, Operations, and Maintenance

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.1.06	Replace existing non-SCADA Capacitors with a more modern SCADA switchable Capacitor or remove non-SCADA Capacitor if not required for voltage or reactive support, to reduce potential for fire caused by faulted capacitors in the HFTD and WUI Areas.	Capacitor Maintenance and Replacement Program, WMP.453	8.1.4.4, p.214	12/31/2025	12/31/2023	Completed work orders / GIS Data Submission(s) (e.g., QDR Reports showing GIS data).	Installation was completed for the 20 SCADA capacitors planned for the 2023-2025 WMP cycle. Four SCADA capacitors were installed in Tier 2 of the HFTD, two in Tier 3, and 14 in the WUI. No further work is planned for the 2023-2025 WMP cycle.
8.1.07	Install new CAL FIRE-approved power fuses to replace existing expulsion fuse equipment in the HFTD.	Expulsion Fuse Replacement, WMP.459	8.1.4.5, p.216	12/31/2023*	-	Completed work orders/ GIS Data Submission(s)	In 2023, the Expulsion Fuse Replacement program was substantially completed and targeted HFTD and WUI areas. This objective was expected to be completed in 2023, however, there are approximately 1,000 fuses that remain to be replaced with CAL FIRE-approved fuses. Therefore, the objective has been extended through the 2023-2025 WMP cycle. See Section 5.2.11 Expulsion Fuse Replacement (WMP.459) for details on 2023 completions.
8.1.23	Automate creation of corrective work orders (substation).	Substation Patrol Inspections, WMP.492	8.1.3, p. 181	12/31/2022	12/31/2022	Substation system of record	The creation of substation corrective work orders in Cascade, the system of record, was successfully automated for frequently identified findings.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.1.31	Implement dedicated line inspector program to perform routine inspection types.	Workforce Planning-Asset Inspections, WMP.1334	8.1.9.1, p.249	12/31/2023	10/31/2023	Implementation of Line Inspector job classification	In 2023, three dedicated line inspectors were hired to perform overhead detailed and overhead/ underground patrol inspections. These inspectors are currently undergoing a 6-month training program before being authorized to perform the inspections. In 2024, the QA/QC required for these inspectors will be further refined as part of their initial training in the field. It is expected that these inspectors will perform solo inspections beginning in Q2 2024.

**Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines.⁷*

Table 4-2: Completion of 3-Year Objectives for Vegetation Management and Inspection

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.2.01	Create new attribute fields within tree inventory database to document site-specific and tree-specific risk conditions.	Vegetation Management Enterprise System, WMP.511	8.2.4, p. 279	12/31/2025	11/30/2023	n/a	In 2023, a new 'Tree Metrics' attribute field was created at the tree record level within the inventory database (Epoch). It displays the frequency a tree has been a memo, hazard, and/or was the cause of an outage.
8.2.04	Integrate risk-analysis into annual, off-cycle HFTD and at-risk patrols.	Off-Cycle Patrols, WMP.508	8.2.3.1, p. 270	12/31/2025	3/31/2023	n/a	In 2023, a set of risk-related attributes to support development of the vegetation priority risk model was tested. The first iteration of the model was used to adjust the schedule of off-cycle HFTD patrol activities. VMAs with a higher frequency of historical memos and/or reliability (hazard) trees were scheduled to be patrolled closer to the fall season when fire conditions begin to peak. Performance of

⁷ 2025 Wildfire Mitigation Plan Update Guidelines, Section 2.2; <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2025-wildfire-mitigation-plans/>

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
							<p>the model was also tested to identify any limitations, and a consequently the model will be shifted from tree-based to span-based in 2024.</p> <p>In collaboration with the SDSC, development of the tree outage probability continued. The first iteration of the model was completed, and the output and predictive capabilities are being validated. In addition, a wind condition map visualization was added.</p> <p>A first iteration dashboard was also created using LiDAR tree strike analysis to rank circuit sections using vegetation management inventory tree data and strike tree density. Initial use of this dashboard may include desk-top visualization and scoping activities.</p>

Table 4-3: Completion of 3-Year Objectives for Situational Awareness and Forecasting

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.3.05	Incorporate and publish AQI data via existing FSCA app.	Air Quality Management Program, WMP.970	8.3.2.3, p. 299	12/31/2024	10/30/2023	Data can be viewed on the FSCA app and compared to dashboard data.	AQI data collected from particulate sensors was incorporated and published via the existing SDG&E Weather app.
8.3.12	2023: Harden backbone communication network for mountaintop cameras via replacement of legacy equipment and work to explore AI technology for image processing.	Cameras, WMP.1343	8.3.4.1.2, p. 311	12/31/2023	12/29/2023	HPWREN User Group Member Planning	Numerous backbone enhancements were made in 2023, such as mountaintop cameras and associated infrastructure rebuilds at Cuyamaca Peak, Boucher Hill, and Birch Hill due to ice storm damage. A new relay was installed at Camp Fox and public safety access points were upgraded at Birch Hill, Boucher Hill, and High Point to enable back country emergency responder connectivity. Smoke detection

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
							AI was implemented on several HPWREN sites to test AI on the network. Third party verification of progress was used as all work is managed and executed through third-party partners. A field check of one site was performed by SDG&E at Cuyamaca Peak.

Table 4-4: Completion of 3-Year Objectives for Emergency Preparedness

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.4.02	Expand Emergency Management Operations by increasing staff dedicated to enhancing various emergency programs.	Watch Command Desk, WMP.1335	8.4.2.2.1, p. 343	6/30/2023*	-	PSPS Coordination: Regulatory Compliance Each month a report ID produced for computer tests and dashboards are tested daily through automated smoke tests	Resource planning work is ongoing. Discussions around full-time employee versus contractor staff continue.
8.4.11	Put two new state-of-the-art Incident Support Vehicles in service to support existing fleet in field incidents.	Watch Command Desk, WMP.1335	8.4.2.1.1, p. 338	12/31/2023*	-	Mobile command resources available for deployment for field incident support	In 2023, both Incident Support vehicles were received. Modifications need to be completed on the command module and radios and data link systems need to be delivered and installed. However, supply chain delays have caused modifications to be halted. An update is expected in mid-2024.

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
8.4.12	Create new repository (software solution) for AARs (platform to share with Safety Services). Accessible to others to interact.	Public outreach and education awareness program, WMP.527	8.4.2.1.5, p. 342	12/31/2023*	-	Operational unit and EOC stakeholders have accessibility to exercise and real-world incident/ event corrective actions	Research and additional planning work is ongoing to design the most efficient use of resources. Discussions continue with joint IOUs and internal staff on best practice for after action reviews.

*Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines.⁸

Table 4-5: Completion of 3-Year Objectives for Community Outreach*

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

*There were no completed objectives for Community Outreach.

Table 4-6: Completion of 3-Year Objectives for PSPS

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
9.1.07	Supplant VRI with a predictive model for the likelihood of vegetation related failures.	Risk Assessment Improvement Plan, WMP.1339	6.7, p. 91	12/31/2023*	-	New model documentation	In 2023, evaluation of transitioning the current VRI to a predictive model was begun. A machine learning model was created, in collaboration with UCSD, aimed at assessing the probability of vegetation-related outages given forecasted weather conditions. In addition, a Vegetation model was created in the

⁸ 2025 Wildfire Mitigation Plan Update Guidelines, Section 2.2

Objective Number	Objective	Applicable Initiative(s), Tracking ID(s)	2023-2025 WMP Section, Page #	Projected Completion Date	Actual Completion Date	Method of Verification	Assessment of Progress
							<p>WiNGS-Ops suite of models to assess the probability of vegetation contact with assets.</p> <p>Currently, both models are in the process of being evaluated, potential consolidation into a unified model is being examined, and future enhancements for this consolidated model are being discussed. In addition, the potential replacement of the existing VRI model is being investigated based on insights derived from these assessments.</p>

**Objective completion date has been adjusted from the 2023-2025 Wildfire Mitigation Plan and is reflected in the 2025 WMP Update as required by the 2025 Wildfire Mitigation Plan Update Guidelines.⁹*

⁹ 2025 Wildfire Mitigation Plan Update Guidelines, Section 2.2

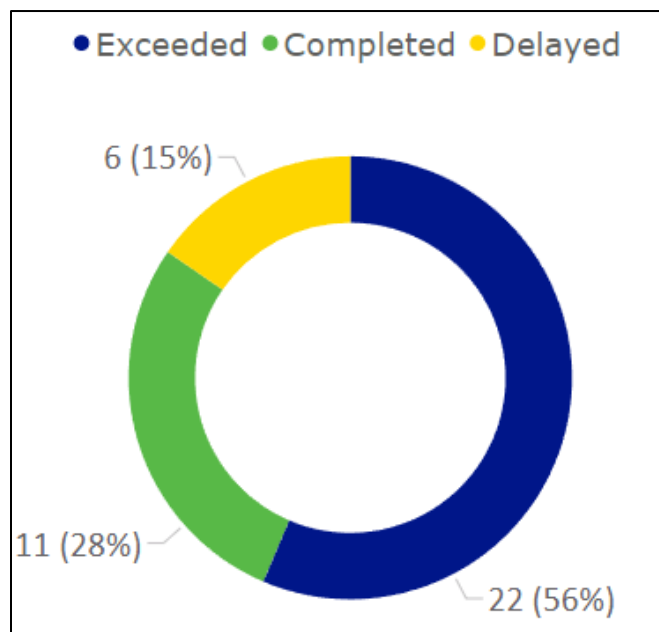
5 Assessment of 2023 Targets and Expenditures

This section provides an assessment of SDG&E's 39 quantitative mitigation programs with associated targets and spend and 23 initiatives with associated spend but no associated targets. This section presents planned and actual targets and expenditures and provides variance explanations for all target units and for expenditures with greater or less than 10% of planned.

In 2023, SDG&E substantially completed or exceeded the target for 33 of 39 quantitative programs. In these achievements, the overall risk reduction intent as described in the 2023-2025 Wildfire Mitigation Plan¹⁰ was met. Figure 5-1 shows 2023 year-end status for the 39 quantitative programs. The following are key accomplishments for activities that occurred between January 1, 2023, and December 31, 2023.

- SDG&E fire hardened 95 miles of its overhead electric system within the HFTD.
- SDG&E undergrounded 72 miles of its electric system within the HFTD.
- SDG&E completed routine and HFTD-focused distribution, substation, and transmission inspections, including timely remediation per general order requirements.
- SDG&E completed risk-based drone inspections, including structures in Tier 2 and Tier 3 of the HFTD and in the WUI.
- Vegetation management annual inspections and trimming were completed, including the inspection of over 514,000 trees in the service territory and the trim or removal of over 13,000 targeted species trees to enhanced clearance levels.
- SDG&E enhanced situational awareness capabilities by upgrading and rebuilding 50 weather stations.

Figure 5-1: 2023 Program Status



¹⁰ 2023-2025 Wildfire Mitigation Plan; <https://www.sdge.com/2023-wildfire-mitigation-plan>

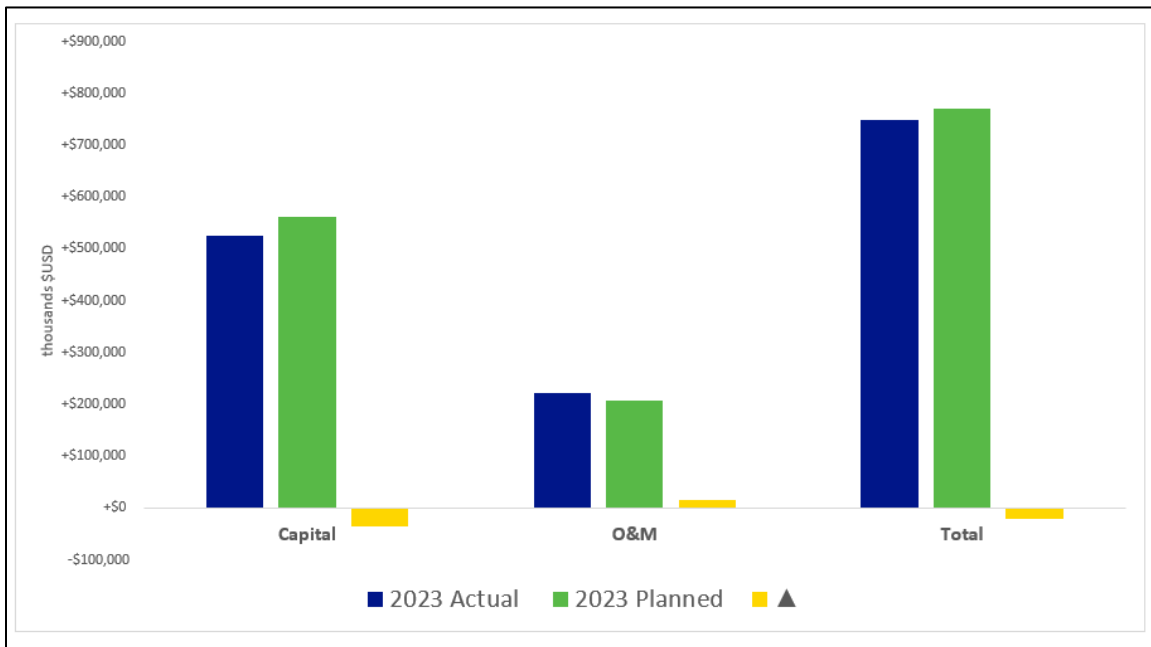
SDG&E did not meet six quantitative program targets as initially planned in its 2023-2025 Wildfire Mitigation Plan. Generally, two of the programs met the risk reduction intent, one program does not provide direct risk reduction and will be completed in 2024, and the remaining three did not meet their risk reduction intent and will be completed in 2024 (see Table 5-1). Risk reduction mitigation and corrective actions for these programs are described in more detail within each section.

Table 5-1: Programs not Meeting Quantitative Targets in 2023

Program Name, Tracking ID	Delayed, Meeting Risk Reduction Intent	Delayed with no Direct Risk Reduction	Delayed, not Meeting Risk Reduction Intent
Transmission Overhead Detailed Inspections, WMP.479	X		
Advanced Protection, WMP.463	X		
Distribution Communications Reliability Improvements, WMP.549		X	
Strategic Undergrounding, WMP.473			X
Strategic Pole Replacement Program, WMP.1189			X
Early Fault Detection, WMP.1195			X

In 2023, overall actual spend including capital and Operations & Maintenance (O&M) combined was less than planned by 3%. Figure 5-2 shows planned and actual capital, O&M, and total expenditures.

Figure 5-2: 2023 Expenditures



5.1 Wildfire Mitigation Strategy Development

SDG&E made advancements to its risk modeling capabilities to better inform its investment strategies and initiative selections and to optimize its ability to target the areas of highest wildfire risk. In 2023, the WiNGS-Planning model was updated with the objective of reinforcing the model to support scoping efforts, which involved architectural updates as well as a series of automated data verification improvements and output validation analyses. There were several enhancements made to the risk model's data governance and data architecture to promote reliability, standardization, and transparency. Lastly, improvement of data accuracy in the WiNGS-Planning model continued to provide more accurate insights, leading to better investment decision making.

Table 5-2 lists projected and actual expenditures for each initiative within the Wildfire Mitigation Strategy Development category of the 2023-2025 Wildfire Mitigation Plan.¹¹ Narrative is provided in this section if actual spend was greater or less than 10% of planned.

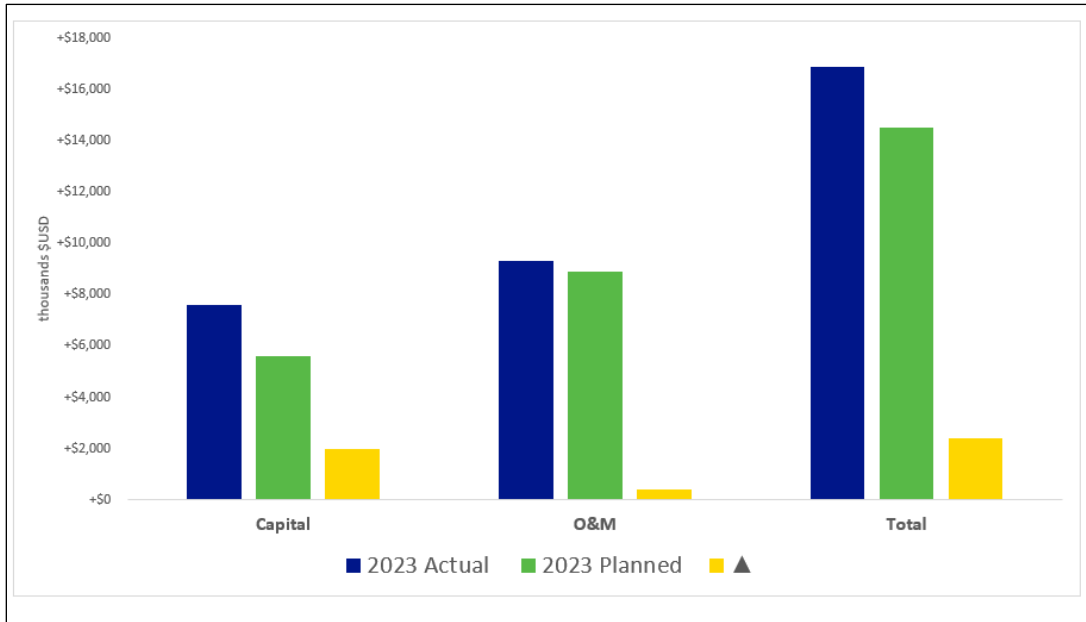
Figure 5-3 is a financial summary for initiatives within the Wildfire Mitigation Strategy Development category of the 2023-2025 Wildfire Mitigation Plan.

Table 5-2: Wildfire Mitigation Strategy Development: 2023 Expenditures

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	Capital Change*	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	O&M Change*
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	WMP.442	\$319	\$ -	-100%	\$3,597	\$3,872	8%
Documentation and disclosure of wildfire-related data and algorithms	WMP.521	\$ -	\$2,434	100%	\$ -	\$ -	- %
Allocation methodology development and application	WMP.523	\$5,277	\$5,155	-2%	\$5,291	\$5,432	3%
TOTAL		\$5,596	\$7,589	36%	\$8,888	\$9,303	5%

¹¹ 2023-2025 Wildfire Mitigation Plan, Section 7

Figure 5-3: Wildfire Mitigation Strategy Development: 2023 Expenditures



5.1.1 Summarized Risk Map (WMP.442)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

In 2023, capital expenditures were less than planned by 100%. Work related to this initiative has evolved from SDG&E’s Circuit Risk Index (CRI) model to the WiNGS cloud-based risk models and WiNGS-Planning and WiNGS-Ops Visualization Platforms, and actual costs are now embedded within Wildfire-Related Data and Algorithms (WMP.521) (see Section 5.1.2). Therefore, there are no associated costs with this initiative.

5.1.2 Wildfire-Related Data and Algorithms (WMP.521)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

In 2023, capital expenditures exceeded planned by 100% due to a shift in actual costs from Summarized Risk Map (WMP.442) to this initiative. An innovative cloud-based visualization tool, the WiNGS-Planning and WiNGS-Ops Visualization Platforms, was developed that leverages large sets of fire science and weather data to help prioritize grid hardening and support operational decision making during extreme fire weather conditions. Capital expenditures exceeded planned spend because additional scope was

added to the project including disaster recovery, architectural, performance enhancements, and front-end usability features.

5.1.3 Allocation Methodology Development and Application (WMP.523)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

No variance explanations are required for expenditures.

5.2 Grid Design, Operations, and Maintenance

SDG&E's grid design, operations, and maintenance programs are a set of controls and mitigations that directly address WMP goals by reducing risk events that can lead to ignitions caused by utility equipment and minimizing societal impacts to customers from mitigations such as PSPS de-energizations. Some mitigations have a measured reduction in risk events, others reduce the likelihood that a risk event results in an ignition, and others reduce PSPS de-energization impacts to customers. Asset management and inspections identify and repair conditions and components to reduce potentially defective equipment on the electric system to minimize hazards and maintain system reliability. Grid operations and protocols consist of mitigations that reduce risk through changing the way SDG&E operates during periods of elevated and extreme wildfire risk. This includes disabling of reclosing in the HFTD, enabling of Sensitive Relay Profiles (SRP), and restricting work in the HFTD during extreme fire potential and Red Flag Warnings (RFW).

Table 5-3 lists programs and initiatives within the Grid Design, Operations, and Maintenance category of the 2023-2025 Wildfire Mitigation Plan¹² and their associated targets, the method of verification for each target, projected and actual expenditures, and whether risk reduction was achieved. Projected and actual completion dates for all programs were December 31, 2023. Narrative is provided in this section if the target was not met, actual spend was greater or less than 10% of planned, risk impact was not achieved, or if there is a QA/QC component.

Figure 5-4 is a status summary for programs within the Grid Design, Operations, and Maintenance category of the 2023-2025 Wildfire Mitigation Plan.

Figure 5-5 is a financial summary for programs and initiatives within the Grid Design, Operations, and Maintenance category of the 2023-2025 Wildfire Mitigation Plan.

¹² 2023-2025 Wildfire Mitigation Plan, Section 8.1

Table 5-3: Grid Design, Operations, and Maintenance: 2023 Expenditures and Targets

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change	Projected Target/Unit	Actual Target/Unit	% Risk Impact Achieved?	QA/QC Applicable ?	Method of Verification
Avian Protection	WMP.972	\$2,507	\$1,435	-43%	\$19	\$9	-54%	200 Poles	657 Poles	Yes	No	Completed work order/GIS Data Submission(s)
Additional Inspections (69kV TLs in Tier 3)	WMP.555	\$ -	\$ -	-%	\$ -	\$ -	-%	1632 Structures	1602 Structures	Yes	Yes	Asset management system
Distribution Drone Assessments	WMP.552	\$80,740	\$75,131	-7%	\$53,171	\$52,915	0%	13692 Poles Assessed	15311 Poles Assessed	Yes	Yes	Asset management system
Lightning Arrestor Replacement	WMP.550	\$3,407	\$3,432	1%	\$ -	\$ -	-%	1848 Arrestors	2216 Arrestors	Yes	No	Completed work order/GIS Data Submission(s)
LTE Communication Network (DCRI)	WMP.549	\$81,274	\$75,714	-26%	\$1,122	\$910	-19%	35 Base Stations	11 Base Stations	n/a	No	Completed work orders/Primavera P6 Site Schedule
Transmission OH Hardening - DUB	WMP.545	\$11,397	\$14,326	26%	\$ -	\$ -	-%	7 Miles	17 Miles	Yes	No	Completed work order/GIS Data Submission(s)
Transmission OH Hardening	WMP.543	\$ -	\$ -	-%	\$ -	\$ -	-%	14 Miles	16 Miles	Yes	No	Completed work order/GIS Data Submission(s)
Substation Inspections	WMP.492	\$ -	\$ -	-%	\$ -	\$ -	-%	384 Inspections	396 Inspections	n/a	Yes	Asset management system
QA/QC Distribution Detailed	WMP.491	\$ -	\$ -	-%	\$ -	\$ -	-%	160 Inspections	150 Inspections	n/a	No	Completed work order/GIS Data Submission(s)
Transmission OH Inspections (visual - helo patrol)	WMP.489	\$ -	\$ -	-%	\$ -	\$ -	-%	6337 Structures	6200 Structures	Yes	Yes	Asset management system
Distribution OH Patrols	WMP.488	\$952	\$795	-17%	\$285	\$297	4%	86880 Inspections	85857 Inspections	Yes	No	Asset management system
Distribution Wood Pole Intrusive	WMP.483	\$1,592	\$1,328	-17%	\$24	\$97	305%	50 Inspections	1038 Inspections	Yes	Yes	Asset management system
Transmission Infrared Inspections	WMP.482	\$ -	\$ -	-%	\$ -	\$ -	-%	6179 Structures	6077 Structures	Yes	Yes	Asset management system
Distribution Infrared	WMP.481	\$ -	\$ -	-%	\$175	\$305	74%	9578 Inspections	11900 Inspections	Yes	No	Asset management system
Transmission OH Detailed Inspections	WMP.479	\$842	\$1,537	83%	\$9	\$35	294%	2387 Structures	1928 Structures	Yes	Yes	Asset management system
Distribution OH Detailed	WMP.478	\$10,408	\$8,687	-17%	\$940	\$773	-18%	11100 Inspections	11755 Inspections	Yes	Yes	Asset management system

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change	Projected Target/Unit	Actual Target/Unit	% Risk Impact Achieved?	QA/QC Applicable ?	Method of Verification
DIST OH Hardening - Traditional Hardening	WMP.475	\$1,985	\$6,069	206%	\$1,800	\$1,168	-35%	1.9 Miles	2.33 Miles	Yes	No	Completed work order/GIS Data Submission(s)
Strategic Undergrounding	WMP.473	\$196,200	\$174,778	-11%	\$436	\$429	-2%	84 Miles	72 Miles	No	No	Completed work order/GIS Data Submission(s)
Fixed Power Backup	WMP.468	\$ -	\$ -	- %	\$10,350	\$12,680	23%	300 Generators	362 Generators	Yes	No	Third-party data submission
Hotline Clamps	WMP.464	\$ -	\$ -	- %	\$486	\$1,642	238%	250 HLC	962 HLC	Yes	No	Completed work order/GIS Data Submission(s)
Advanced Protection	WMP.463	\$9,706	\$16,298	68%	\$300	\$194	-35%	5 Circuits	4 Circuits	Yes	No	Completed work order/GIS Data Submission(s)
Sectionalizing Devices	WMP.461	\$1,837	\$2,035	11%	\$ -	\$ -	- %	10 Switches	10 Switches	Yes	No	Completed work order/GIS Data Submission(s)
Expulsion Fuse Replacement	WMP.459	\$93	\$50	-46%	\$ -	\$ -	- %	40 Fuses	36 Fuses	Yes	No	Completed work order/GIS Data Submission(s)
DIST OH Hardening - Covered Conductor	WMP.455	\$76,806	\$81,553	6%	\$2,220	\$3,319	50%	60 Miles	60 Miles	Yes	No	Completed work order/GIS Data Submission(s)
SCADA Capacitors	WMP.453	\$1,885	\$1,557	-17%	\$ -	\$ -	- %	15 Capacitors	20 Capacitors	Yes	No	Completed work order/GIS Data Submission(s)
Early Fault Detection	WMP.1195	\$5,612	\$6,061	8%	\$9	\$4	-60%	60 Nodes	32 Nodes	No	No	Completed work order/GIS Data Submission(s)
QA/QC Substations	WMP.1194	\$ -	\$ -	- %	\$ -	\$ -	- %	18 Inspections	23 Inspections	n/a	No	Completed work order/GIS Data Submission(s)
QA/QC Wood Pole Intrusive (Dist & Trans)	WMP.1193	\$ -	\$ -	- %	\$ -	\$ -	- %	12 Inspections	111 Inspections	Yes	No	Completed work order/GIS Data Submission(s)
QA/QC Distribution Drone	WMP.1192	\$ -	\$ -	- %	\$ -	\$ -	- %	13692 Inspections	15311 Inspections	Yes	No	Completed work order/GIS Data Submission(s)
Secondary Inspections of Transmission (QA/QC)	WMP.1191	\$ -	\$ -	- %	\$ -	\$ -	- %	100 Structures	100 Structures	Yes	No	Completed work order/GIS Data Submission(s)

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change	Projected Target/Unit	Actual Target/Unit	% Risk Impact Achieved?	QA/QC Applicable ?	Method of Verification
Transmission Wood Pole Intrusive Inspections	WMP.1190	\$ -	\$ -	-%	\$ -	\$ -	-%	73 Structures	90 Structures	Yes	Yes	Asset management system
Strategic Pole Replacement	WMP.1189	\$1,710	\$67	-96%	\$130	\$0	-100%	60 Poles	1 Poles	No	No	Completed work order/GIS Data Submission(s)
CNF(Distribution Underground)	WMP.1016	\$1,183	\$620	-48%	\$2,070	\$672	-68%	n/a	n/a	n/a	n/a	n/a
CNF(Distribution Overhead)	WMP.1017	\$1,471	\$756	-49%	\$ -	\$ -	-%	n/a	n/a	n/a	n/a	n/a
Wireless Fault Indicators	WMP.449	\$51	\$10	-81%	\$ -	\$ -	-%	0	0	n/a	n/a	Completed work order/GIS Data Submission(s)
Microgrids	WMP.462	\$16,576	\$3,197	-81%	\$1,652	\$1,105	-33%	n/a	n/a	n/a	n/a	Completed work order/GIS Data Submission(s)
Generator Grant Program	WMP.466	\$ -	\$ -	-%	\$7,060	\$5,407	-23%	n/a	n/a	n/a	n/a	n/a
Generator Assistance Program	WMP.467	\$ -	\$ -	-%	\$1,000	\$547	-45%	n/a	n/a	n/a	n/a	n/a
LiDAR inspections of distribution electric lines and equipment	WMP.484	\$ -	\$ -	-%	\$1,388	\$873	-37%	n/a	n/a	n/a	n/a	n/a
Centralized repository for data	WMP.519	\$11,819	\$10,047	-15%	\$1,944	\$1,657	-15%	n/a	n/a	n/a	n/a	n/a
TOTAL		\$520,053	\$485,482	-7%	\$86,589	\$85,038	-2%					

Figure 5-4: Grid Design, Operations, and Maintenance: 2023 Program Status

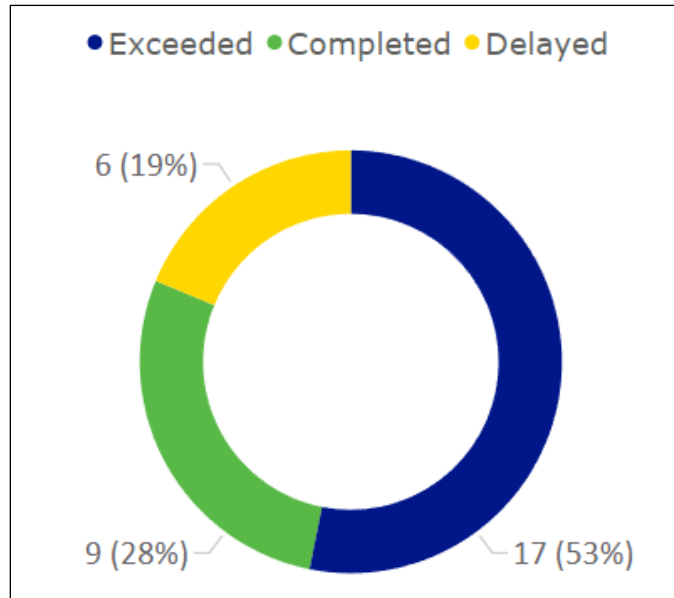
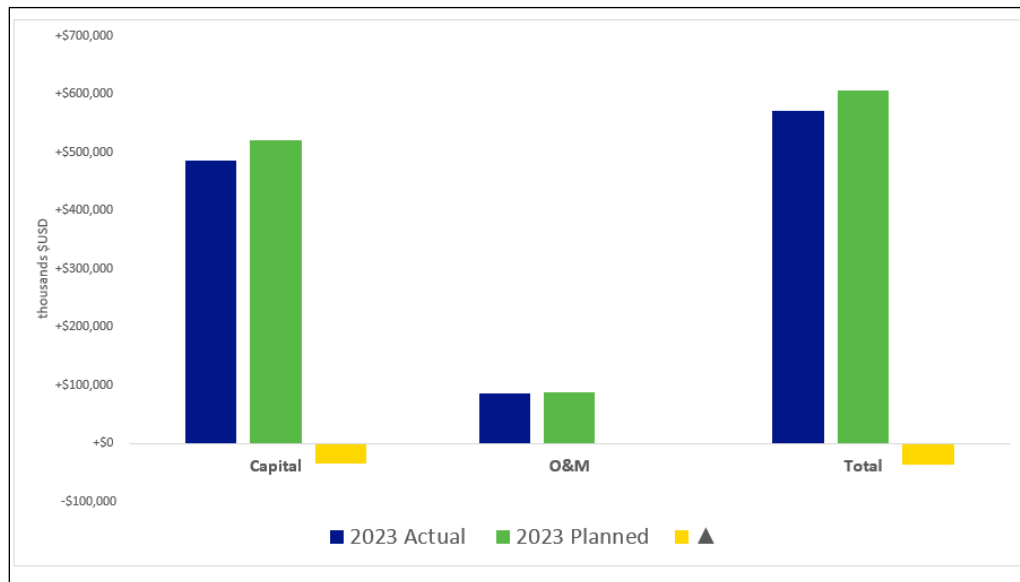


Figure 5-5: Grid Design, Operations, and Maintenance: 2023 Expenditures



5.2.1 Covered Conductor (WMP.455)

In 2023, 100% of the projected target for Covered Conductor was completed.

All risk reduction was met in 2023 with completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

O&M expenditures exceeded planned by 50% due to the forecast underestimating the percentage of O&M as a function of capital expenditures. Typically, O&M costs are estimated to be approximately 3% of capital expenditures. However, in 2023 the O&M spend was approximately 4% of capital spend. Capital expenditures were also 6% higher than forecasted, which contributed to the overall increased O&M spend.

5.2.2 Strategic Undergrounding (WMP.473)

In 2023, 86% of the projected target for Strategic Undergrounding was completed and the program met 86% of its intended risk reduction. Various factors were involved in preventing the program from meeting its full target, including permitting, easements, materials, weather conditions, customer property access, and design changes due to customer requests and field conditions. In-construction review is embedded in this program and was completed for all projects completed in 2023.

County and Caltrans permits faced delays in processing due to staff turnover and a higher volume of requests than previous years. Subsequent meetings with permitting agencies were conducted to communicate project priorities. These efforts proved successful, enabling the program to obtain the necessary permits for 2023 projects that are now scheduled to be completed in 2024.

In 2023, there was an increased demand for easement acquisition driven by the program's expansion. However, the inability to secure 253 total easements by the scheduled date resulted in construction delays. To address this, project management held weekly meetings with the program's land team to prioritize projects and allocate resources more effectively. Beginning in 2024, the team is adopting a proactive approach by initiating land acquisition earlier in the design process.

A shortage of electrical materials, such as 4-way cable taps, caused delays in construction start dates, extending some projects into Q4 2023. These delays posed challenges in resource allocation and scheduling outages for timely project energization and limited time to construct. In response, a materials group was established to collaborate with manufacturers more effectively, ensuring timely deliveries and actively seeking alternative manufacturers capable of producing the essential materials. A higher volume of materials will also be purchased earlier in the project life, and a 2-year forecast will be considered.

Inclement weather conditions in early 2023 significantly impacted construction start dates, which resulted in a cascading effect delaying all 2023 projects.

In 2023, there were challenges accessing customer property due to issues such as a lack of customer support for the program, customers changing preferences about access and design, customers residing out of the county or state, and unresponsive customers. To mitigate these issues, attempts were made to contact customers with mailers, phone calls, text messages, and emails, and projects worked with the security team to arrange escorts to properties, ensuring set appointments and engagement based on

customer's interactions. Additionally, a centralized community engagement team has been established to engage early and often with customers impacted by this initiative.

During construction, customers sometimes altered their preferences regarding the agreed upon route or equipment placement, leading them to retract their signed easement or deny access to their property. Additionally, unforeseen field conditions such as hard rock excavation or cultural discoveries may necessitate a departure from the original design, requiring redesign efforts. To mitigate these challenges, a centralized community engagement team was established with expertise in fostering positive relationships with customers early and often in a project lifecycle. Customers are provided pictures and dimensions of equipment during the design and easement acquisition process, ensuring they are informed during construction. When encountering unexpected field conditions, appropriate solutions are identified, including collaboration with construction and design contractors, that prioritize safety while keeping the project on track.

Capital expenditures were less than planned by 11% due to the postponement of construction and energization to 2024 due to the aforementioned challenges. Cost savings were realized through various means including materials, civil construction, and cash discounts for timely invoicing. Savings were partially offset by the increased project support required to establish the SDG&E and AECOM Portfolio Management Office (PMO) support team. AECOM was contracted to provide program execution management and preconstruction support capabilities at the scale necessary to achieve future strategic undergrounding efforts.

5.2.3 Distribution Overhead System Hardening (WMP.475)

In 2023, the projected target for Distribution Overhead System Hardening was exceeded by 23% due to a higher number of projects that completed the design process and were issued for construction. Because it is difficult to predict which projects will be successful in acquiring land rights, permits, environmental releases, and other external uncertainties, targets can be exceeded if more projects are issued for construction than expected. In 2023, more projects were successful in achieving these milestones than in previous years. In addition, a much higher percentage of projects were related to non-typical reconductor projects such as True-up Remediation work, Fast Track, and in one case a complete removal of overhead spans.

All risk reduction was met in 2023 with completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Capital expenditures exceeded planned by 206% due to the substantial number of non-typical jobs that were issued. Over 80% of the projects issued under this program in 2023 were related to True-up Remediation, whereas in previous years most of the work was related to typical reconductor projects. Cost estimates for True-Up Remediation are new and evolving as SDG&E improves the accuracy and timing of costs associated with this type of project.

O&M expenditures were less than planned by 35% due to estimates being derived from past actuals as a percentage of capital expenditures. However, unlike Covered Conductor hardening, higher O&M costs were anticipated because of the type of projects that were planned to be issued to construction. These non-typical projects were expected to have higher O&M costs than typical reconductor projects, but those additional O&M costs were not realized.

5.2.4 Transmission Overhead Hardening (WMP. 543)

In 2023, the projected target for Transmission Overhead System Hardening was exceeded by 14% due to the availability of resources to complete additional overhead mileage.

All risk reduction was met in 2023 with completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Expenditures for this program are Federal Energy Regulatory Commission (FERC)-funded and are not reported within the WMP.

5.2.5 Distribution Underbuild (WMP.545)

In 2023, the projected target for Distribution Underbuild was exceeded by 143% due to the availability of resources to complete additional overhead mileage. Furthermore, ideal weather conditions reduced the impact on construction activities.

All risk reduction was met with the completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Capital expenditures exceeded planned by 26% due to the completion of additional mileage.

5.2.6 Microgrids (WMP.462)

There was no target for this initiative in 2023.

Although no microgrids with renewable energy sources were completed in 2023, all risk reduction was met with the existing operational microgrids.

There is no QA/QC associated with this program.

Capital and O&M expenditures were less than planned by 81% and 33%, respectively. Capital spend was decreased due to a change in battery manufacturer, which shifted milestone payments and construction costs to 2024. O&M was underspent due to a lack of de-energizations in 2023.

5.2.7 Advanced Protection (WMP.463)

In 2023, 80% of the projected target for Advanced Protection was completed. One circuit planned for installation of FCP, C78, was descope to avoid overlapping mitigation activities due to planned undergrounding of a substantial portion of the circuit. The remaining targeted work is expected to be completed by the end of the 2023-2025 WMP cycle.

All risk reduction intent was met in 2023 with substantial completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Capital expenditures exceeded planned by 68% due to delayed substation construction that was shifted from 2022 to 2023 and accelerated distribution construction that was shifted from 2024 to 2023.

O&M expenditures were less than planned by 35% because O&M forecasting is based on a percentage of capital work and a substantial amount of capital expenditures in 2023 were attributed to engineering,

design, and construction activities. O&M expenditures are not typically realized until assets are placed into service and become used and useful. For this reason, O&M expenditures are expected to increase in future years.

5.2.8 Early Fault Detection (WMP.1195)

In 2023, 53% of the projected target for the EFD program was completed. Construction-ready jobs were proactively paused due to design improvements found during post-construction review of previously constructed sites, and will resume starting Q2 of 2024. This temporary pause was necessary to ensure optimal ease of construction and resulting performance of the system. Process improvements include, but are not limited to:

- Updated site review process to ensure optimal node placement for construction and sensor performance.
- Updated design standards capturing best practices observed during previous installations.
- Added step-by-step commissioning steps into construction job packages, ensuring nodes are communicating prior to closing the job.
- Added deployment locations into SDG&E's GIS mapping system.
- Integrated SDG&E's QA/QC team into the design review and construction workflow.

Post-construction reviews were performed and completed in 2023 on previously constructed locations, resulting in corrective action on 14 nodes.

Risk reduction goals are measured on a sensor node basis, with each node providing risk reduction factors. In 2023, EFD met 53% of its intended risk reduction.

O&M expenditures were less than planned by 60% due to the design delay and inability to complete planned work.

5.2.9 Distribution Communications Reliability Improvements (WMP.549)

In 2023, 31% of the projected target for the Distribution Communications Reliability Improvement (DCRI) program was completed due to distribution and transmission engineering design reviews taking longer than expected.

To resolve this, a concerted effort will be made to optimize and streamline project review and approval processes. A standard is being developed for all projects that will help improve review timeframes and expedite project reviews and approvals. In addition, project schedules will account for longer review and approval timeframes, and future targets will be adjusted accordingly.

This program does not provide direct risk reduction.

There is no QA/QC associated with this program.

Capital and O&M expenditures were less than planned by 26% and 19%, respectively, due to less-than-planned volume of work completed in 2023.

5.2.10 Capacitor Maintenance and Replacement Program (SCADA) (WMP.453)

In 2023, the projected target for the Capacitor Maintenance and Replacement program was exceeded by 33% due to the availability of crews and resources to accomplish more work than planned.

All risk reduction was met in 2023 with completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Capital expenditures were less than planned by 17% due to overall reduced unit costs.

5.2.11 Expulsion Fuse Replacement (WMP.459)

In 2023, 90% of the projected target for the Expulsion Fuse Replacement program was completed. The remaining fuses were not installed due to production delay and shortage of fuse inventory. Due to the fuse shortage that occurred mid-2023 and the allocation of current in-stock material to emergency repair jobs, the remaining 10% of work will be completed in 2024.

All risk reduction intent was met in 2023 with substantial completion of this program.

There is no QA/QC associated with this program.

Capital expenditures were less than planned by 46% due to two factors. First, costs associated with the remaining 10% of work were not realized. Second, the direct costs for completed work were much less than previous years, which resulted in an imperfect forecast. This is a result of efficiencies realized with high volume jobs being worked at a single structure.

5.2.12 Maintenance, Repair, and Replacement of Connectors, including Hotline Clamps (WMP.464)

In 2023, the projected target for Maintenance, Repair, and Replacement of Connectors, including Hotline Clamps, was exceeded by 285% due to the target being determined prior to structures being fielded and confirmed as included in scope. HLC replacements are identified concurrently with Lightning Arrestor Removal and Replacements (WMP.550) and are required to support lightning arrestors, which is the driver for the high-volume program.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

O&M expenditures exceeded planned by 238% due to the higher volume of work completed.

5.2.13 Lightning Arrestor Removal and Replacement (WMP.550)

In 2023, the projected target for the Lightning Arrestor Removal and Replacement program was exceeded by 20% due to additional crew availability.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

No variance explanations are needed for program expenditures.

5.2.14 Avian Protection (WMP.972)

In 2023, the projected target for the Avian Protection program was exceeded by 229% due to the target being determined prior to structures being fielded and confirmed as included in scope. Avian protection

units are identified concurrently with Lightning Arrestor Removal and Replacements (WMP.550), which is the driver for the high-volume program.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

Capital and O&M expenditures were less than planned by 43% and 54% respectively due to a decrease in direct costs for all the jobs listed compared to 2022. Efficiencies were also gained due to a high volume of jobs being performed alongside lightning arrestor replacements and hotline clamp removals at a single structure.

5.2.15 Strategic Pole Replacement Program (WMP.1189)

In 2023, 2% of the projected target for the Strategic Pole Replacement Program was completed. This program began in 2023 and experienced delays with onboarding the engineering and design consultants for the 2023 scope of work. These delays resulted in less time to complete designs and issue jobs to construction than initially forecasted. Design delays led to challenges with construction resources as jobs were scheduled to be issued late in Q4 when internal construction resources were allocated to other work, there was limited staff due to holidays, or there was insufficient time to assign jobs to construction contractors. In total 6 poles were issued to construction in 2023, all of which were issued in either late November or December, which did not provide enough time to work with construction resources, receive final materials, schedule outages, and complete construction. Poles not completed in 2023 are scheduled to be completed in 2024. To mitigate the issues of 2023 for the 2024 and 2025 scope, work was bundled into one bid and awarded to two engineering and design consultants, both of which have experience designing SDG&E's overhead system.

Although the direct risk reduction intent was not met by this program, the poles that were targeted for replacement in 2023 were mitigated through cyclical, routine asset inspection programs if they were due for inspection. See Section 5.2.21, 5.2.23, 5.2.25, and 5.2.28 for more information on distribution asset inspections.

Post-construction inspections and true-up analysis are embedded in this program and will be completed after as-builts are received from the construction team.

Capital and O&M expenditures were less than planned by 96% and 100%, respectively, due to the 98% of remaining work to be completed.

5.2.16 Wireless Fault Indicators (WMP.449)

There was no target for this program in 2023.

This program did not provide direct risk reduction in 2023.

There is no QA/QC associated with this program.

Capital expenditures were less than planned by 81% due to no completed work in 2023. All spend was associated with trailing costs from 2022.

5.2.17 PSPS Sectionalizing Enhancements (WMP.461)

In 2023, 100% of projected target for PSPS Sectionalizing Enhancements was completed.

All risk reduction was met in 2023 with the completion of this program.

Post-construction review is embedded in this program and was completed in 2023.

Capital expenditures exceeded planned by 11% due to extended contract costs that resulted from permitting delays.

5.2.18 Generator Grant Program (WMP.466)

In 2023, the GGP shifted from a quantitative to a qualitative target. As this program matures and high-risk qualifying customers are mitigated, the remaining pool of eligible customers decreases. Demand is also driven by customer anticipation of PSPS de-energizations, which was not realized in 2023, resulting in lower-than-planned customer participation. For this reason, O&M expenditures were less than planned by 23%.

All risk reduction intent was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

5.2.19 Generator Assistance Program (WMP.467)

In 2023, the GAP shifted from a quantitative to a qualitative target. The program is developed based on the expectation that customers will participate in anticipation of PSPS de-energizations. In 2023, customers experienced only one PSPS activation without de-energization, resulting in lower-than-planned customer participation. For this reason, O&M expenditures were less than planned by 45%.

All risk reduction intent was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

5.2.20 Standby Power Program (Fixed Backup Power) (WMP.468)

In 2023, the projected target for Fixed Backup Power (FBP) was exceeded by 21% due to a change in technology implementation. The program scope initially included a combination of backup batteries and propane fueled generators; however, only the existing technology of permanent propane fueled generators was installed. This less expensive option allowed more customers to be served.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

O&M expenditures exceeded planned by 23% due to the higher volume of generators provided. Quarterly accounting checkpoints were conducted to ensure that there was adequate funding to offer additional offerings to customers in the queue.

5.2.21 Distribution Overhead Detailed Inspections (WMP.478)

In 2023, the projected target for Distribution Detailed Inspections was exceeded by 6%.

All risk reduction intent was met in 2023 with the completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Distribution Detailed Inspections (WMP.491). See Section 5.2.33 for more information.

Capital expenditures were less than planned by 17% due to a reduced number of inspection findings that required a capital repair and delays in completing capital work due to material shortages.

O&M expenditures were less than planned by 18% due to more than 1,000 overhead detailed inspections that were satisfied through risk-informed drone inspections and funded through the Drone Assessments program (WMP.552). See Section 5.2.27 for more information on Drone Assessments.

5.2.22 Transmission Overhead Detailed Inspections (WMP.479)

In 2023, 81% of the projected target for Transmission Overhead Detailed Inspections was completed. There are 13 tielines comprising 459 structures with forecasted completion dates in Q4 2023 that will be completed in Q1 2024 in compliance with SDG&E's CAISO-approved transmission maintenance practice. These inspections can be performed within a 6-month timeframe, and the forecasted completion dates for these structures are within that timeframe. Although these inspections were not performed in Q4 2023, SDG&E remains compliant with its approved maintenance practice.

All risk reduction intent was met in 2023 with substantial completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Transmission Inspections (WMP.1191). See Section 5.2.32 for more information on QA/QC of Transmission Inspections (WMP.1191).

Capital expenditures exceeded planned by 83% because starting in 2023, the Transmission Corrective Maintenance Program (CMP) began including existing capital corrective work resulting from inspections in the non-HFTD WUI areas within the scope of WMP reporting. Therefore, a higher than anticipated capital spend was realized.

O&M expenditures exceeded planned spend by 294% due to unanticipated material and labor costs on distribution underbuild components of corrective work on transmission structures. The minimal forecasted spend for 2023 was determined by an actual spend of \$0 in 2022, and the forecast will be adjusted in future years to account for 2023 actual spend.

5.2.23 Distribution Infrared Inspections (WMP.481)

In 2023, the projected target for Distribution Infrared Inspections was exceeded by 24%. In Q1 of 2023, infrared inspections moved to a risk-informed approach that resulted in adding inspections to the previously determined selection of structures for this program. The risk-informed approach did not remove any inspections, therefore the total number of inspections completed was higher than forecasted.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

O&M expenditures exceeded planned by 74% due to additional infrared inspections performed because of transitioning to a risk-informed approach at the beginning of 2023.

5.2.24 Transmission Infrared Inspections (WMP.482)

In 2023, 98% of the projected target for Transmission Infrared Inspections was completed. The remaining 2% of structures were not completed due to an inability to perfectly forecast. The forecast for this program was determined in late 2022 and was subject to the variability of active structures on energized tielines.

All risk reduction intent was met in 2023 with substantial completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Transmission Inspections (WMP.1191). See Section 5.2.32 for more information on QA/QC of Transmission Inspections (WMP.1191).

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.25 Distribution Wood Pole Intrusive Inspections (WMP.483)

In 2023, the projected target for Distribution Wood Pole Intrusive Inspections was exceeded by 1,976% due to performing additional non-routine inspections in the HFTD. Non-routine inspections can be requested for various reasons and are typically performed to support pole-loading calculations needed for engineering and design work as required by GO 95 rule 44.2. For this reason, non-route inspections cannot be forecasted.

All risk reduction was met in 2023 with completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Wood Pole Intrusive (WMP.1193). See Section 5.2.35 for more information on QA/QC activities for wood pole intrusive inspections (WMP.1193).

Capital expenditures were less than planned by 17% due to lower than anticipated pole replacements needed resulting from a wood pole intrusive inspection.

O&M expenditures exceeded planned by 305% due to the high volume of additional inspections performed.

5.2.26 Transmission Wood Pole Intrusive Inspections (WMP.1190)

In 2023, the projected target for Transmission Wood Pole Intrusive Inspections was exceeded by 23% due to performing additional non-routine inspections in the HFTD. Non-routine inspections can be requested for various reasons and are typically performed to support pole-loading calculations needed for engineering and design work. This program does not target non-routine inspections because they cannot be forecasted; they are supplemental inspections that exceed approved transmission maintenance practice.

All risk reduction intent was met in 2023 with substantial completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Wood Pole Intrusive (WMP.1193). See Section 5.2.35 for more information on QA/QC activities for wood pole intrusive inspections (WMP.1193).

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.27 Drone Assessments (WMP.552)

In 2023, the projected target for Distribution Drone Assessments was exceeded by 12% due to inclusion of additional structures in the WUI.

All risk reduction was met in 2023 with completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Distribution Drone Assessments (WMP.1192). See Section 5.2.34 for more information on QA/QC of drone inspections (WMP.1192).

No variance explanations are needed for program expenditures.

5.2.28 Distribution Overhead Patrol Inspections (WMP.488)

In 2023, 99% of the projected target for Distribution Overhead Patrol Inspections was completed. The remaining 1% of structures were forecasted in late 2022 and did not meet the criteria for inspection in 2023. For example, these structures may have been removed from service or undergrounded and no longer require the overhead patrol inspection.

All risk reduction intent was met in 2023 with substantial completion of this program.

There is no QA/QC associated with this program.

Capital expenditures were less than planned by 17% due to lower than anticipated pole replacements needed resulting from patrols.

5.2.29 Transmission Overhead Patrol Inspections (WMP.489)

In 2023, 98% of the projected target for Transmission Overhead Patrol Inspections was completed. The remaining 2% of structures were not completed due to an inability to perfectly forecast. The forecast for this program was determined in late 2022 and was subject to variability of active structures on energized tielines.

All risk reduction intent was met in 2023 with substantial completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Transmission Inspections (WMP.1191). See Section 5.2.32 for more information on QA/QC activities for transmission inspections (WMP.1191).

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.30 Transmission 69kV Tier 3 Visual Inspections (WMP.555)

In 2023, 98% of the projected target for Transmission 69kV Tier 3 visual inspections was completed. The remaining 2% of structures were forecasted in late 2022 and no longer met the criteria for inspection in 2023.

All risk reduction intent was met in 2023 with substantial completion of this program.

Inspections performed in this program undergo QA/QC under QA/QC of Transmission Inspections (WMP.1191). See Section 5.2.32 for more information on QA/QC activities for transmission inspections (WMP.1191).

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.31 Substation Patrol Inspections (WMP.492)

In 2023, the projected target for Substation Patrol Inspections was exceeded by 3% due to an imperfect forecast. The forecast was determined in late 2022, and additional substations may have necessitated inspection in 2023. For example, any given substation could experience a change in cycle from monthly inspection to every other month, or vice versa. These routine changes in infrastructure drive the actual inspections performed, which could differ from the forecast.

This program does not provide direct risk reduction.

Inspections performed in this program undergo QA/QC under QA/QC of Substation Inspections (WMP.1194). See Section 5.2.36 for more information on QA/QC activities for substation inspections (WMP.1194).

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.32 QA/QC of Transmission Inspections (WMP.1191)

In 2023, 100% of the projected target for QA/QC of Transmission Inspections was completed.

This program does not provide direct risk reduction.

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.33 QA/QC of Distribution Detailed Inspections (WMP.491)

In 2023, 94% of the projected target for QA/QC of Distribution Detailed Inspections was completed. As stated in the 2023-2025 Wildfire Mitigation Plan, this program targets 0.5% to 1.5% of completed detailed inspections and is therefore substantially complete. Due to the time between inspection and QA/QC activity, there is no way to determine whether results of the QA/QC findings were present at the time of inspection, therefore the program did not track pass/fail results in 2023. Future enhancements are described in the 2025 WMP Update in response to ACI SDGE-23-13.

This program does not provide direct risk reduction.

Expenditures for this program are embedded within Detailed Distribution Inspections (WMP.478) and are not exclusively reported within the WMP.

5.2.34 QA/QC of Distribution Drone Assessments (WMP.1192)

In 2023, the projected target for QA/QC of Distribution Drone Assessments was exceeded by 12% due to the assessment of additional structures in the WUI. QA/QC activities were performed on 100% of completed drone assessments, therefore exceeding the target. QA/QC activities consisted of a desktop

review of drone assessment results and images processed through machine learning models. Discrepancies identified were corrected on the assessment result prior to finalization, communicated with inspectors, and used to inform machine learning models.

This program does not provide direct risk reduction.

Expenditures for this program are embedded within Distribution Drone Assessments (WMP.552) and are not exclusively reported within the WMP.

5.2.35 QA/QC of Wood Pole Intrusive (Transmission & Distribution) (WMP.1193)

In 2023, the projected target for QA/QC of Distribution and Transmission Wood Pole Intrusive Inspections was exceeded by 825% due to the high volume of additional non-routine inspections performed. See Sections 5.2.25 and 5.2.26 for more information on wood pole intrusive inspections.

This program does not provide direct risk reduction.

Expenditures for this program are embedded within Transmission and Distribution Wood Pole Intrusive Inspections (WMP.483 and WMP.1190, respectively) and are not exclusively reported within the WMP.

5.2.36 QA/QC of Substation Inspections (WMP.1194)

In 2023, the projected target for QA/QC of Substation Inspections was exceeded by 28%. The goal of this program is to QA/QC a minimum of 20 substation inspections per inspector every year, but more can be performed if desired. In 2023, additional substation inspections were completed, which warranted some additional QA/QC activities. See Section 5.2.31 for more information on Substation Patrol Inspections (WMP.492).

This program does not provide direct risk reduction.

Expenditures for this program are FERC-funded and are not reported within the WMP.

5.2.37 CNF (Distribution Underground) (WMP.1016)

This is a retired program that had associated costs in 2023. Capital and O&M expenditures were less than planned by 48% and 68% respectively. Electric infrastructure hardening work within the Cleveland National Forest (CNF) was completed, however environmental restoration work is ongoing. Restoration activities are dependent on many factors, including weather, which can make forecasting difficult. This program remains compliant with its Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) as required by the project.

5.2.38 CNF (Distribution Overhead) (WMP.1017)

This is a retired program that had associated costs in 2023. Capital expenditures were less than planned by 49%. Electric infrastructure hardening work within the CNF was completed, however environmental restoration work is ongoing. Restoration activities are dependent on many factors, including weather, which can make forecasting difficult. This program remains compliant with its MMCRP as required by the project.

5.2.39 LiDAR Inspections of Distribution Electric Lines and Equipment (WMP.484)

There is no target for this program.

This program does not provide direct risk reduction.

There is no QA/QC associated with this program.

O&M expenditures were less than planned by 37% due to the reactive nature of these projects. LiDAR inspections of distribution lines and equipment are performed as part of the QA/QC process for completed overhead activities. Forecasting this work can be difficult due to the reactive nature of the project and the many variables including location and terrain for which projects require these inspections each year. Required LiDAR inspections were completed in 2023 with lower-than-expected costs.

5.2.40 Centralized Repository for Data (WMP.519)

There is no target for this initiative.

Capital and O&M expenditures were less than planned by 15% and 15%, respectively, due to reassignment of project work from external, contractor resources to internal, full-time employees and descoping and deferral of advanced analytics projects to 2024.

5.3 Vegetation Management and Inspection

As part of its efforts to make its electric system more resistant to wildfires and to comply with relevant Commission rules and state law, SDG&E's Vegetation Management was designed with the goal of keeping trees and brush clear of electric infrastructure. Vegetation Management involves several components including tracking and maintaining a database of inventory trees and poles, routine and enhanced patrolling, pruning and removing hazardous trees, replacing unsafe trees with more situationally compatible species, pole brushing, and training first responders in electrical and fire awareness.

Table 5-4 lists programs and initiatives within the Vegetation Management and Inspection category of the 2023-2025 Wildfire Mitigation Plan¹³ and their associated targets, the method of verification for each target, projected and actual expenditures, and whether risk reduction was achieved. Projected and actual completion dates for all programs were December 31, 2023. Narrative is provided in this section if the target was not met, actual spend was greater or less than 10% of planned, risk impact was not achieved, or if there is a QA/QC component.

Figure 5-6 is a status summary for programs within the Vegetation Management and Inspection category of the 2023-2025 Wildfire Mitigation Plan.

Figure 5-7 is a financial summary for programs and initiatives within the Vegetation Management and Inspection category of the 2023-2025 Wildfire Mitigation Plan.

¹³ 2023-2025 Wildfire Mitigation Plan, Section 8.2

Table 5-4: Vegetation Management and Inspection: 2023 Expenditures and Targets

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change	Projected Target/Unit and Completion Date	Actual Target/Unit and Completion Date	% Risk Impact Achieved?	QA/QC Applicable?	Method of Verification
Detailed Inspections	WMP.494	\$ -	\$ -	- %	\$44,559	\$67,765	52%	48,5400 Trees	51,4626 Trees	Yes	Yes	GIS Data Submission(s)
Fuels Management Program	WMP.497	\$ -	\$ -	- %	\$7,011	\$4,255	-39%	500 Poles Cleared	514 Poles Cleared	Yes	No	GIS Data Submission(s)
Clearance (enhanced trim or remove)	WMP.501	\$ -	\$ -	- %	\$10,235	\$ -	-100%	11,200 Trees	13,419 Trees	Yes	Yes	GIS Data Submission(s)
QA/QC Vegetation Management	WMP.505	\$ -	\$ -	- %	\$ -	\$ -	- %	15%	16.2%	n/a	n/a	n/a
VM Off-Cycle Patrol (strike potential)	WMP.508	\$ -	\$ -	- %	\$ -	\$ -	- %	106 VMAs	106 VMAs	Yes	No	GIS Data Submission(s)
Vegetation management enterprise system	WMP.511	\$2,096	\$880	-58%	\$ -	\$ -	- %	n/a	n/a	n/a	n/a	n/a
Pole Clearing (brushing)	WMP.512	\$ -	\$ -	- %	\$6,411	\$8,004	25%	33,010 Poles Brushed	35,258 Poles Brushed	Yes	Yes	GIS Data Submission(s)
Right Tree Right Place	WMP.1325	\$ -	\$ -	- %	\$1,000	\$1,208	21%	n/a	n/a	n/a	n/a	n/a
TOTAL		\$2,096	\$880	-58%	\$69,215	\$82,443	19%					

Figure 5-6: Vegetation Management and Inspection: 2023 Program Status

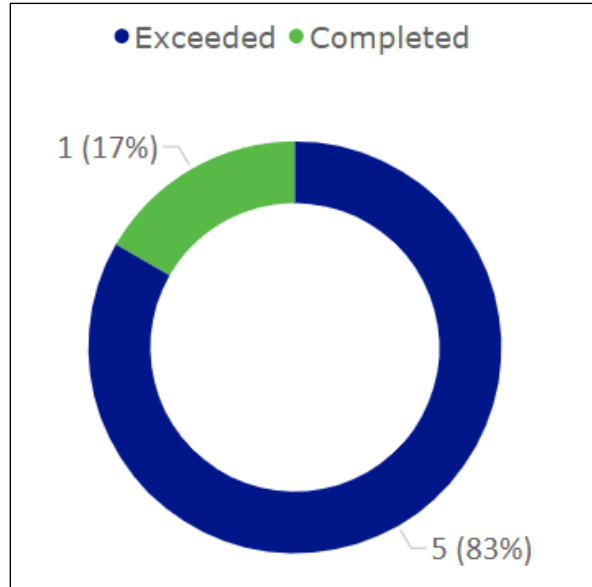
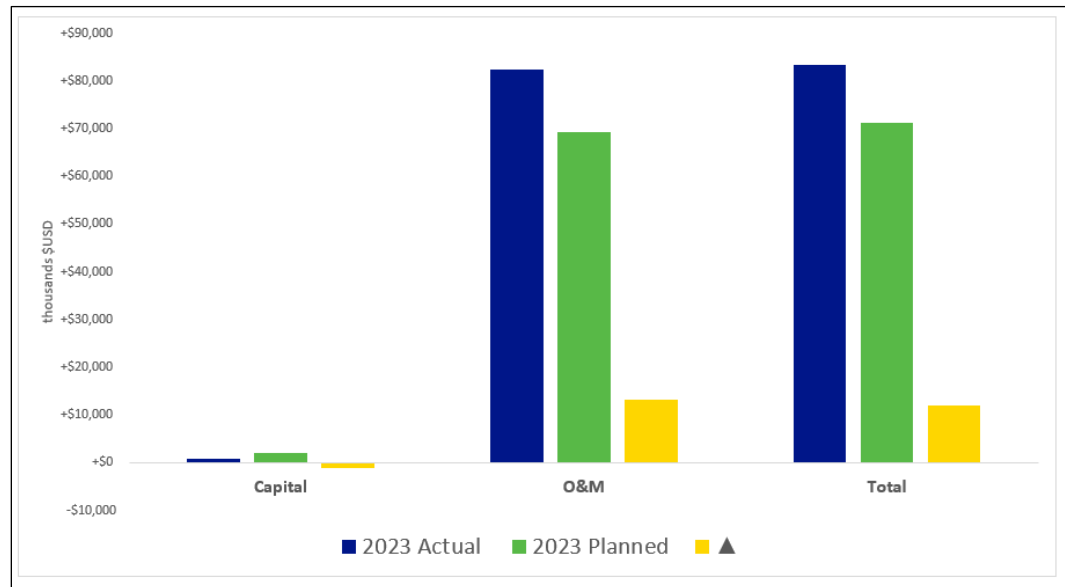


Figure 5-7: Vegetation Management and Inspection: 2023 Expenditures



5.3.1 Detailed Inspections (WMP.494)

In 2023, the projected target for Detailed Inspections was exceeded by approximately 6%. Targets for this program are forecasted based on the estimated number of inventory trees throughout the service territory that will require inspection. The population of inventory trees fluctuates continuously as new trees are added to the system when they first meet the inventory tree criteria and removed from the system when they are removed from the landscape.

All risk reduction was met in 2023 with the completion of this program.

A post-activity audit on a representative sample of all completed vegetation management work is performed on an annual basis. See Section 5.3.4 for the audit sample percentage and pass rate for this activity.

O&M expenditures exceeded planned by 52%. However, the O&M expenditures recorded for this initiative are inclusive of Detailed Inspections (WMP.494); Off-Cycle Patrol (WMP.508); QA/QC (WMP.505); and Clearance (WMP.501) including enhanced and routine tree trimming and removal activities. Most of the increase in O&M expenditures can be attributed to negotiated unit cost rates resulting from new service agreements between SDG&E and its contractors.

5.3.2 Fuels Management (WMP.497)

In 2023, the projected target for Fuels Management was exceeded by 2.8% due to available budget, contractor resources, and allowable timeframe to increase the number of poles that could be cleared by year's end.

All risk reduction was met in 2023 with the completion of this program.

Post-activity review is embedded within this program and was completed in 2023.

O&M actual expenditures for this initiative were less than planned by 22% due to a restructure of the service agreements and changeout of vendors performing the work. In 2023, Vegetation Management completed a sourcing initiative to restructure all its contracted service agreements, including Fuels Management. With the goal of aligning existing vendors and creating synergies in contractor insurance, the mechanical thinning activity of the Fuels Management program was awarded to an existing tree trim contractor, reducing the overall cost of performing this activity.

5.3.3 Clearance (WMP.501)

In 2023, the projected target for Clearance was exceeded by 20% due to a focused effort to obtain greater (enhanced) post-trim clearances on "targeted" species throughout the HFTD and remove fast-growing species that are not compatible with power lines.

All risk reduction was met in 2023 with the completion of this program.

A post-activity audit on a representative sample of all completed vegetation management work is performed on an annual basis. See Section 5.3.4 for the audit sample percentage and pass rate for this activity.

O&M expenditures were less than planned by 100% because actual costs for this program are embedded within overall O&M costs for Detailed Inspections (WMP.494), which include the activities of tree trimming, pre-inspection, and auditing. Currently, there is no ability to specifically isolate the costs associated with enhanced tree clearances.

5.3.4 QA/QC Vegetation Management (WMP.505)

In 2023, the projected target for QA/QC Vegetation Management was exceeded by 2.5% as an overall average due to a relative increase in the initiative work activities that are subject to audit. A post-activity audit is performed on a representative sample of all completed vegetation management work including the activities of pre-inspection, tree trimming and removal including clearance activities, and pole clearing. The projected target for this program is to complete a sample of 12% to 15% of work completed. Table 5-5 illustrates the actual, average audit sample percentage and pass rate for these activities in 2023.

Table 5-5: QA/QC Vegetation Management

Activity Audited	Audit Sample %	Pass Rate
Detailed Inspections (WMP.494)	16.5%	96.7%
Overall Tree Trimming/Removal (including Clearance WMP.501)	17.8%	93.9%
Pole Clearing (WMP.512)	18.4%	99.3%
Average	17.5%	96.6%

This program does not provide direct risk reduction.

5.3.5 Off-Cycle Patrol (WMP.508)

In 2023, 100% of the projected target for Off-Cycle Patrols was completed.

All risk reduction was met in 2023 with the completion of this program.

There is no QA/QC associated with this program.

Costs for Off-Cycle Patrol are associated with Detailed Inspections (WMP.494) and addressed in Section 5.3.1.

5.3.6 Vegetation Management Enterprise System

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures for this initiative were less than planned by 58%, although deliverables associated with this initiative were completed. Deliverables and advancements made in this initiative in 2023 included:

- Process creation to calculate all expenses for every tree trim activity tree and automated upload to the AWS cloud for multi-year reporting capability.
- Installation and customization of a new version of Cityworks (in a Development environment), and eventual transition to iOS for the PowerWorkz mobile application.
- Implementation of tree metrics to provide more information about trees when making decisions for maintenance.
- Development of new attribute fields within the tree database for increased situational awareness.

5.3.7 Pole Clearing (Brushing) (WMP.512)

In 2023, the projected target for Pole Clearing (Brushing) was exceeded by 6.4% due to a modified quantification of pole clearing activities. It was determined that the original projected target units did not capture all types of activities that represent a cleared pole, therefore the query logic for calculating the count of poles cleared was modified, which resulted in the target being exceeded.

All risk reduction was met in 2023 with the completion of this program.

A post-activity audit on a representative sample of all completed vegetation management work is performed on an annual basis. See Section 5.3.4 for the audit sample percentage and pass rate for this activity.

O&M expenditures exceeded planned by 25% due to increased costs associated with restructured and renegotiated service agreements. In 2023, Vegetation Management completed a strategic sourcing initiative to renew contracts for all its vegetation management activities including pole clearing. Unitized and hourly pricing increases were the main driver for overall cost increases for pole clearing.

5.3.8 Tree Planting – Right Tree Right Place (WMP.1325)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

In 2023, O&M expenditures exceeded planned by 21% due to popularity and interest in the initiative from collaborative stakeholders including customers, homeowners' associations, cities, schools, and tribal governments. This tree planting initiative consists of three programs including the Customer Tree Rebate program, the Tree Replacement program, and the Tree Giveaway program. The overall success and interest in this program resulted in increased costs for tree planting labor.

5.4 Situational Awareness and Forecasting

Weather continues to have a significant impact on utility operations. Utilization of situational awareness tools such as weather stations, cameras, WFIs, and the FPI have proven successful historically and continue to be beneficial to system planning, emergency operations, and the safe implementation of PSPS de-energizations. Based on these successes, situational awareness networks will be expanded into areas where they can be used to minimize the impacts of PSPS de-energizations and make communities safer.

Table 5-6 lists programs and initiatives within the Situational Awareness and Forecasting category of the 2023-2025 Wildfire Mitigation Plan¹⁴ and their associated targets, the method of verification for each target, projected and actual expenditures, and whether risk reduction was achieved. Projected and actual completion dates for all programs were December 31, 2023. Narrative is provided in this section if the target was not met, actual spend was greater or less than 10% of planned, risk impact was not achieved, or if there is a QA/QC component.

Figure 5-8 is a status summary for programs within the Situational Awareness and Forecasting category of the 2023-2025 Wildfire Mitigation Plan.

Figure 5-9 is a financial summary for programs and initiatives within the Situational Awareness and Forecasting category of the 2023-2025 Wildfire Mitigation Plan.

¹⁴ 2023-2025 Wildfire Mitigation Plan, Section 8.3

Table 5-6: Situational Awareness and Forecasting: 2023 Expenditures and Targets

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change	Projected Target/Unit and Completion Date	Actual Target/Unit and Completion Date	% Risk Impact Achieved?	QA/QC Applicable?	Method of Verification
Environmental monitoring systems (Advanced weather monitoring)	WMP.447	\$416	\$206	-50%	\$ -	\$ -	- %	n/a	n/a	n/a	n/a	n/a
Fire potential index	WMP.450	\$2,426	\$1,279	-47%	\$3,781	\$4,268	13%	n/a	n/a	n/a	n/a	n/a
High-performance computing infrastructure	WMP.541	\$ -	\$10	100%	\$ -	\$ -	- %	n/a	n/a	n/a	n/a	n/a
Air Quality Index	WMP.970	\$58	\$ 82	41%	\$28	\$66	134%	6 Sensors	6 Sensors	n/a	No	Completed work orders
TOTAL		\$2,900	\$1,578	-46%	\$3,809	\$4,334	14%					

Figure 5-8: Situational Awareness and Forecasting: 2023 Program Status

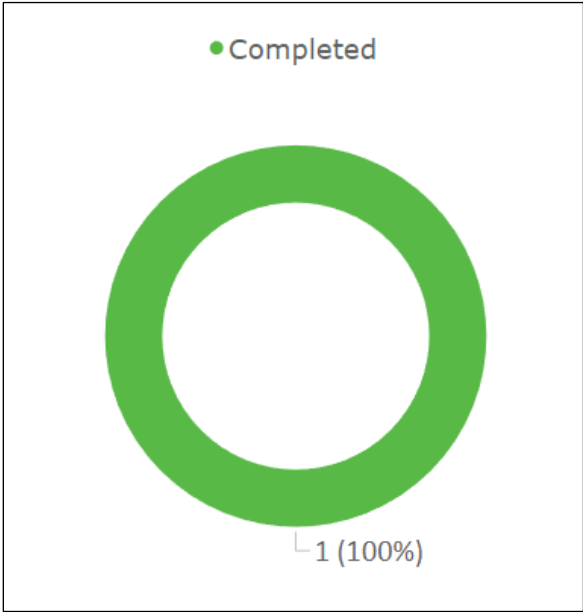
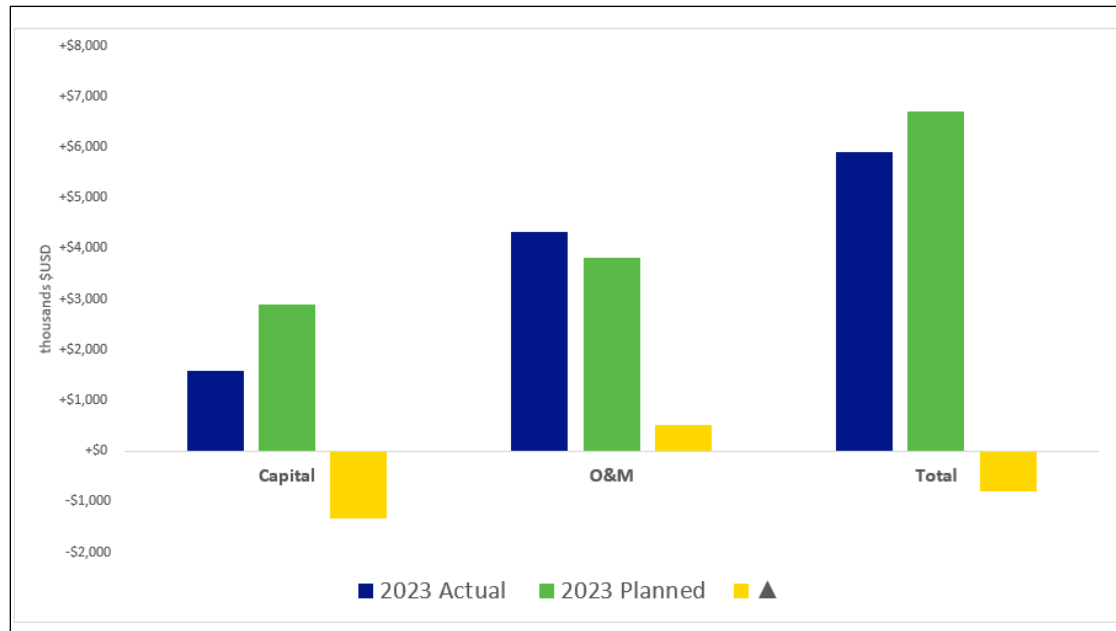


Figure 5-9: Situational Awareness and Forecasting: 2023 Expenditures



5.4.1 Fire Potential Index (WMP.450)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures were less than planned by 47% and O&M expenditures exceeded planned by 13%. FPI capital expenditures decreased due to a change in accounting treatment for the software data subscriptions. Fire behavior modeling software can no longer be capitalized as the costs have almost completely transitioned to data subscriptions, which resulted in the additional O&M spend.

5.4.2 Weather Stations and Normalized Difference Vegetation Index (NDVI) Cameras (WMP.447)

There is no target for this program.

This program does not provide direct risk reduction.

There is no QA/QC associated with this program.

Capital expenditures were less than planned by 50% due to fewer weather network upgrades than initially planned. The service territory is well saturated with weather stations and there is currently no demand for additional stations.

5.4.3 High-Performance Computing Infrastructure (WMP.541)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures exceeded planned by 100% due to an unforeseen purchase of a supercomputer warranty invoice, which extends all hardware and labor coverage until December 31, 2025.

5.4.4 Air Quality Index (WMP.970)

In 2023, 100% of the projected target for the Air Quality Index was completed.

This program does not provide direct risk reduction.

There is no QA/QC associated with this program.

Capital and O&M expenditures exceeded planned by 41% and 134%, respectively.

O&M expenditures were exceeded due to the completion of sensor installations ahead of schedule, which resulted in an increase in maintenance costs earlier than originally planned.

Capital expenditures were exceeded due to redesign of the notification system. A redesign was needed to comply with regulatory requirements, which state that employees must be notified when air quality level thresholds are exceeded due to a wildfire, rather than an acute event such as a car fire or nearby

dust-generating construction. Additional costs were incurred to create a semi-automated solution. The system now sends notifications to SDG&E’s Safety Services department, who then verifies whether the cause is a wildfire and determines whether to notify employees.

5.5 Emergency Preparedness

The mission of Emergency Management is to coordinate safe and effective emergency preparedness for the Company, customers, and emergency response personnel. That mission extends to safely and efficiently preparing for, responding to, and recovering from all threats and hazards through strategic planning, training, and exercising, and a sustained Quality Assurance and Improvement process.

Table 5-7 lists projected and actual expenditures for each initiative within the Emergency Preparedness category of the 2023-2025 Wildfire Mitigation Plan.¹⁵ Narrative is provided in this section if actual spend was greater or less than 10% of planned.

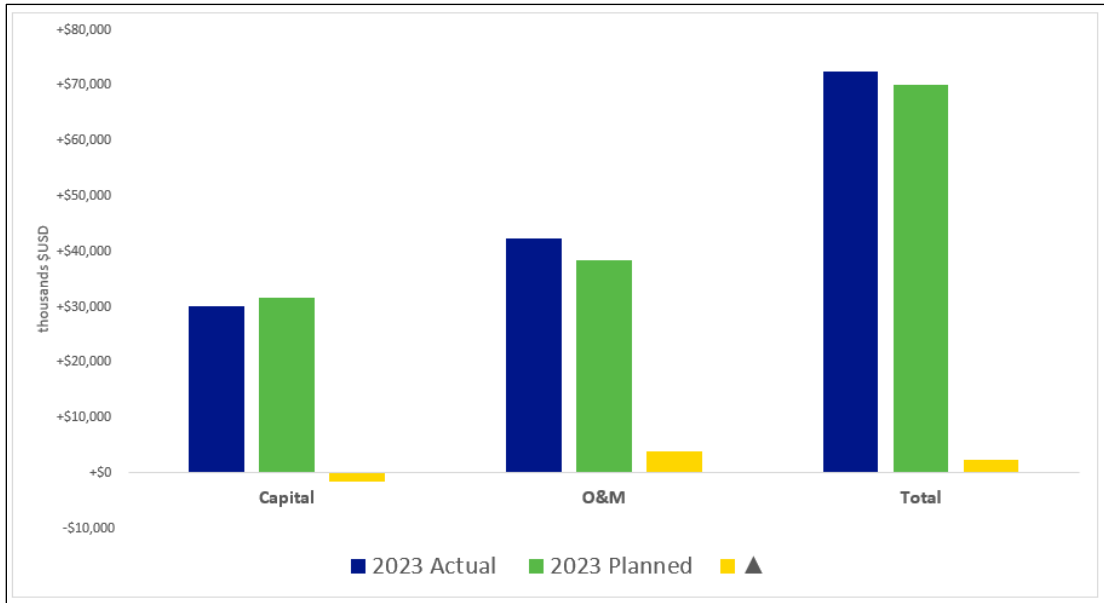
Figure 5-10 is a financial summary for initiatives within the Emergency Preparedness category of SDG&E’s 2023 WMP.

Table 5-7: Emergency Preparedness: 2023 Expenditures

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change
Crew-accompanying ignition prevention and suppression resources and services	WMP.514	\$ -	\$ -	- %	\$3,844	\$4,639	21%
Aviation Firefighting Program	WMP.557	\$7,960	\$3,553	-55%	\$9,326	\$8,014	-14%
Public emergency communication strategy	WMP.563	\$3,453	\$10,375	200%	\$10,168	\$10,128	0%
Emergency preparedness plan	WMP.1008	\$20,286	\$16,243	-20%	\$15,052	\$19,459	29%
TOTAL		\$31,698	\$30,172	-5%	\$38,391	\$42,240	10%

¹⁵ 2023-2025 Wildfire Mitigation Plan, Section 8.4

Figure 5-10: Emergency Preparedness: 2023 Expenditures



5.5.1 Other: Suppression Resources and Services (WMP.514)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

O&M expenditures exceeded planned by 21% due to higher-than-expected costs for new vendor contracts. O&M expenditures were forecasted based on historical spend and did not account for an increase in vendor costs.

5.5.2 Other: Aviation (WMP.557)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures were less than planned by 55% due to the delay of some helicopter enhancements, now planned for 2024.

O&M expenditures were less than planned by 14% due to restructuring Blackhawk contracts, lowering monthly costs, and fewer fires than previous years requiring response. O&M expenditures were forecasted based on historical spend and did not account for a decrease in fires flown.

5.5.3 Public Emergency Communication Strategy (WMP.563)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures exceeded planned by 200% due to an increase in scope of the Public Safety Partner Portal. Originally, the application was to be used primarily for PSPS communications with PSPs. Currently, the application has been expanded to encompass communications to PSP in all hazards, which required a significant number of enhancements.

5.5.4 Emergency Preparedness Plan (WMP.1008)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

Capital expenditures were less than planned by 20% due to the discontinuation of Noggin phase 4/5 and the EOC mobile app. Microsoft Teams is being used in the interim while a replacement for the EOC activation functionality, including notifications, communications, and decision-making tools, is being evaluated.

O&M expenditures exceeded planned by 29% due to higher than planned costs for the Bell 412 aircraft and higher than planned IT costs for Emergency Management. With the retirement of Noggin, additional enhancements and modifications were required in Microsoft Teams to provide similar functionality during EOC activations.

5.6 Community Outreach and Engagement

Community Outreach and Engagement provides all stakeholders up-front awareness and information, using available channels to educate the public on wildfire preparedness and PSPS de-energizations. This robust, external communication strategy includes thoughtful education campaigns and strategic partnerships and is continuously analyzed to identify areas of improvement.

Table 5-8 lists projected and actual expenditures for each initiative within the Community Outreach and Engagement category of the 2023-2025 Wildfire Mitigation Plan.¹⁶ Narrative is provided in this section if actual spend was greater or less than 10% of planned.

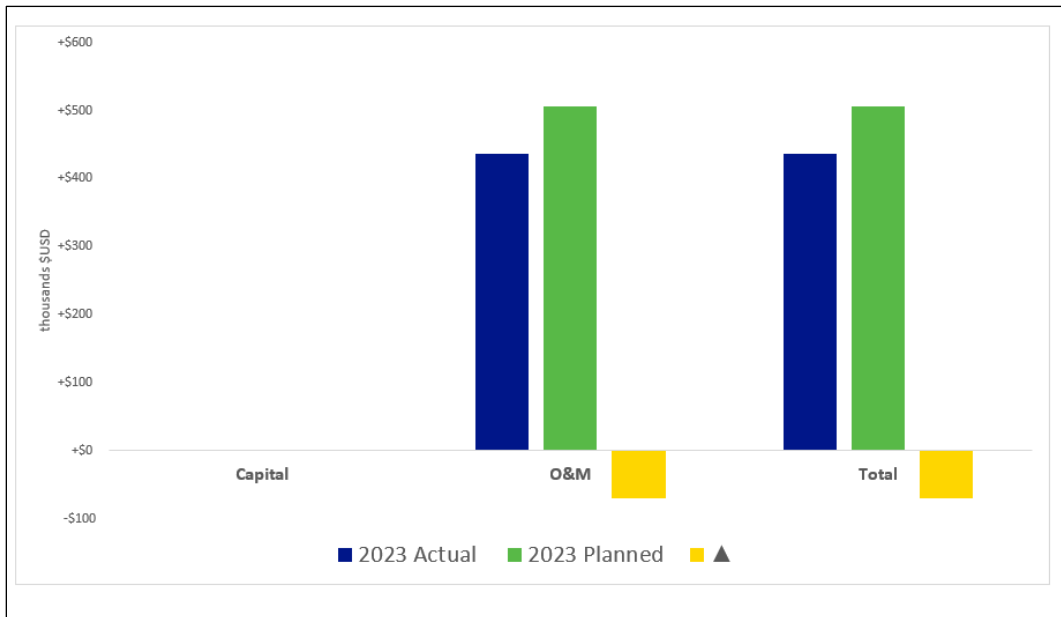
Figure 5-11 is a financial summary for initiatives within the Community Outreach and Engagement category of SDG&E's 2023 WMP.

Table 5-8: Community Outreach and Engagement: 2023 Expenditures

Initiative Name	Utility Tracking ID(s)	Capital Planned (\$, thousands)	Capital Actual (\$, thousands)	% Capital Change	O&M Planned (\$ thousands)	O&M Actual (\$ thousands)	% O&M Change
Community engagement	WMP.1337	\$ -	\$ -	- %	\$505	\$435	-14%
TOTAL					\$505	\$435	-14%

¹⁶ 2023-2025 Wildfire Mitigation Plan, Section 8.5

Figure 5-11: Community Outreach and Engagement: 2023 Expenditures



5.6.1 Other: Community Engagement (WMP.1337)

There is no target for this initiative.

This initiative does not provide direct risk reduction.

There is no QA/QC associated with this initiative.

O&M expenditures were less than planned by 14% due to a lack of PSPS de-energizations, resulting in no activations of CRCs.

6 Change Orders

Table 6-1: Change Orders

Description of Change Order	Date Requested	Date Approved
n/a	n/a	n/a

SDG&E did not request any change orders for the 2023 compliance period.

Appendix A: SDG&E 2023 ARC Summary Targets and Expenditures

SDG&E 2023 ARC Summary Targets and Expenditures

Targets and Expenditures

Category	Initiative Name	Tracking ID	Units	Target	Actual	% Complete	Capital Planned	Capital Actual	% Capital Change	O&M Planned	O&M Actual	% O&M Change	Status
Wildfire Mitigation Strategy Development	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	WMP.442	n/a	n/a	n/a	n/a	\$319	\$ -	-100%	\$3,597	\$3,872	8%	n/a
Wildfire Mitigation Strategy Development	Documentation and disclosure of wildfire-related data and algorithms	WMP.521	n/a	n/a	n/a	n/a	\$0	\$2,434	100%	\$ -	\$ -	-%	n/a
Wildfire Mitigation Strategy Development	Allocation methodology development and application	WMP.523	n/a	n/a	n/a	n/a	\$5,277	\$5,155	-2%	\$5,291	\$5,432	3%	n/a
Grid Design, Operations, & Maintenance	Avian Protection	WMP.972	Poles	200	657	329%	\$2,507	\$1,435	-43%	\$19	\$9	-54%	Exceeded
Grid Design, Operations, & Maintenance	Additional Inspections (69kV TLs in Tier 3)	WMP.555	Structures	1,632	1,602	98%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Distribution Drone Assessments	WMP.552	Poles Assessed	13,692	15,311	112%	\$80,740	\$75,131	-7%	\$53,171	\$52,915	0%	Exceeded
Grid Design, Operations, & Maintenance	Lightning Arrestor Replacement	WMP.550	Arrestors	1,848	2,216	120%	\$3,407	\$3,432	1%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	LTE Communication Network (DCRI)	WMP.549	Base Stations	35	11	31%	\$81,274	\$75,714	-26%	\$1,122	\$910	-19%	Delayed
Grid Design, Operations, & Maintenance	Transmission OH Hardening - DUB	WMP.545	Miles	7	17	243%	\$11,397	\$14,326	26%	\$0	\$0	0%	Exceeded
Grid Design, Operations, & Maintenance	Transmission OH Hardening	WMP.543	Miles	14	16	114%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	Substation Inspections	WMP.492	Inspections	384	396	103%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded

Category	Initiative Name	Tracking ID	Units	Target	Actual	% Complete	Capital Planned	Capital Actual	% Capital Change	O&M Planned	O&M Actual	% O&M Change	Status
Grid Design, Operations, & Maintenance	QA/QC Distribution Detailed	WMP.491	Inspections	160	150	94%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Transmission OH Inspections (visual - helo patrol)	WMP.489	Structures	6,337	6,200	98%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Distribution OH Patrols	WMP.488	Inspections	86,880	85,857	99%	\$952	\$795	-17%	\$285	\$297	4%	Completed
Grid Design, Operations, & Maintenance	Distribution Wood Pole Intrusive	WMP.483	Inspections	50	1,038	2076%	\$1,592	\$1,328	-17%	\$24	\$97	305%	Exceeded
Grid Design, Operations, & Maintenance	Transmission Infrared Inspections	WMP.482	Structures	6,179	6,077	98%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Distribution Infrared	WMP.481	Inspections	9,578	11,900	124%	\$ -	\$ -	-%	\$175	\$305	74%	Exceeded
Grid Design, Operations, & Maintenance	Transmission OH Detailed Inspections	WMP.479	Structures	2,387	1,928	81%	\$842	\$1,537	83%	\$9	\$35	294%	Delayed
Grid Design, Operations, & Maintenance	Distribution OH Detailed	WMP.478	Inspections	11,100	11,755	106%	\$10,408	\$8,687	-17%	\$940	\$773	-18%	Exceeded
Grid Design, Operations, & Maintenance	DIST OH Hardening - Traditional Hardening	WMP.475	Miles	1.90	2.33	123%	\$1,985	\$6,069	206%	\$1,800	\$1,168	-35%	Exceeded
Grid Design, Operations, & Maintenance	Strategic Undergrounding	WMP.473	Miles	84	72	86%	\$196,200	\$174,778	-11%	\$436	\$429	-2%	Delayed
Grid Design, Operations, & Maintenance	Fixed Power Backup	WMP.468	Generators	300	362	121%	\$ -	\$ -	-%	\$10,350	\$12,680	23%	Exceeded
Grid Design, Operations, & Maintenance	Hotline Clamps	WMP.464	HLC	250	962	385%	\$ -	\$ -	-%	\$486	\$1,642	238%	Exceeded
Grid Design, Operations, & Maintenance	Advanced Protection	WMP.463	Circuits	5	4	80%	\$9,706	\$16,298	68%	\$300	\$194	-35%	Delayed
Grid Design, Operations, & Maintenance	Sectionalizing Devices	WMP.461	Switches	10	10	100%	\$1,837	\$2,035	11%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Expulsion Fuse Replacement	WMP.459	Fuses	40	36	90%	\$93	\$50	-46%	\$ -	\$ -	-%	Completed

Category	Initiative Name	Tracking ID	Units	Target	Actual	% Complete	Capital Planned	Capital Actual	% Capital Change	O&M Planned	O&M Actual	% O&M Change	Status
Grid Design, Operations, & Maintenance	DIST OH Hardening - Covered Conductor	WMP.455	Miles	60	60	100%	\$76,806	\$81,553	6%	\$2,220	\$3,319	50%	Completed
Grid Design, Operations, & Maintenance	SCADA Capacitors	WMP.453	Capacitors	15	20	133%	\$1,885	\$1,557	-17%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	Early Fault Detection	WMP.1195	Nodes	60	32	53%	\$5,612	\$6,061	8%	\$9	\$4	-60%	Delayed
Grid Design, Operations, & Maintenance	QA/QC Substations	WMP.1194	Inspections	18	23	128%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	QA/QC Wood Pole Intrusive (Dist & Trans)	WMP.1193	Inspections	12	111	925%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	QA/QC Distribution Drone	WMP.1192	Inspections	13,692	15,311	112%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	Secondary Inspections of Transmission (QA/QC)	WMP.1191	Structures	100	100	100%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Grid Design, Operations, & Maintenance	Transmission Wood Pole Intrusive Inspections	WMP.1190	Structures	73	90	123%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Grid Design, Operations, & Maintenance	Strategic Pole Replacement	WMP.1189	Poles	60	1	2%	\$1,710	\$67	-96%	\$130	\$0	-100%	Delayed
Grid Design, Operations, & Maintenance	CNF(Distribution Underground)	WMP.1016	n/a	n/a	n/a	n/a	\$1,183	\$620	-48%	\$2,070	\$672	-68%	n/a
Grid Design, Operations, & Maintenance	CNF(Distribution Overhead)	WMP.1017	n/a	n/a	n/a	n/a	\$ 1,471	\$756	-49%	\$ -	\$ -	-%	n/a
Grid Design, Operations, & Maintenance	Wireless Fault Indicators	WMP.449	n/a	n/a	n/a	n/a	\$51	\$10	-81%	\$ -	\$ -	-%	n/a
Grid Design, Operations, & Maintenance	Microgrids	WMP.462	n/a	n/a	n/a	n/a	\$16,576	\$3,197	-81%	\$1,652	\$1,105	-33%	n/a
Grid Design, Operations, & Maintenance	Generator Grant Program	WMP.466	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$7,060	\$5,407	-23%	n/a
Grid Design, Operations, & Maintenance	Generator Assistance Program	WMP.467	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$1,000	\$547	-45%	n/a

Category	Initiative Name	Tracking ID	Units	Target	Actual	% Complete	Capital Planned	Capital Actual	% Capital Change	O&M Planned	O&M Actual	% O&M Change	Status
Grid Design, Operations, & Maintenance	LiDAR inspections of distribution electric lines and equipment	WMP.484	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$1,388	\$873	-37%	n/a
Grid Design, Operations, & Maintenance	Centralized repository for data	WMP.519	n/a	n/a	n/a	n/a	\$11,819	\$10,047	-15%	\$ 1,944	\$1,657	-15%	n/a
Grid Design, Operations, & Maintenance	HFTD Tier 3 Distribution Pole Inspections	WMP.551	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$ -	\$ -	-%	n/a
Vegetation Management & Inspection	Pole Clearing (brushing)	WMP.512	Poles Brushed	33,010	35,258	107%	\$ -	\$ -	-%	\$ 6,411	\$ 8,004	25%	Exceeded
Vegetation Management & Inspection	VM Off-Cycle Patrol (strike potential)	WMP.508	VMAs	106	106	100%	\$ -	\$ -	-%	\$ -	\$ -	-%	Completed
Vegetation Management & Inspection	QA/QC Vegetation Management	WMP.505	Inspections	79,441	106,041	133%	\$ -	\$ -	-%	\$ -	\$ -	-%	Exceeded
Vegetation Management & Inspection	Clearance (enhanced trim or remove)	WMP.501	Trees	11,200	13,419	120%	\$ -	\$ -	-%	\$ 10,235	\$ -	-100%	Exceeded
Vegetation Management & Inspection	Fuels Management Program	WMP.497	Poles Cleared	500	514	103%	\$ -	\$ -	-%	\$ 7,011	\$ 5,455	-22%	Exceeded
Vegetation Management & Inspection	Detailed Inspections	WMP.494	Trees	485,400	514,626	106%	\$ -	\$ -	-%	\$ 44,559	\$ 67,765	52%	Exceeded
Vegetation Management & Inspection	Right Tree Right Place	WMP.1325	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$ 1,000	\$ 1,208	21%	n/a
Vegetation Management & Inspection	Vegetation management enterprise system	WMP.511	n/a	n/a	n/a	n/a	\$2,096	\$880	-58%	\$ -	\$ -	-%	n/a
Situational Awareness & Forecasting	Air Quality Index	WMP.970	Sensors	6	6	100%	\$58	\$82	41%	\$28	\$66	134%	Completed
Situational Awareness & Forecasting	Environmental monitoring systems (Advanced weather monitoring)	WMP.447	n/a	n/a	n/a	n/a	\$416	\$206	-50%	\$ -	\$ -	-%	n/a
Situational Awareness & Forecasting	Fire potential index	WMP.450	n/a	n/a	n/a	n/a	\$2,426	\$1,279	-47%	\$3,781	\$4,268	13%	n/a
Situational Awareness & Forecasting	High-performance computing infrastructure	WMP.541	n/a	n/a	n/a	n/a	\$ 0	\$10	100%	\$ -	\$ -	-%	n/a

Category	Initiative Name	Tracking ID	Units	Target	Actual	% Complete	Capital Planned	Capital Actual	% Capital Change	O&M Planned	O&M Actual	% O&M Change	Status
Emergency Preparedness	Emergency preparedness plan	WMP.1008	n/a	n/a	n/a	n/a	\$20,286	\$16,243	-20%	\$15,052	\$19,459	29%	n/a
Emergency Preparedness	Crew-accompanying ignition prevention and suppression resources and services	WMP.514	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$3,844	\$4,639	21%	n/a
Emergency Preparedness	Aviation Firefighting Program	WMP.557	n/a	n/a	n/a	n/a	\$7,960	\$3,553	-55%	\$9,326	\$8,014	-14%	n/a
Emergency Preparedness	Public emergency communication strategy	WMP.563	n/a	n/a	n/a	n/a	\$3,453	\$10,375	200%	\$10,168	\$10,128	0%	n/a
Community Outreach and Engagement	Community engagement	WMP.1337	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$505	\$435	-14%	n/a
Community Outreach and Engagement	Public outreach and education awareness program	WMP.527	n/a	n/a	n/a	n/a	\$ -	\$ -	-%	\$ -	\$ -	-%	n/a
TOTAL							\$562,343	\$525,700	-7%	\$207,398	\$223,783	8%	

Planned and Actual Expenditures by Category

Category	# of Programs and Initiatives	2023 Planned Expenditures (\$ thousands)	% of 2023 Planned Expenditures	2023 Actual Expenditures (\$ thousands)	% of 2023 Actual Expenditures
Grid Design, Operations, & Maintenance	41	\$606,642	78.81%	\$570,520	76.12%
Vegetation Management & Inspection	8	\$71,312	9.26%	\$83,313	11.12%
Emergency Preparedness	4	\$70,089	9.11%	\$72,411	9.66%
Wildfire Mitigation Strategy Development	3	\$14,484	1.88%	\$16,892	2.25%
Situational Awareness & Forecasting	4	\$6,709	0.87%	\$5,912	0.79%
Community Outreach and Engagement	2	\$505	0.07%	\$435	0.06%
Total	62	\$769,741	100.00%	\$749,483	100.00%