State of California – A Natural Resources Agency
Gavin Newsom, Governor

OFFICE OF ENERGY INFRASTRUCTURE SAFETY
715 P Street, 20th Floor | Sacramento, CA 95814
916.902.6000 | www.energysafety.ca.gov

Caroline Thomas Jacobs, Director

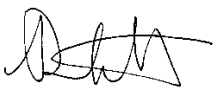
September 26, 2024

Dear Stakeholders,

Enclosed is the Office of Energy Infrastructure Safety's (Energy Safety's) Annual Report on Compliance regarding San Diego Gas & Electric Company's execution of its 2022 Wildfire Mitigation Plan.

This Annual Report on Compliance is hereby published as of the date of this letter. San Diego Gas & Electric Company may, if it wishes to do so, file a public response to this Annual Report on Compliance within 14 calendar days of the date of publication. Comments must be submitted to Energy Safety's E-Filing system in the 2022 Annual Report on Compliance docket.[1]

Sincerely,



Patrick Doherty
Program Manager | Compliance Assurance Division
Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety

[1] Submit responses to the 2022-ARC docket via the Office of Energy Infrastructure Safety's E-Filing system (https://efiling.energysafety.ca.gov/EFiling/DocketInformation.aspx?docketnumber=2022-ARC [accessed September 19, 2024]).

OFFICE OF ENERGY INFRASTRUCTURE SAFETY

2022 ANNUAL REPORT ON COMPLIANCE

SAN DIEGO GAS & ELECTRIC COMPANY

September 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Executive Summary

The Office of Energy Infrastructure Safety (Energy Safety) is tasked with evaluating and either approving or denying Wildfire Mitigation Plans (WMPs) annually filed by electrical corporations pursuant to Public Utilities Code section 8386 *et seq*. The law also directs Energy Safety to ensure that the electrical corporations have complied with their WMPs.

Pursuant to Government Code section 15475.1, Energy Safety's primary objective is to ensure that electrical corporations reduce wildfire risk and comply with energy infrastructure safety measures. Energy Safety's annual compliance evaluation of San Diego Gas & Electric Company's (SDG&E's) execution of its 2022 WMP is a comprehensive look at whether SDG&E's execution of its 2022 WMP Update reduced the risk of SDG&E equipment igniting a catastrophic wildfire.

Energy Safety conducted its compliance review process through a variety of means including audits, field inspections, and analysis of data submitted by SDG&E to Energy Safety. Energy Safety also evaluated several performance metrics, including metrics that reveal the risk on SDG&E's system. Energy Safety additionally reviewed SDG&E's self-assessment in its Electrical Corporation Annual Report on Compliance (EC ARC) and the findings of its independent evaluator.

Energy Safety's evaluation found that SDG&E completed 69 of 75 (or 92%) of its 2022 WMP initiatives, including nine of the ten initiatives with the largest planned expenditure. However, SDG&E failed to complete the work for six of its WMP initiatives for 2022.

In general, SDG&E spent below the planned amounts on its 2022 WMP initiatives by nearly $119 million in capital expenditures and approximately $12 million in operating expenditures for a total of $131 million in the aggregate. Two of the largest capital budget under-expenditures were due to cost savings associated with increased construction efficiency, while the three largest combined capital and operating under-expenditures were due to project delays associated with not acquiring appropriate and sufficient land rights, and other licensing and construction-related delays. Despite not spending planned amounts, SDG&E claims that it met a significant portion of its quantitative targets and all of its qualitative 2022 WMP initiative targets.

SDG&E's performance on ignition risk and outcome metrics was generally favorable and showed no remarkable issues or problems.

Energy Safety needed to seek more information from SDG&E on 12 initiatives not included in the EC ARC. For 27 of its 2022 WMP initiatives, the reporting provided by SDG&E occasionally contradicted itself, or contradicted the findings of the Independent Evaluator, which demonstrates reporting consistency and accuracy issues were present during the 2022 compliance year.

Taken together, Energy Safety has identified areas for improvement in the accuracy of

documentation of its WMP implementation by SDG&E. Energy Safety expects SDG&E to improve the accuracy of its documentation going forward.

Energy Safety acknowledges that in 2022 SDG&E undertook efforts to reduce its wildfire risk, and in many instances achieved its WMP initiative activity targets.

On balance, SDG&E was largely successful in executing its plan for wildfire risk mitigation. However, there are still areas for improvement and continued learning.

1. Introduction

This Annual Report on Compliance presents the Office of Energy Infrastructure Safety's (Energy Safety's) statutorily mandated assessment of San Diego Gas & Electric Company's (SDG&E's) compliance with its 2022 Wildfire Mitigation Plan (WMP) Update. (Pub. Util. Code § 8386.3(c)(4).)

In the sections that follow, Energy Safety describes the statutory regulatory basis for its reporting, the information supplied by the electrical corporation, and the independent analysis conducted by Energy Safety to examine SDG&E's execution of its 2022 WMP Update and how its infrastructure performed in 2022 relative to wildfire risk. Finally, Energy Safety provides its conclusions, observations, and recommendations for further actions by SDG&E.

1.1 Compliance Process

The statutory objective of electrical corporation wildfire mitigation planning efforts is to ensure that electrical corporations are constructing, maintaining, and operating their infrastructure in a manner that will minimize the risk of catastrophic wildfire. (Pub. Util. Code § 8386(a).) The objective of a WMP, and consequently the focus of Energy Safety's assessment of compliance, is wildfire risk reduction. An electrical corporation's obligations extend beyond meeting WMP targets.

Energy Safety's 2022 Compliance Process establishes the parameters for this Annual Report on Compliance. Consistent with the 2022 Compliance Process, this report considers the totality of all compliance assessments completed with respect to SDG&E's 2022 WMP Update. This includes all inspection, audit, investigation, and data analysis work performed by Energy Safety, as well as separate electrical corporation and independent third-party evaluations of compliance. (Compliance Process, p. 6.)

Energy Safety evaluated whether the electrical corporation implemented the initiatives in its 2022 WMP Update, looking specifically at whether the electrical corporation funded and performed the work stated for each initiative. (Compliance Process, p. 7.)

Energy Safety also considered the electrical corporation's stated goals and objectives of its plan, its performance of initiatives essential to reducing wildfire risk and achieving its objectives, and the ultimate performance of its infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk. (Compliance Process, p. 7.)

2. SDG&E 2022 Wildfire Mitigation Plan Update

SDG&E submitted a comprehensive WMP in 2020 covering a three-year term from 2020 through the end of 2022. SDG&E submitted annual updates to the original 2020 WMP, including a 2022 Update to its 2020 WMP that is the subject of this Annual Report on Compliance.

Energy Safety approved SDG&E's 2022 Update to its 2020 WMP (hereinafter 2022 WMP Update) on July 5, 2022. (WMP Decision.) SDG&E's 2022 WMP Update highlighted ongoing efforts to mitigate wildfire risk related to electrical infrastructure and reduce the impacts of public safety power shutoff (PSPS) events. (2022 WMP, pp. 1-2.) Mitigation efforts covered a wide range of programs, including:

- *Risk Assessment and Mapping*: SDG&E discussed intentions to continue to advance its maturity in risk modeling to better understand the probability and consequence of ignition along its infrastructure. SDG&E began the process of automating and transitioning models to the cloud to allow for the connection of multiple data sets and more granular models to be run on an hourly basis during high-risk situations such as Red Flag Warnings (RFWs) or PSPS events.
- *Situational Awareness and Forecasting*: SDG&E expanded its artificial intelligence (AI) forecasting system across 190 weather stations in 2021 and planned to continue expanding this program to help increase the accuracy of weather forecasts, which are shared with public and fire agencies. Additionally, SDG&E intended to continue to make progress with its initiative to install particulate sensors measuring air quality index (AQI), with an automatic notification system to provide real-time AQI values via its Fire Science and Climate Adaptation (FS&CA) application.
- *Grid Design and System Hardening*: SDG&E stated that it would continue to transition its distribution hardening from bare conductor hardening towards covered conductor and undergrounding.
- *Asset Management and Inspections*: SDG&E discussed its efforts to collect updated light detection and ranging (LiDAR) data across its high fire threat district (HFTD) areas in 2021 and leverage these data to provide detailed power line analysis for pre-construction design and post-construction survey, increasing both system reliability and safety. SDG&E also intended to utilize the LiDAR data to perform vegetation analysis, identifying trees with strike potential and areas of high-risk due to clearance from power lines.
- *Vegetation Management and Inspections*: SDG&E generally described its intentions to build upon and expand its existing vegetation management programs, including active tracking and maintenance of its tree database, completing patrols, pruning,

and removing hazardous trees, and promoting the planting of trees compatible with wildfire safety and powerlines as part of broader sustainability initiatives. SDG&E planned to expand its fuel management activities.

- *Grid Operations and Protocols*: SDG&E's aviation firefighting program was expanded in 2021. SDG&E purchased a Sikorsky S-70M (Firehawk) helicopter which it intended to deploy as a lead aerial firefighting resource once it was outfitted with firefighting capability.
- *Data Governance*: As part of its enterprise-wide initiative, SDG&E planned to continue to build a central data repository and establish an asset data foundation integrating key asset-related attributes to enable predictive health analyses and risk modeling and improve inspection/assessment strategies and prioritization. With respect to wildfire mitigation, SDG&E established data governance structures in prior periods and worked to increase the resolution and quality of its wildfire-related metrics including those reported through the WMP.
- *Resource Allocation and Methodology*: SDG&E categorized its resource allocation practices as enterprise-level and program-level. Its enterprise-level methodology included the investment prioritization tool which was being developed by SDG&E's asset management business unit to help allocate capital resources across SDG&E's electric asset classes, while WiNGS-Planning, SDG&E's program-level methodology developed by the wildfire mitigation department, applied a more granular approach to targeting programs such as grid hardening. SDG&E worked to expand both tools in 2021 and pledged to continue expanding their functionality to better support PSPS risks and decision making during PSPS events.
- *Emergency Planning and Preparedness*: SDG&E generally described its 2021 efforts to improve customer notification processes and cadences with the broader community including expanding its Tribal and access and functional needs (AFN) campaigns to communicate with a greater number of hard-to-reach vulnerable populations during events resulting in activation of its emergency operations center (EOC). SDG&E intended to continue expanding these efforts to reach under-represented communities by conducting public education in a wider range of prevalent languages within its service territory.
- *Stakeholder Cooperation and Community Engagement*: SDG&E established a community-based organization (CBO) network made up of over 400 groups with a critical role in connecting SDG&E with its constituencies and discussed general efforts to build on its prior education efforts with the boarder community. (2022 WMP, pp. 1-7.)

Descriptions of the activities of the programs and initiatives contained in SDG&E's 2022 WMP Update are listed in Table 2.

3. SDG&E Annual Report on Compliance

Public Utilities Code section 8386.3(c)(1) directs electrical corporations to file a report addressing the electrical corporation's compliance with their WMP during a compliance year. This document is known as the Electrical Corporation Annual Report on Compliance (EC ARC).

Energy Safety's 2022 Compliance Process outlines the requirements for an EC ARC. The EC ARC must detail the electrical corporation's self-assessment of its compliance with the 2022 WMP Update during the 2022 compliance period. Energy Safety's 2021 Compliance Operational Protocols also apply to EC ARCs for the 2022 compliance period. These Protocols outline the requirements for EC ARCs, including an assessment by the electrical corporation of whether it met its intended risk reduction by implementing all its approved WMP initiatives (i.e., the degree to which initiative activities have reduced ignition probabilities), descriptions of all planned WMP initiative spending versus actual WMP initiative spending, and an explanation of any differentials between the planned and actual spending. (Compliance Operational Protocols, p. 10.)

SDG&E submitted its EC ARC to Energy Safety on April 3, 2023. (EC ARC.) The following is a narrative summary of the EC ARC.

In general, SDG&E asserted that it met or exceeded the risk reduction goals outlined in its 2022 WMP Update. According to SDG&E's 2022 EC ARC, SDG&E implemented and tracked the progress of 73[1] different mitigations outlined in its 2022 WMP Update, and progress on these mitigations was reported through 41 quantitative and 32 qualitative program metrics. (EC ARC, p. 1.)

SDG&E's mitigations included inspection and maintenance programs, system hardening programs, and vegetation management programs, all aimed at mitigating the risk of ignitions related to the electric system. Additional categories included situational awareness, which informed SDG&E's risk models and helped prioritize infrastructure replacement and upgrades, and emergency planning and preparedness, which enabled strategies and tools for real time decision making during emergency response and PSPS events. SDG&E also outlined mitigations aimed at reducing the impact of an ignition-caused wildfire, including high-definition cameras, ground and aerial fire suppression resources, and a fuels management program. Lastly, SDG&E reported it implemented mitigations designed to minimize the customer impacts associated with PSPS events, including the installation of sectionalizing

[1] The initiatives listed are those that SDG&E provided a discussion for in its EC ARC. The total number of initiatives differs from what is listed in Table 2, as Energy Safety requested additional information on two initiatives via a data request.

devices, additional weather stations, and microgrids and customer service efforts including generator grant programs, operating community resource centers (CRC) during PSPS events, and customer outreach programs aimed at wildfire and PSPS preparedness.

3.1 EC ARC Information on Initiative Completion

SDG&E maintained that it met or exceeded the risk reduction intent, as described in the 2022 WMP Update, for 67 program initiatives, including 35 of 41 quantitative programs and all 32 qualitative programs.[2] SDG&E highlighted the following as key accomplishments in 2022:

- Hardened 106 miles of its overhead electric system within the HFTD.
- Undergrounded 71 miles of its electric system.
- Completed distribution, substation, and transmission inspections, including timely remediation.
- Completed the LiDAR and drone investigation assessment and repair (DIAR) programs, inspecting 100 percent of distribution and transmission structures in HFTD Tier 2 and HFTD Tier 3 under each program.
- Completed vegetation management annual inspections and trimming, including inspection of over 250,000 trees in the HFTD and the trim or removal of over 10,000 targeted trees.
- Enhanced situational awareness capabilities by upgrading and rebuilding 50 weather stations.

SDG&E reported that there were no PSPS events in 2022 and that updates were made to the company emergency and disaster preparedness plan (CEADPP) in compliance with emergency management accreditation program (EMAP) standards. A mobile app version of the public safety partner portal (PSPP) was developed to further support collaboration and coordination public safety partners during a PSPS event.

SDG&E reported its self-assessment of its compliance with its 2022 WMP Update initiatives within the EC ARC. The main location for this information is throughout SDG&E's narrative discussion of each identified initiative in the body of its EC ARC and Appendix A. The EC ARC Appendix A generally concerns quantifiable, "top-line" WMP initiative targets and information on expenditures toward WMP initiatives, while the body of the report contains narrative and tabular disclosures with information on qualitative target attainment for certain WMP initiative activities that may not be contained in Appendix A. A summary table of SDG&E's self-reported compliance with both types of WMP initiatives is in Table 2 of this document. While a

[2] The initiatives listed are those that SDG&E provided a discussion for in its EC ARC. The total number of initiatives differs from what is listed in Table 2, as Energy Safety requested additional information on two initiatives via a data request.

narrative summary of SDG&E's self-reported compliance appears below, please refer to Table 2 for more information.

SDG&E self-reported it did not meet six quantitative program targets. Of these, SDG&E reported three met the risk reduction intent of the initiative, but the original target was either based on erroneous or inadequate information or did not accurately reflect the initiative's intent. The remaining three were in progress and expected to be completed in 2023. (EC ARC, p. 2.) The SDG&E self-reported initiatives with missed targets included:

- *Microgrids (7.3.3.8.2):* SDG&E reported completing permanent renewable solutions on one microgrid installation against a target of four.
- *Installation of System Automation Equipment (7.3.3.9):* SDG&E reported completing three circuits against a target of eight.
- *Generator Assistance Programs (7.3.3.11.3):* SDG&E reported providing 140 generator rebates against a target of 1,250.
- *Transmission System Hardening – Distribution Underbuilt (7.3.3.17.2.3):* SDG&E reported completing 0.6 miles against a target of 7.6.
- *Distribution Communications Reliability Improvements (LTE) (7.3.3.18.1):* SDG&E reported completing 21 installations of long-term evolution (LTE) communication network base stations against a target of 25.
- *Other Discretionary Inspection of Distribution Electric-Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations (7.3.5.9):* SDG&E reported completing 10,488 tree trimmings or removals against a target of 12,500.

From the examination of the data provided in the EC ARC, it is also apparent that there was one other missed WMP initiative target:

- *Standby Power Programs (7.3.3.11.2):* SDG&E reported providing 376 generators against a target of 415.

Additionally, some WMP activities that were included in SDG&E's 2022 WMP Update were not described or accounted for in the SDG&E EC ARC. (2022 WMP, pp. 94-95, 204, 220, 223, 226, 228-230, 232-234, 240, 286, 292.) Table 1: includes a list of 12 unaccounted initiatives. These activities were included in SDG&E's 2022 WMP Update but references to them do not appear in SDG&E's 2022 EC ARC. In the majority of cases, SDG&E established quantitative and qualitative targets in the WMP but only discussed the quantitative components of each initiative in the EC ARC and left out qualitative versions. The effect of SDG&E not providing this information in its EC ARC is discussed in Section 5.2.

Table 1: SDG&E Unaccounted WMP Initiative Activities

2022 WMP Update Initiative	2022 Activity
Air Quality Index (7.3.2.2.1)	SDG&E did not provide additional discussion with respect to its progress on certain quantitative aspects: • Procure 12 additional AQI sensors. SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Provide training on sensor calibration and maintenance. • Develop and implement a notification system.
Microgrids (7.3.3.8.2)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Implement off grid (box power) solution for a cathodic protection water system that has a two-mile line through the HFTD.
Installation of System Automation Equipment (7.3.3.9)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Expand the functionality of wire down detection (WDD) and early fault detection (EFD) demonstration projects based on initial 2021 results. • Enhance the coordination with expanding initiatives such as strategic undergrounding and covered conductor to refine scoping of advanced protection program (APP) circuits, thereby optimizing the deployment schedule for both HFTD Tier 2 and HFTD Tier 3.
Generator Grant Programs (7.3.3.11.1)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Strengthen the process of promoting participation and delivering resources in partnership with Tribal community partners.

2022 WMP Update Initiative	2022 Activity
	• Develop plans to offer dedicated backup battery units during active PSPS events to additional AFN population and Tribal communities. • SDG&E's program team revisited the delivery model and subsequently reduced the target as part of SDG&E's approved Change Order request.
Standby Power Programs (7.3.3.11.2)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Continue to reduce permitting times by beginning projects earlier in the year, learning and adjusting to the more stringent and increased safety standards, and building and maintaining relationships with the County to ensure a natural flow of communication. • Streamline program planning by identifying a larger target audience and creating a marketing schedule to ensure customers are invited earlier and more often. • Collaborate with program contractor to codesign marketing material and customer information pieces, staff up certified installers to accommodate larger customer pipeline, and send project leads earlier and more often. • Develop a customer survey to better understand customer needs and potential gaps in program experience. • Use WiNGS-Planning to prioritize regions and specific customers.
Generator Assistance Programs (7.3.3.11.3)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Continue evaluating rebate process options to maximize customer options. • Identify additional portable battery and power station options for the program. • Continue pursuing additional marketing and outreach channels.

2022 WMP Update Initiative	2022 Activity
Undergrounding of Electric Lines and/or Equipment (7.3.3.16)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Reduce trench dimensions where possible to reduce costs and schedule impacts. • Create permitting strike team to manage and expedite WMP-related permitting and agency approvals. • Re-evaluate Strategic Undergrounding program contracting strategy to address resource constraints and workload increase.
Traditional Hardening Distribution Overhead System Hardening (7.3.3.17.1)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Fully transition the electrical system hardening (ESH) project prioritization process to WiNGS-Planning
Cleveland National Forest (CNF) Master Special Use Permit (MSUP) Powerline Replacement Program – Underground and Overhead (7.3.3.17.3)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Post project environmental work in the future, for which it assigned planned expenditures in 2022 to this activity.
Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.2)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Explore the use of the WiNGS-Planning risk model to evaluate the effectiveness of vegetation management operations risk models to support future prioritization and implementation of tree trimming. • Modify the annual schedule for off-cycle inspections within the HFTD to occur closer to the beginning of the region's peak fire season (September), while allowing enough time to complete any backlog items. • Continue to collaborate on multi-year vegetation management enhanced clearance study with other electrical corporations.

2022 WMP Update Initiative	2022 Activity
	• Further integrate video remote interpreting (VRI) into inspection activities for the HFTD. • Engage third-party review of inspection activities to gauge the effectiveness and efficiency of scheduling. • Continue additional inspection activities throughout 2022. • Proactively manage Century plants within transmission corridors through biological means (herbicide use).
LiDAR Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.7)	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Develop a centralized enterprise repository where LiDAR data and associated files will be uploaded, stored, and accessed to set the stage for running analytics and Artificial Intelligence on LiDAR data. • Engage with other electrical corporations on their use and integration of remote sensing technologies within their vegetation management programs. • Engage with satellite vendors to determine current status of technology, and capabilities for augmentation and integration with vegetation management operations.
Documentation and Disclosure of Wildfire-related Data and Algorithms (7.3.7.3)	Complete further refinements to the original probability of failure (PoF) model in SDG&E's wildfire risk assessment to expand probability of ignition (PoI) models based on different risk drivers (i.e., different assets and different causes). Continued migration of models into the cloud platform to enable more dynamic updates to those models.

3.2 EC ARC Information on Initiative Funding

Information supplied by SDG&E on its initiative funding appears in Appendix C.

In general, SDG&E spent below the planned amounts on its 2022 WMP Update initiatives by a

considerable amount of nearly $119 million in capital expenditures and approximately $12 million in operating expenditures for a total of $131 million (17%) in the aggregate. (EC ARC, Appendix A.) SDG&E met nine of the ten initiatives with the largest planned expenditures. Despite not spending planned amounts, SDG&E claims that it met a significant portion of its quantitative targets and all of its qualitative 2022 WMP Update initiative targets.

4. Independent Evaluator ARC for SDG&E

Energy Safety, in consultation with the Office of the State Fire Marshal, annually publishes a list of entities qualified to serve as independent evaluators of WMP compliance. (Pub. Util. Code § 8386.3(c)(2)(A).) Each electrical corporation is then required to hire an independent evaluator from the list to perform an independent WMP compliance assessment. (Pub. Util. Code § 8386.3(c)(2)(B)(i).)

The independent evaluator (IE) reviews and assesses the electrical corporation's compliance with its approved WMP. As part of its evaluation, the IE must determine whether the electrical corporation failed to fund any activities included in its plan.

On July 1st of each year, the IE issues its Independent Evaluator Annual Report on Compliance (IE ARC) for a given electrical corporation. (Pub. Util. Code § 8386.3(c)(2)(B)(i).)

The 2022 IE ARC for SDG&E was prepared by Bureau Veritas North America Inc. The IE ARC included a review of the wildfire mitigation initiatives and activities implemented in 2022, and an accounting of whether SDG&E met its performance targets, underfunded any of the initiatives, and followed its quality assurance and quality control (QA/QC) processes.

The IE determined that SDG&E completed its WMP programs outlined in the approved SDG&E 2022 WMP Update. (IE ARC, p. 121.) The IE also evaluated SDG&E's funding of initiatives but did not draw an overall conclusion as to whether SDG&E's overall under-expenditure impacted its ability to meet its objectives. Per the IE, two of the largest capital budget under-expenditures were due to cost savings associated with increased construction efficiency, while the three largest combined capital and operating under-expenditures were due to project delays associated with not acquiring appropriate and sufficient land rights, and other licensing and construction-related delays. (IE ARC, pp. 6-7.) Finally, the IE concluded that SDG&E is applying and following its QA/QC processes. (IE ARC, Table 58, p. 113.)

The IE utilized a variety of techniques, including inspecting a sample of SDG&E's field-verifiable WMP initiatives, to analyze SDG&E's progress toward meeting its WMP commitments. The IE segregated 27 large volume (=> 100 units) quantifiable goals from the remaining smaller unit goals. Five of the large volume initiatives were field verifiable and the remaining 22 were non-field verifiable initiatives and were analyzed by inspecting data samples.

The IE confirmed the completion of the work required for all five large volume, field verifiable goals. The IE was able to validate the successful completion of 20 of the remaining 22 non-field verifiable, large volume initiatives. The IE determined that SDG&E effectively achieved its large volume, field verifiable goals and target objectives described in the 2022 WMP Update. (IE ARC, p. 6.) Due to timing issues, the IE, in conjunction with approval from Energy Safety, reduced the random sample sizing to a minimum of 5% of each category's total annual quantity target for HFTD Tier 2 and HFTD Tier 3 only.

As a result of the work conducted, the IE made some observations and recommendations to SDG&E in certain areas:

- There were a small number of instances in which assets related to initiatives were found in incorrect coordinates, with variances ranging from 105 feet to 220 feet.
- Avian mitigation protection equipment was absent at two locations and partially failed at nine additional locations, resulting in 11 avian mitigation concerns out of 141 field location visits by the IE team.
- The IE was unable to validate SDG&E's activity with respect to the following initiative:
    - Additional Transmission Aerial 69kV HFTD Tier 3 Visual Inspection (7.3.4.10.2)
- The following initiatives were found non-compliant with the commitments established by the 2022 WMP Update:
    - Microgrids (7.3.3.8.2)
    - Installation of System Automation Equipment (7.3.3.9)
    - Overhead Transmission Fire Hardening (Distribution Underbuilt) (7.3.3.17.2.3)
    - Distribution Communications Reliability Improvements (LTE) (7.3.3.17.18.1)
- The following initiatives were found to be "in progress" rather than fully validated or ongoing in 2022, but the IE did not explicitly classify these as being non-compliant with the commitments established by the 2022 WMP Update:
    - Recruiting and Training of Vegetation Management Personnel (7.3.5.14)
    - Remediation of At-risk Species (7.3.5.15)
    - Vegetation Inventory System (7.3.5.19)
    - Centralized Repository for Data (7.3.7.1)
    - Ignition Management Program (7.3.7.4.1)

In general, the IE found that 32 of SDG&E's 73 WMP[3] activities were funded below the planned amount and five initiative targets were not met. (IE ARC, Appendix F.) Additionally, one activity target was not validated. (IE ARC, pp. 53-54.)

5. Energy Safety Evaluation of WMP Initiative Completion

Energy Safety's evaluation of SDG&E's performance in 2022 indicates that SDG&E attained 69 of their 75 WMP initiative activities, did not perform all the work required by six of 75 WMP initiative activities, and did not report in their EC ARC on 12 WMP initiative activities. The subsections below describe Energy Safety's evaluation of SDG&E's execution of its WMP in 2022.

5.1 SDG&E 2022 WMP Update Initiative Activities Assessed by Energy Safety

Energy Safety evaluated the totality of the compliance data available including SDG&E's 2022 WMP Update, the EC ARC, the IE ARC, SDG&E's quarterly data reports (QDRs), and responses to data requests received from SDG&E. (2022 WMP; EC ARC; IE ARC; 2022 Q4 QDR; DR 248; DR 248 Response.) The initiative activities that Energy Safety assessed in this ARC, a total of 75 initiatives, are itemized in Table 2.

Table 2: SDG&E 2022 WMP Update Initiative Activities

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
A Summarized Risk Map that Shows the Overall Ignition Probability and Estimated Wildfire Consequence (7.3.1.1)	Plan to continue enhancements on wildfire risk reduction model (WRRM) and WRRM-Ops that include upgrading fuel moisture inputs into fire behavior modeling, upgrading the forecaster interface, and incorporating data into a PSPS decision support tool. Enhancements planned for WiNGS-Planning and WiNGS-Ops include completing automation, developing user interface and visualization tools,

[3] The initiatives listed are those that the IE evaluated in the IE ARC. The total number of initiatives differs from what is listed in Table 2, as Energy Safety requested additional information on two initiatives via a data request.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	improving the models with new data, and integration of Technosylva and weather data.
Advanced Weather Monitoring and Weather Stations (7.3.2.1)	Install 20 weather stations.
Air Quality Index (AQI) (7.3.2.2.1)	Quantitative aspects: • Install six AQI sensors purchased in 2021 at key locations. • Procure 12 additional AQI sensors. Qualitative aspects: • Provide training on sensor calibration and maintenance. • Develop and implement a notification system.
Satellite-Based Remote Sensing (7.3.2.2.2)	Quantitative aspects: • Install eight cameras. Qualitative aspects: • Continue efforts to coordinate satellite-based alerts with the ground-based camera network.
Wireless Fault Indicators (7.3.2.3)	Install 500 wireless fault indicators.
Fire Potential Index (7.3.2.4.1)	Continue to advance fire and weather science through partnerships with academia.
Santa Ana Wildfire Threat Index (7.3.2.4.2)	Increase resolution of the modeling used to generate the Santa Ana Wind Threat Index (SAWTI).
High-Performance Computing Infrastructure (7.3.2.4.3)	Add two new high performance computing infrastructure (HPCCs) units to enhance forecasting capabilities.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
Personnel Monitoring Areas of Electric Lines and Equipment in Elevated Fire Risk Conditions (7.3.2.5)	Review additional consistencies in updating digital maps along with enhancements to field navigation for use by field personnel during patrols and observations.
Capacitor Maintenance and Replacement Program (7.3.3.1)	Install 40 supervisory control and data acquisition (SCADA) capacitors.
Covered Conductor Installation (7.3.3.3)	Install 60 miles of covered conductor.
Distribution Pole Replacement and Reinforcement (7.3.3.6)	SDG&E notes it does not have specific targets set for this initiative as all replacement work is reactive and based on findings from the various asset inspection programs from the "Asset Inspections" category.
Expulsion Ruse Replacement (7.3.3.7)	Replace 227 expulsion fuses.
PSPS Sectionalizing Enhancements (7.3.3.8.1)	Install 10 switches.
Microgrids (7.3.3.8.2)	Quantitative aspects: • Complete permanent renewable solution for four microgrids. Qualitative aspects: • Implement off grid (box power) solution for a cathodic protection water system that has a 2-mile line through the HFTD. • Install new non-toxic, non-flammable iron and saltwater batteries.
Installation of System Automation Equipment (7.3.3.9)	Quantitative aspects: • Enable eight circuits with Advanced Protection.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	Qualitative aspects: • Expand the functionality of WDD and EFD demonstration projects based on initial 2021 results. • Enhance the coordination with expanding initiatives such as strategic undergrounding and covered conductor to refine scoping of APP circuits, thereby optimizing the deployment schedule for both HFTD Tier 2 and HFTD Tier 3.
Maintenance, Repair, and Replacement of Connectors, Including Hotline Clamps (7.3.3.10)	Replace 1,650 hotline clamps.
Generator Grant Programs (7.3.3.11.1)	Quantitative aspects: • Provide 700 generators to Medical Baseline (MBL) and Access and Functional Needs (AFN) customers impacted by PSPS. (Change Order.) Qualitative aspects: • Strengthen the process of promoting participation and delivering resources in partnership with Tribal community partners. • Develop plans to offer dedicated backup battery units during active PSPS events to additional AFN population and Tribal communities.
Standby Power Programs (7.3.3.11.2)	Quantitative aspects: • Provide 412 whole facility generators to customers impacted by PSPS. Qualitative aspects: • Continue to reduce permitting times by beginning projects earlier in the year, learning

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	and adjusting to the more stringent and increased safety standards, and building and maintaining relationships with the County to ensure a natural flow of communication. • Streamline program planning by identifying a larger target audience and creating a marketing schedule to ensure customers are invited earlier and more often. • Collaborate with program contractor to codesign marketing material and customer information pieces, staff up certified installers to accommodate larger customer pipeline, and send project leads earlier and more often. • Develop a customer survey to better understand customer needs and potential gaps in program experience. • Use WiNGS-Planning to prioritize regions and specific customers.
Generator Assistance Programs (7.3.3.11.3)	Quantitative aspects: • Provide 1,250 generator rebates to customers impacted by PSPS within HFTD. Qualitative aspects: • Continue evaluating rebate process options to maximize customer options. • Identify additional portable battery and power station options for the program. • Continue pursuing additional marketing and outreach channels.
Undergrounding of Electric Lines and/or Equipment (7.3.3.16)	Quantitative aspects: • Complete 65 miles of undergrounding. Qualitative aspects:

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	• Reduce trench dimensions where possible to reduce costs and schedule impacts. • Create permitting strike team to manage and expedite WMP-related permitting and agency approvals. • Re-evaluate Strategic Undergrounding program contracting strategy to address resource constraints and workload increase.
Distribution Overhead System Hardening (7.3.3.17.1)	Quantitative aspects: • Harden 5 miles of the overhead traditional distribution system Qualitative aspects: • Fully transition the ESH project prioritization process to WiNGS-Planning
Transmission System Hardening – Overhead (7.3.3.17.2.1)	Harden 18.5 miles of the overhead transmission system.
Transmission System Hardening – Underground (7.3.3.17.2.2)	Harden 5.5 miles of the underground transmission system.
Transmission System Hardening – Distribution Underbuilt (7.3.3.17.2.3)	Harden 7.6 miles of the distribution underbuilt transmission system.
CNF Master Special Use Permit (MSUP) Powerline Replacement Program – Underground and Overhead (7.3.3.17.3)	Construction commenced on the CNF Program in late 2016 and was completed in 2021. All construction and close out activities such as QA/QC reviews were also completed in 2021, however SDG&E reported it would

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	conduct post project environmental work in the future.[4]
Distribution Communications Reliability Improvements (LTE) (7.3.3.18.1)	Install 25 LTE communication network base stations.
Lightning Arrestor Removal and Replacement (7.3.3.18.2)	Replace 1,848 lightning arrestors.
Avian Mitigation (7.3.3.18.3)	Install 847 avian protection poles.
Detailed Inspections of Distribution Electric Lines and Equipment (7.3.4.1)	Perform 18,177 detailed distribution system inspections as part of the compliance maintenance program.
Detailed Inspections of Transmission Electric Lines and Equipment (7.3.4.2)	Perform 2,087 detailed transmission system inspections.
Infrared Inspections of Distribution Electric Lines and Equipment (7.3.4.4)	Perform 12,000 distribution infrared inspections.
Infrared Inspections of Transmission Electric Lines and Equipment (7.3.4.5)	Perform 6,154 transmission infrared inspections.
Intrusive Pole Inspections (7.3.4.6)	Perform 350 intrusive pole inspections as part of the compliance maintenance program.

[4] The WMP does not clarify whether their intention was to conduct this work in 2022; however, Table 12 of the 2022 WMP Update disaggregates this into two projects with planned spend totaling $6.5 million for 2022.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
LiDAR Inspections of Distribution Electric Lines and Equipment (7.3.4.7)	Complete LiDAR inspections for all circuits within the HFTD. Use captured data to implement vegetation risk analysis. Use results for emergency operations during red flag and other extreme events. Complete additional pre-LiDAR and post-LiDAR design and analysis as system hardening projects continue to roll out.
LiDAR Inspections of Transmission Electric Lines and Equipment (7.3.4.8)	Continue to use LiDAR inspections of transmission lines to supplement post-construction analysis of grid hardening efforts as well as vegetation analysis.
HFTD Tier 3 Distribution Pole Inspections (7.3.4.9.1)	Perform 12,268 HFTD Tier 3 distribution pole inspections.
Drone Assessments of Distribution Infrastructure (7.3.4.9.2)	Quantitative aspects: • Perform 22,000 drone assessments of distribution infrastructure. Qualitative aspects: • Continue to refine and expand SDG&E's damage detection models. • Streamline the process of gaining government agency authorizations from California State Parks, as well as coordination with sensitive customers. • Develop processes and procedures to incorporate the use of drones into SDG&E's routine inspection program
Drone Assessments of Transmission Infrastructure (7.3.4.10.1)	Quantitative aspects:

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	• Perform 500 drone assessments of transmission infrastructure. Qualitative aspects: • Continue to refine transmission DIAR Program based on consequence of failure and probability of failure. • Expand intelligent image processing to build models for transmission facilities asset identification and damage detection in 2022 using the images collected.
Additional Transmission Aerial 69kV HFTD Tier 3 Visual Inspection (7.3.4.10.2)	Perform 1,654 aerial 69kV HFTD Tier 3 visual transmission system inspections.
Patrol Inspections of Distribution Electric Lines and Equipment (7.3.4.11)	Perform 86,490 patrol inspections of distribution lines and equipment.
Patrol Inspections of Transmission Electric Lines and Equipment (7.3.4.12)	Perform 6,312 patrol inspections of transmission lines and equipment.
Quality Assurance/Quality Control of Inspections (7.3.4.14)	Conduct all 2022 audits as inspections and repairs are completed.
Substation Inspections (7.3.4.15)	Perform 330 substation inspections.
Additional Efforts to Manage Community and Environmental Impacts (7.3.5.1)	Grow the company sustainability initiative to provide 10,000 trees annually in collaboration with customers and local agencies. Implement a Tree Rebate Program targeted at underserved communities to promote the planting of trees where climate equity is compromised. Establish an interactive company website to educate customers about program participation.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	Develop and expand a customer survey regarding vegetation management operations to gather additional feedback on tree trimming operations. Develop internal, quarterly newsletters to engage internal business units and raise awareness of vegetation management operations. Continue to work collaboratively with state and federal agencies on the scope and effectiveness of sound vegetation management operations.
Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.2)	Quantitative aspects: • Perform 491,822 detailed tree trimming inspections. Qualitative aspects: • Explore the use of the WiNGS-Planning risk model to evaluate the effectiveness of vegetation management operations risk models to support future prioritization and implementation of tree trimming. • Modify the annual schedule for off-cycle inspections within the HFTD to occur closer to the beginning of the region's peak fire season (September), while allowing enough time to complete any backlog items. • Continue to collaborate on multi-year vegetation management enhanced clearance study with joint IOUs. • Further integrate VRI into inspection activities for the HFTD. • Engage third-party review of inspection activities to gauge the effectiveness and efficiency of scheduling.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	• Continue additional inspection activities throughout 2022. • Proactively manage Century plants within transmission corridors through biological means (herbicide use).
Fuel Management and Reduction of "Slash" From Vegetation Management Activities (7.3.5.5)	Quantitative aspects: • Clear 500 poles as part of fuel management activities. Qualitative aspects: • Fuels Treatment activity - Continue to assess cost/benefit as well as research alternatives such as use of fire retardants, engage third party to study the methodology and effectiveness of the fuels treatment activity, and provide customer engagement and awareness earlier in the year to streamline authorization to perform. • Vegetation Abatement activity - Expand the acreage to be abated by goat grazing in sections of the Transmission corridors within Chula Vista, Oceanside, Escondido, and Harmony Grove. • Fuels Reduction Grant activity – Complete treatment of wildland fuels in proximity to electric facilities.
LiDAR Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.7)	Quantitative aspects: • Complete 730 miles of remote sensing inspections of vegetation around distribution lines and equipment. Qualitative aspects: • Develop a centralized enterprise repository where LiDAR data and associated files will be

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	uploaded, stored, and accessed to set the stage for running analytics and Artificial Intelligence on LiDAR data. • Engage with other IOUs on their use and integration of remote sensing technologies within their vegetation management programs. • Engage with satellite vendors to determine current status of technology, and capabilities for augmentation and integration with vegetation management operations.
Other Discretionary Inspection of Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations (7.3.5.9)	Trim or remove 12,500 trees as part of enhanced inspections, patrols and trimming activities.
Quality Assurance / Quality Control of Vegetation Inspections (7.3.5.13)	Conduct QC over 15% of vegetation inspections.
Recruiting and Training Vegetation Management Personnel (7.3.5.14)	Expand line-clearance tree trimming training class established in 2021 to develop classroom and field curriculum courses for pre-inspection. Review SDG&E's training programs to determine the applicability of species identification in conjunction with other vegetation activities and encourage personnel to identify genus/species. Expand third-party pre-inspection auditing scope to include validation of genus/species.
Identification and Remediation of At-risk Species (7.3.5.15)	Refine its vegetation management practices for at-risk species based on research results, and by working with database developers to add genus-species identification within the inventory database tree records.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment (7.3.5.16)	Inspect 106 vegetation management areas (VMAs) and remove trees with strike potential.
Vegetation Inventory System (7.3.5.19)	Investigate integration of new work management system with other inter-departmental systems to streamline workflows. Research opportunities to share inventory data with external stakeholders for cross-activity initiatives.
Vegetation Management to Achieve Clearances Around Electric Lines and Equipment (7.3.5.20)	Perform pole brushing on 34,000 poles.
Crew-accompanying Ignition Prevention and Suppression Resources and Services (7.3.6.3)	Conduct regular activities. Utilize fire prevention resources throughout service territory, refine program with training qualifications of personnel serving on CFRs, and review utility activities annually.
Personnel Work Procedures and Training in Conditions of Elevated Fire Risk (7.3.6.4)	Review and update Operations and Maintenance Wildland Fire Prevention Plan (ESP 113.1). Conduct training on fire prevention. Refine procedures to prevent ignitions from equipment or activities.
Protocols for PSPS Re-energization (7.3.6.5)	Continue to explore ways to reduce post-event patrol times to reduce impacts of PSPS events on SDG&E customers.
PSPS Events and Mitigation of PSPS Impacts (7.3.6.6)	Continue capital projects including traditional hardening, undergrounding, covered conductor, microgrids, and generator programs to reduce future scope and impact of PSPS events. WiNGS-Planning modeling will enable segment-based estimates around wildfire risk and PSPS impacts.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
Aviation Firefighting Program (7.3.6.7.1)	Outfit Sikorsky S-70M Firehawk purchased in 2021 to become a firefighting resource, with expectations to place into service in late 2022. Install wire crossing hazard placards to increase the safety of helicopter patrols on distribution and transmission circuits within the HFTD.
Centralized Repository for Data (7.3.7.1)	Continue documentation for the central catalog of metric logics to provide improved transparency. Initiate DGF and documentation standards for data models and predictive analytics algorithms. Collaborate on implementation of OEIS GeoDatabase schema with Asset Management. Deliver data governance education for data owners and data stakeholders. Continue to conduct internal mock-audit checks of existing documentation.
Collaborative Research on Utility Ignition and/or Wildfire (7.3.7.2)	Establish lasting partnerships with the at least three members of the academic community to sponsor ongoing wildfire mitigation-related data and collaborative research through internship programs to further expose students to data driven wildfire mitigation within utility companies.
Documentation and Disclosure of Wildfire-related Data and Algorithms (7.3.7.3)	Complete further refinements to the original probability of failure (PoF) model in SDG&E's wildfire risk assessment to expand probability of ignition (PoI) models based on different risk drivers (i.e., different assets and different causes). Continue migration of models into the cloud platform to enable more dynamic updates to those models.
Ignition Management Program (7.3.7.4.1)	Refine the ignition event information gathering process. Continue to make progress on PoI by

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	gathering data on both ignitions and near ignition events and communicating that information to decision makers during project planning and during extreme fire weather events.
Reliability Database (7.3.7.4.2)	Continue to work toward migrating current Access database to an Amazon Web Services (AWS) IT-supported application for outage coding.
Allocation Methodology Development and Application (7.3.8.1)	Investment Prioritization: • Expand the investment prioritization prototype development to electric distribution projects, including wildfire-driven projects. • Develop PoC for electric distribution portfolio optimization approach. • Develop associated business processes to implement the tool with electric distribution business units. WiNGS-Planning: • Complete WiNGS-Planning automation. • Develop user interface/visualization tool for WiNGS-Planning to enhance grid hardening planning process. • Improve WiNGS-Planning model with new data and models such as PoI models. • Migrate WiNGS-Planning model to the cloud for advanced analysis. • Initiate third-party model review. • Initiate egress analysis and explore ways to incorporate it into WiNGS-Planning model. • Incorporate lifecycle cost analysis into WiNGS-Planning.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
Adequate and Trained Workforce for Service Restoration (7.3.9.1)	Continue comprehensive training program to support outage restoration, patrols, inspections and maintenance, and risk events. Enhance personnel training by incorporating virtual reality (VR) training into existing curriculums. Plans are to build an Electric Safety Center within Skills Training Center to enhance safety-specific training initiatives.
Community Outreach, Public Awareness, and Communications Efforts (7.3.9.2)	Integrate recommendations associated with SDG&E's Compliance Report Regarding Surveys and Metrics to Determine Effectiveness of 2021 Outreach into planning efforts. Use customer feedback solicited to inform Compliance Report on Effectiveness of 2021 Outreach to refine and improve public education messaging and tactics. Expand Tribal and AFN campaigns to reach and communicate with a greater number of hard-to-reach vulnerable populations. Strengthen enhanced partnerships with Indian Health Councils and provide ongoing support to mitigate the impacts of PSPS events. Expand and strengthen partnerships with CBOs. Evaluate partnerships with local school districts to enhance public education efforts, including school newsletters and communications to parents, as well as leveraging established school communication platforms (emails, text messages and collateral materials).
Customer Support in Emergencies (7.3.9.3)	Focus on strengthening existing partnerships while also building new partnerships with organizations that represent the needs of customers with AFN, with an emphasis on the deaf and blind communities,

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	seniors, and the non-English speaking population. Continue to identify organizations with quick response capacity that can meet the needs of customers across the region during PSPS activations. Explore expanded food resource options with the San Diego Food Bank (a Community Information Exchange partner of 211 San Diego) and resiliency solutions for those impacted in the HFTD during PSPS. Develop targeted marketing campaigns to individuals with AFN, broader marketing efforts as well as trainings and materials for CBOs. Explore opportunities to provide for targeted resiliency items to households with individuals with AFN (e.g., lights, sensors, cooler bags, gas cards, battery powered blenders). Work with stakeholders and experts to identify accessibility enhancement opportunities.
Disaster and Emergency Preparedness Plan (7.3.9.4)	Update its company emergency response plan (CERP) based on lessons learned. Additional annexes and standard operating procedures will be developed to support the CERP as new emergent risks arise.
Preparedness and Planning for Service Restoration (7.3.9.5)	Develop a formal mutual assistance training program to include automating processes where possible to streamline deployment and demobilization.
Protocols in Place to Learn from Wildfire Events (7.3.9.6)	Continue the After-Action Review (AAR) program expansion activities and related initiatives to enhance the strong safety and growth mindset culture.
Community Outreach, Public Awareness, and Communications Efforts (Emergency) (7.3.10.1)	Augment public education and outreach to AFN and Tribal communities in a more customized manner. Refine processes and procedures based on stakeholder and community feedback. Enhance identification of AFN customers for the purposes of targeting outreach, communications, and solutions.

2022 WMP Update Initiative	2022 Activity (2022 WMP, Table 5-2, Sec. 7.3, & Attachment B Table 12; WMP Supp. 1st Errata)
	Enhance collaboration with community partners, including Fire Safe Councils, local Fire Departments, Community Emergency Response Teams (CERT), AFN partners, Tribal nations, local town organizations, and other CBOs in order to educate on PSPS, emergency response, and programs available to all communities.
PSPS Communication Practices (7.3.10.1.1)	Continue to collaborate with AFN councils and working groups and other stakeholders to identify and implement opportunities for enhancement. This includes new opportunities with established partners at local Tribal Councils; Other resources that serve Native American communities will be explored. Expand 2022 wildfire safety and PSPS outreach communications to Native American communities. Work to develop new communications in a culturally appropriate and relevant manner.
Cooperation with Suppression Agencies (7.3.10.3)	Maintain coordination with agencies in the SDG&E service territory.

5.2 Energy Safety Analysis of WMP Initiative Activity Attainment – Data Requests

The majority of SDG&E's 2022 WMP Update initiative activities in 2022 are accounted for in SDG&E's EC ARC, IE ARC, and QDR submissions. However, SDG&E's approved 2022 WMP Update proposed several WMP initiative activities for the 2022 compliance year that were not described in its EC ARC, IE ARC, or in the QDR submissions reviewed by Energy Safety. Each activity outlined in SDG&E's WMP must be accounted for by SDG&E in its EC ARC and QDR submissions. In cases where this accounting did not occur, Energy Safety requested further data from SDG&E on those activities that were unaccounted for, including a description of the work completed in 2022. Table 3 includes a list of 12 initiatives that were unaccounted for in other documents and for which Energy Safety requested additional information through a data request. (DR 248.)

Table 3: Initiatives Included in Data Request

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
Air Quality Index 7.3.2.2.1	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Provide training on sensor calibration and maintenance. • Develop and implement a notification system. SDG&E did not provide additional discussion with respect to its progress on certain quantitative aspects: • Procure 12 additional AQI sensors.	• Employees who perform maintenance on the sensors received sensor calibration and maintenance training. • Notification system developed and implemented in 2022. • 12 particulate sensors were acquired in 2022.
Microgrids 7.3.3.8.2	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Implement off grid (box power) solution for a cathodic protection water system that has a 2-mile line through the HFTD.	• SDG&E did not move forward with the cathodic protection water system using an off-grid solution, as that service is instead being performed through undergrounding from a nearby distribution branch.
Installation of System Automation Equipment	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Expand the functionality	• Work for the SDG&E WDD algorithm included: new coding to help avoid false alarms due to planned switching events, a configuration change to reduce the number of meters

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
7.3.3.9	of wire down detection (WDD) and early fault detection (EFD) demonstration projects based on initial 2021 results. • Enhance the coordination with expanding initiatives such as strategic undergrounding and covered conductor to refine scoping of advanced protection program (APP) circuits, thereby optimizing the deployment schedule for both HFTD Tier 2 and HFTD Tier 3.	reporting low voltage, and having all SDG&E smart meters under active surveillance for WDD. • Upon successful completion of the Early Fault Detection pilot project, a separate and distinct program (WMP.1195) was established in 2022. • The APP increased coordination with adjacent programs such as the Covered Conductor Program (WMP.455), EFD (WMP.463), and Strategic Undergrounding Program (WMP.473).
Generator Grant Programs 7.3.3.11.1	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Strengthen the process of promoting participation and delivering resources in partnership with Tribal community partners. • Develop plans to offer dedicated backup battery units during active PSPS events to additional AFN population and Tribal	• In addition to proactive outreach via hardcopy letters and phone calls to pre-qualified customers eligible for the Generator Grant Program, a new online interest form was developed and launched on the main program webpage in 2022 which allows any SDG&E customer to input their contact and account information and be individually evaluated for program eligibility. • SDG&E staff worked with Tribal Relations to promote the Generator Grant Program through the Indian Health Councils. • Program staff worked with AFN representatives, as well as the

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
	communities.	contracted program implementer, to establish a dedicated supply of backup batteries for emergency delivery during active PSPS events for all eligible customers.
Standby Power Programs 7.3.3.11.2	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Continue to reduce permitting times by beginning projects earlier in the year, learning and adjusting to the more stringent and increased safety standards, and building and maintaining relationships with the County to ensure a natural flow of communication. • Streamline program planning by identifying a larger target audience and creating a marketing schedule to ensure customers are invited earlier and more often. • Collaborate with program contractor to codesign marketing material and customer information pieces, staff up certified installers to	• SDG&E implemented improvements to streamline the installation process for customer projects. SDG&E worked with the program contractor to better understand common scenarios that led to delays in permits being granted, which helped lead to decreased permitting approval times and strengthened the relationship with the county. • SDG&E developed and implemented a more comprehensive marketing schedule to launch program enrollment campaigns earlier than previous years. SDG&E also revamped automated customer communications throughout the program process to improve customer experience. • SDG&E collaborated with the program contractor to develop marketing materials for the program. As a result, SDG&E updated its customer invitation letter to better market the program. SDG&E also implemented improvements to the customer intake form with the vendor. • SDG&E elected to leverage a Resiliency Audit survey to capture a more strategic set of customer insights focused on a broader set of

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
	accommodate larger customer pipeline, and send project leads earlier and more often. • Develop a customer survey to better understand customer needs and potential gaps in program experience. • Use WiNGS-Planning to prioritize regions and specific customers.	resiliency solutions including but not limited to backup power programs. SDG&E deployed the survey to all customers in the HFTD to better understand customer resiliency needs and their experience with program offerings. • SDG&E continued to utilize information provided by the WiNGS-Planning team to ensure that initial analysis conducted by the program team was accurate in identifying customers that would most benefit from the Standby Power Program offering.
Generator Assistance Programs 7.3.3.11.3	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Continue evaluating rebate process options to maximize customer options. • Identify additional portable battery and power station options for the program. • Continue pursuing additional marketing and outreach channels.	• The program process and portal were enhanced in 2022 to allow customers to receive rebates on purchases made at any retailer, versus prior years where customers were limited to receive rebates only when purchasing units from two retailers. • SDG&E updated the qualified product list to only include models that are CARB compliant and have carbon monoxide sensor and auto shutoff. The program also added additional fuel generators for instant rebate, and additional fuel generators that customers could purchase at any retailer and receive a post-purchase rebate. • SDG&E worked with the Generator Grant Program implementer to cross-promote the Generator Assistance Program by providing an

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
		informational fact sheet to qualifying customers during battery delivery appointments. The program was also promoted to local agencies to spread awareness for qualified constituents.
Undergrounding of Electric Lines and/or Equipment 7.3.3.16	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Reduce trench dimensions where possible to reduce costs and schedule impacts. • Create permitting strike team to manage and expedite WMP-related permitting and agency approvals. • Re-evaluate Strategic Undergrounding program contracting strategy to address resource constraints and workload increase.	• SDG&E has successfully implemented reduced trench dimensions from 30 inches of cover to 24 inches of cover based on site-specific conditions. • A permitting strike team was formed in 2022 to focus on resolving delays with permitting across various jurisdictional areas (Caltrans, County of San Diego, US Forest Service, Bureau of Indian Affairs, etc.). • SDG&E developed contracting roadmap for accessing, improving and building up the Strategic Undergrounding Program to meet the wildfire mitigation and PSPS reduction goals.
Traditional Hardening Distribution Overhead System Hardening 7.3.3.17.1	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Fully transition the electrical system hardening (ESH) project prioritization process to WiNGS-Planning	• SDG&E used WiNGS-Planning to select and prioritize hardening projects for 2022. This included the selection and prioritization of covered conductor, strategic undergrounding, and other wildfire mitigation projects.

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
CNF Master Special Use Permit (MSUP) Powerline Replacement Program – Underground and Overhead 7.3.3.17.3	Construction commenced on the CNF Program in late 2016 and was completed in 2021. All construction and close out activities such as QA/QC reviews were also completed in 2021, however SDG&E reported it would conduct post project environmental work in the future and assigned planned expenditure to this activity.	• By 2022, SDG&E had already started restoration activities on all the transmission lines and most of the distribution circuits. Once implemented, restoration areas are monitored and maintained for eventual sign-off. • Decommissioned access roads with seed and slash applied in 2022. • Completed engineering solutions. Transmission and/or distribution lines on the CNF with access road segments that required engineering solutions (grading, water bar installation, concrete treated base application, etc.) to mitigate agency concerns around soil erosion and other factors.
Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment 7.3.5.2	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects: • Explore the use of the WiNGS-Planning risk model to evaluate the effectiveness of vegetation management operations risk models to support future prioritization and implementation of tree trimming. • Modify the annual schedule for off-cycle	• SDG&E evaluated the application of its WiNGS-Planning risk model for the use case of prioritizing vegetation operational activities. • SDG&E made modifications to the off cycle HFTD patrol schedule in 2022 to facilitate an inspection activity for all VMAs located within the HFTD prior to the onset of peak wildfire season. • In the first part of 2022, SDG&E, Pacific Gas and Electric Company, and Southern California Edison Company chose to hire a third-party to establish the data collection standards, create the cross-utility database, and study the relationship between enhanced

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
	inspections within the HFTD to occur closer to the beginning of the region's peak fire season (September), while allowing enough time to complete any backlog items. • Continue to collaborate on multi-year vegetation management enhanced clearance study with other electrical corporations. • Further integrate VRI into inspection activities for the HFTD. • Engage third-party review of inspection activities to gauge the effectiveness and efficiency of scheduling. • Continue additional inspection activities throughout 2022. • Proactively manage Century plants within transmission corridors through biological means (herbicide use).	vegetation clearances and tree-caused risk events. The completed and signed contract was completed with the selected vendor, Electric Power Research Institute (EPRI), on September 7, 2022. • In 2022, after EPRI was under contract the Database Evaluation Phase, commenced in October of 2022. • SDG&E engaged a third party (Logic 20/20) to review the existing off-cycle HFTD schedule. The analysis informed SDG&E that its schedule can be optimized by integrating risk-informed attributes. • SDG&E conducted off-cycle Century plant and bamboo patrols. • SDG&E treated Century plants with herbicide.
LiDAR Inspections of Vegetation Around	SDG&E did not provide additional discussion with respect to its progress on qualitative aspects:	• Development was completed in late 2022 for SDG&E's Intelligent Image Processing (IIP) to support LiDAR data. The IIP platform serves as an

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
Distribution Electric Lines and Equipment 7.3.5.7	• Develop a centralized enterprise repository where LiDAR data and associated files will be uploaded, stored, and accessed to set the stage for running analytics and Artificial Intelligence on LiDAR data. • Engage with other IOUs on their use and integration of remote sensing technologies within their vegetation management programs. • Engage with satellite vendors to determine current status of technology, and capabilities for augmentation and integration with vegetation management operations.	operational repository for LiDAR data and associated files where the data can be uploaded, stored and accessed. • SDG&E's Digital Innovation and Asset Compliance teams participated in the Utility Imagery & Inspection Consortium. • SDG&E Digital Innovation engaged in meetings and discussions with Amazon Web Services (AWS) and Planet Labs on their Satellite and Geospatial capabilities. These discussions lead to SDG&E pursuing a Satellite and Veg Analysis Proof of Concept in 2023 for relative comparisons of these two technologies.
Documentation and Disclosure of Wildfire-related Data and Algorithms 7.3.7.3	Complete further refinements to the ignition event information gathering process while also incorporating lessons learned since 2019.	• Specific steps that were taken in 2022 include but are not limited to incorporating definitions of ignition and evidence of heat events into the annual fire prevention training provided to field going personnel; meeting with SDG&E Electric Troubleshooters (SDG&E personnel who typically complete the data gathering process in the

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	Selected SDG&E Description of 2022 Work (DR 248 Response)
		field along with the electric aspects of a response) and their supervision to discuss the differences in the definition of ignitions from the California Public Utilities Commission, Energy Safety, and how evidence of heat is performed; and converting the Ignition Management Program Fire Coordinator role from a contractor to a full time employee.

5.3 Energy Safety Analysis of Substantial Vegetation Management Audits

Public Utilities Code section 8386.3(c)(5) requires Energy Safety to perform an audit to determine whether the electrical corporation "substantially complied with the substantial portion" of its vegetation management requirements in its WMP. (Pub. Util. Code § 8386.3(c)(5)(C).) Energy Safety refers to this audit as the Substantial Vegetation Management (SVM) Audit. Pursuant to section 8386(c)(5), Energy Safety conducted an audit of SDG&E's compliance with the vegetation management requirements in its 2022 WMP Update.

On July 2, 2024, Energy Safety issued its SVM Audit and Report for SDG&E. (SVM Audit and Report.) The purpose of the SVM Audit and Report is to assesses whether SDG&E met its quantitative commitments and verifiable statements in its 2022 WMP Update related to vegetation management activities.

In the SVM Audit and Report, Energy Safety found SDG&E performed all required work. (SVM Audit and Report, Table 1.)

The specific findings from Energy Safety's SVM Audit and Report are detailed in Appendix D.

5.4 Energy Safety Field Inspection Analysis

Energy Safety performs inspections utilizing an electrical corporation's initiative activity data applicable to the WMP year compliance period. Energy Safety conducts two types of inspections: 1) inspections of grid hardening and other work related to WMP initiatives related to physical infrastructure, and 2) inspections of general wildfire safety conditions at

an inspection site. The second category of general wildfire safety conditions is not strictly related to WMP initiatives, and these inspections are additional to Energy Safety's WMP initiative-related inspection work.[5]

For the 2022 compliance period, Energy Safety conducted 11,244 general wildfire safety (GWS) inspection activities and 2,121 WMP inspection activities in SDG&E's territory. Energy Safety distinguishes its inspection activities related to WMP initiatives on grid hardening and physical infrastructure (WMP Inspections) and inspection activities related to general wildfire safety conditions (GWS Inspections) in Table 4 and Table 5.[6]

Table 4: Energy Safety 2022 Observations of General Wildfire Safety Concerns

GWS Inspection Metrics for 2022 in SDG&E Territory	Totals
Total GWS Inspection Activities	11,244
Total Wildfire Safety Concerns Observed	17
Rate of Wildfire Safety Concerns	0.15%
Wildfire Safety Concerns Overdue for Correction	0
Wildfire Safety Concern Timely Correction Rate	100%

Table 5: Energy Safety 2022 Observations of WMP Violations

WMP Inspection Metrics for 2022 in SDG&E Territory	Totals
Total WMP Inspection Activities	2,121

[5] If Energy Safety observes a general wildfire safety concern during an inspection activity, then that is recorded as a "Wildfire Safety Concern." Or as it was known prior to 2024, a "defect." If Energy Safety observes non-compliance with a WMP initiative during an inspection activity that an electrical corporation claimed to have occurred at a site, then that is recorded as a "violation."

[6] Energy Safety uses the term "inspection activity" to refer to a specific question or condition assessed during an inspection. For example, if Energy Safety is inspecting a particular utility pole and looking for eight different conditions associated with a WMP initiative, then that would count as eight WMP inspection activities. If a general wildfire safety inspection occurs at the same time at that utility pole, and 20 general wildfire safety conditions are assessed, then that would count as 20 general wildfire safety inspection activities. In this example, a single utility pole inspection would lead to 28 inspection activities.

WMP Inspection Metrics for 2022 in SDG&E Territory	Totals
Total Violations Observed	3
Violation Rate	0.14%
Violations Overdue for Correction	0
Violation Timely Correction Rate	100%

5.5 SDG&E WMP Initiative Activity Attainment in 2022

As noted previously, Energy Safety's evaluation of SDG&E's performance in 2022 indicates that SDG&E attained 69 of its 75 initiative activities and did not attain six initiative activities. The six initiatives that were not attained are described in more detail in Table 6, below.

For the six missed initiatives, the proposed expenditures totaled $115 million for both capital and operating expenditures, approximately 15% of the total proposed expenditures of $770 million for all 75 initiatives in 2022. Please refer to Appendix C for more detail on these calculations.

These missed initiatives did not have a high impact on wildfire or PSPS risk reduction for the following reasons:

- With respect to the microgrid initiative, all four microgrids were built and are currently operational using fossil fuel-powered backup equipment, and therefore already mitigate the PSPS risk for which they were originally designed. However, the renewable component of the projects proved to require more land and permitting for the large area of land needed for solar installations.
- Standby power and generator assistance programs fell far short of targets partly due to having zero PSPS events for the year, which contributed to a decrease in demand for generators among customers. These initiatives are also intended to mitigate PSPS risk impacts and not to reduce wildfire risk.
- Distribution communication reliability improvements completed 84% of targeted base stations. The equipment in use in the field for 2022 provided a considerable amount of the intended risk reduction.
- While SDG&E completed only 0.6 miles out of 7.6 miles targeted in 2022 for its work on WMP initiative 7.3.3.17.2.3 (Overhead Transmission Fire Hardening – Distribution Underbuilt), this activity had a relatively low risk score of 0.01 compared to initiatives 7.3.3.17.2.1 and 7.3.3.17.2.2 that had risk scores of 0.244 and 0.031, respectively. (2022 WMP, p. 237.)

Table 6: SDG&E Non-attainment of WMP Initiative Activities

2022 WMP Update Initiative	2022 Initiative Activity	Details of Non-Attainment and Rationale
Microgrids 7.3.3.8.2	Completing permanent renewable solution for 4 microgrids deployed in 2020.	Completed one permanent renewable solution for one of the microgrids deployed in 2020. SDG&E experienced delays in acquiring land rights, ongoing supply chain delays and increased costs from supply chain delays, and increased labor.
Installation of System Automation Equipment 7.3.3.9	Installation of equipment on eight circuits so that those circuits are automated.	Installed equipment on three circuits. SDG&E experienced delays acquiring approvals of easement requests.
Standby Power Programs 7.3.3.11.2	Provide 412 generators.	Provided 376 generators. SDG&E did not provide the rationale for non-attainment in the EC ARC or QDR.
Generator Assistance Programs 7.3.3.11.3	Provide 1,250 generators.	Provided 140 generators. The target for this program was developed based on the expectation of customers participating in anticipation of PSPS due to high winds, wildfire risk, or other weather emergency. In 2022, favorable weather reduced anticipation of PSPS resulting in lower-than-expected customer participation.
Overhead Transmission Fire Hardening – Distribution Underbuilt 7.3.3.17.2.3	Complete 7.6 miles.	Completed 0.6 miles. SDG&E did not achieve its target due to permitting delays.

2022 WMP Update Initiative	2022 Initiative Activity	Details of Non-Attainment and Rationale
Distribution Communications Reliability Improvements (LTE) 7.3.3.18.1	Install 25 base stations.	Installed 21 base stations. A variety of permitting activities delayed construction for a number of sites in 2022. The need to secure permits from federal, city, and county jurisdictions played a role in delaying installations.

6. Wildfire Risk Reduction: Performance Metrics and Overall WMP Execution

The Compliance Process applicable to the 2022 WMP Update compliance year defines goals for Energy Safety that extend beyond assessing compliance with WMP initiatives. Specifically, Energy Safety examines the ultimate performance of an electrical corporation's infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk. Energy Safety also considers whether the electrical corporation exhibited issues related to its execution, management, or documentation in the implementation of its WMP, if applicable.

Below, this report outlines the metrics chosen by Energy Safety to evaluate the performance of an electrical corporation's infrastructure relative to risk. These metrics include data on ignitions and PSPS events in the territory of the electrical corporation. The data utilized by Energy Safety were provided by SDG&E in its QDR submissions; but were analyzed and presented here using Energy Safety's own methodology. Where necessary, explanations of Energy Safety's methodology are provided.

6.1 Ignition Risk and Outcomes Metrics

Energy Safety assessed the performance of SDG&E's infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk.

Energy Safety requires electrical corporations to report data, such as ignitions in the HFTD, that help Energy Safety assess whether an electrical corporation reduced its wildfire risk while also reducing its reliance on PSPS. In 2022, Energy Safety assessed each electrical corporation's infrastructure performance for the calendar years 2015 through 2022 with particular attention on the 2022 outcomes.

The collection of metrics evaluated are grouped into two categories: Ignition Risk Metrics, and Outcome Metrics. A list of all the metrics in each category is described fully in their respective following sections. For these sections, Energy Safety relied on data reported in the third quarter 2022 QDR for the 2015 through 2021 values, and the fourth quarter 2023 QDR for the 2022 values. (2022 Q3 QDR; 2023 Q4 QDR.)[7]

Normalizing Metrics:

For applicable performance metrics, the normalizing metrics Energy Safety uses are: "Overhead Circuit Miles" (OCM), "High Wind Warning Overhead Circuit Mile Days" (High Wind Warning Days or HWWOCMD), and "Red Flag Warning Overhead Circuit Mile Days" (Red Flag Warning Days or RFWOCMD). To see the values for each year used, see Appendix E, Figure 25 through Figure 27. (2022 Q3 QDR, Tables 6 and 8; 2023 Q4 QDR, Tables 4 and 7.)

Energy Safety uses these normalizing metrics to ensure a more nuanced interpretation of wildfire risk outcomes. For example, the outcome metric of "acres burned" is impacted directly by the presence of hot dry winds and, thus, this metric is presented in both raw counts and normalized by RFWOCMD. In this way, the acres burned are presented "accounting for" year by year variances in weather conditions that directly influence the outcome.

Findings:

Ignition risk and outcomes metrics findings include:

- The ignition rate for transmission lines is approximately equal to or greater than that of distribution lines in 2021 and 2022.
- The primary drivers for ignitions were object contact and facility/equipment failures.
- Ignitions and wire down events have both been decreasing in absolute terms over the 2015-2022 period.
- When outage events are adjusted for weather, an upward trend may be forming and careful monitoring in subsequent years is warranted.
- For 2022, outage events from vegetation contact are less than one tenth of all outages and future analyses may benefit from a breakout by all risk drivers, which includes vegetation contacts, to identify the largest contributors.
- SDG&E was able to maintain a general downward trend in ignitions without the use of PSPS events in 2022.

[7] The format of the required data reporting for all electrical corporations changed near the end of 2022, thus, all data for 2015-2021 were obtained from the third quarter 2022 QDR (old format) and all data for 2022 were obtained from the fourth quarter 2023 QDR (new format).

6.1.1 Ignition Risk Metrics

Energy Safety reviewed the following metrics associated with ignition risk:

1. *Ignitions* – Incidents in which electrical corporation infrastructure was involved in an ignition,
2. *Wire Down Events* – Incidents in which overhead electrical lines fall to the ground, land on objects, or become disconnected from their moors,
3. *Unplanned Outages* – All unplanned outages experienced,
4. *Vegetation-Caused Outages* – A subset of unplanned outages experienced in which the cause was determined to be vegetation contact with electrical lines,
5. *PSPS Events* – Planned outages called PSPS events.

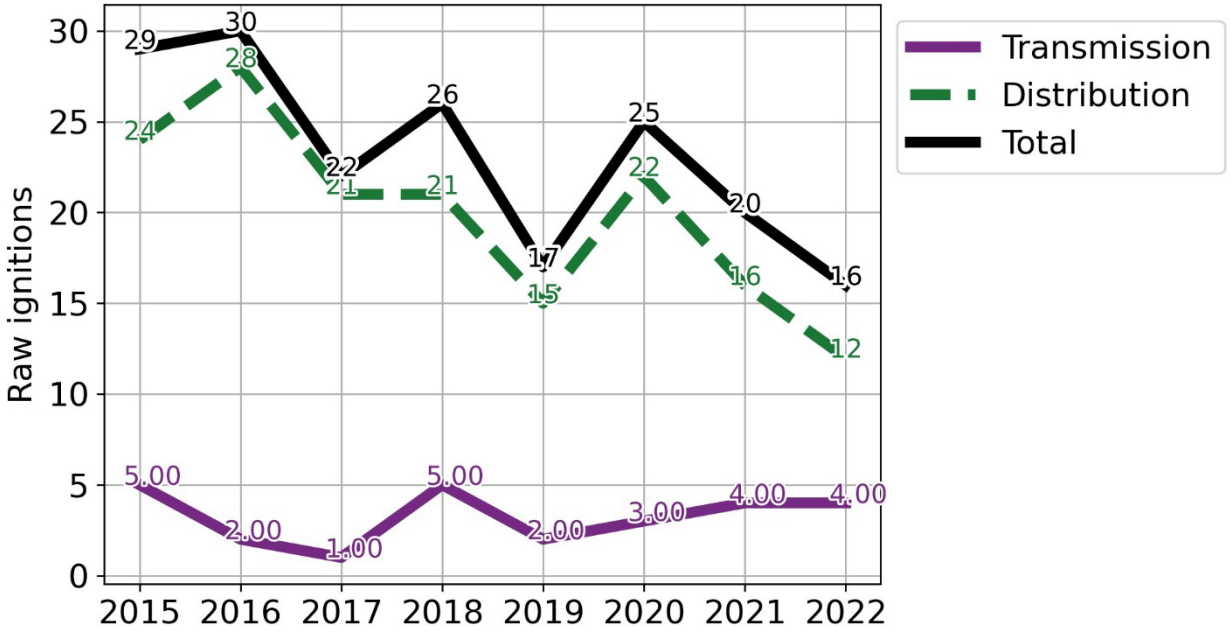
6.1.1.1 Ignition Data Analysis

The ignition data analysis section examines ignitions stemming from distribution and transmission lines located within HFTD Tier 2 and HFTD Tier 3 areas. (2022 Q3 QDR, Table 7.2; 2023 Q4 QDR, Table 6.) In addition to showing raw ignition counts, ignitions are normalized by OCM, HWWOCMD, and RFWOCMD. SDG&E's service territory is divided into three primary area designations: Non-HFTD, HFTD Tier 2, and HFTD Tier 3. For a sense of scale, the percent of OCM for each territory type is as follows: non-HFTD = 45%, HFTD Tier 2 = 31%, and HFTD Tier 3 = 24%. (2022 Q3 QDR, Tables 6 and 8; 2023 Q4 QDR, Tables 4 and 7.)

Raw Ignition Counts:

The raw ignition counts vary across years but show a downward trend in distribution ignitions from 2015 to 2022 with the lowest value in 2022 (Figure 1). Transmission ignitions are generally constant over the same period with only slight fluctuations, indicating that distribution and transmission ignitions are not correlated. Distribution line ignitions are, by far, the main driver of the total ignition trend.

Figure 1: SDG&E Ignition Counts (2015-2022) by Distribution and Transmission Lines

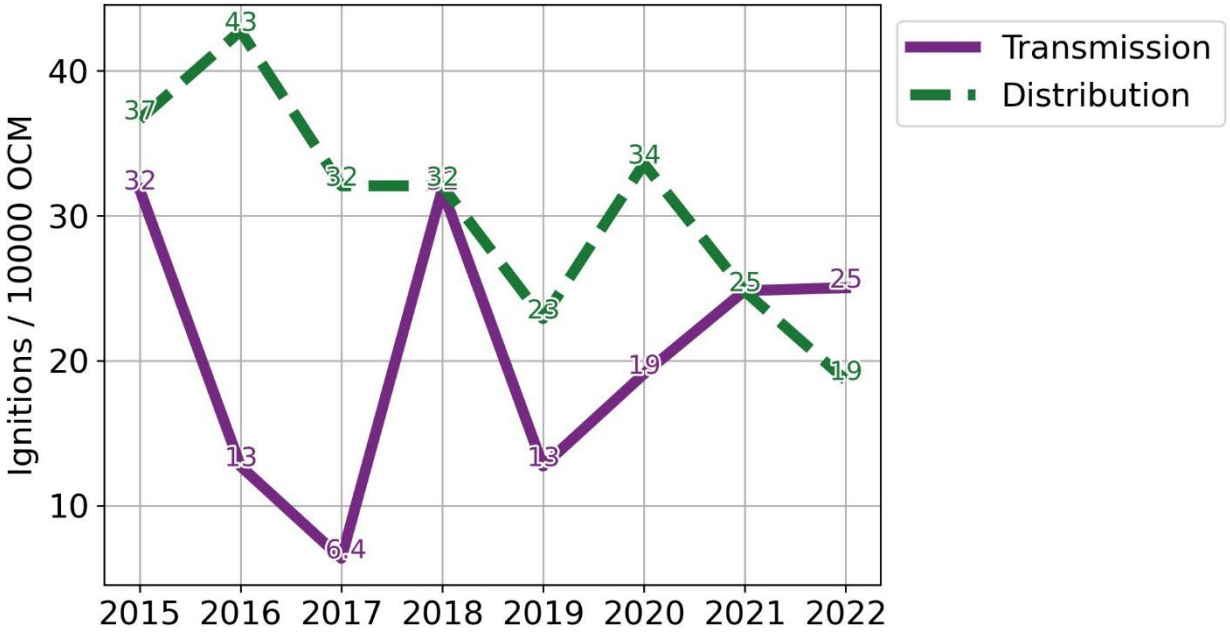


Ignitions Normalized by Overhead Circuit Miles:

To account for concurrent grid expansion within the territory and allow for comparisons with other utilities, ignitions normalized by overhead circuit miles (OCM) are provided and delineated by distribution and transmission lines (Figure 2). The normalized ignitions agree with raw counts in that distribution ignitions generally trended downward between 2015 and 2022. Normalized transmission ignitions show an upward trend beginning in 2017. This trend stems from a combination of minor increases in raw counts for that period and a decrease in OCM due to undergrounding.

The normalized data provide additional insights versus looking at just raw ignitions data. While raw ignitions data indicate fewer transmission than distribution ignitions, normalizing by circuit mileage shows that transmission and distribution ignition rates are comparable.

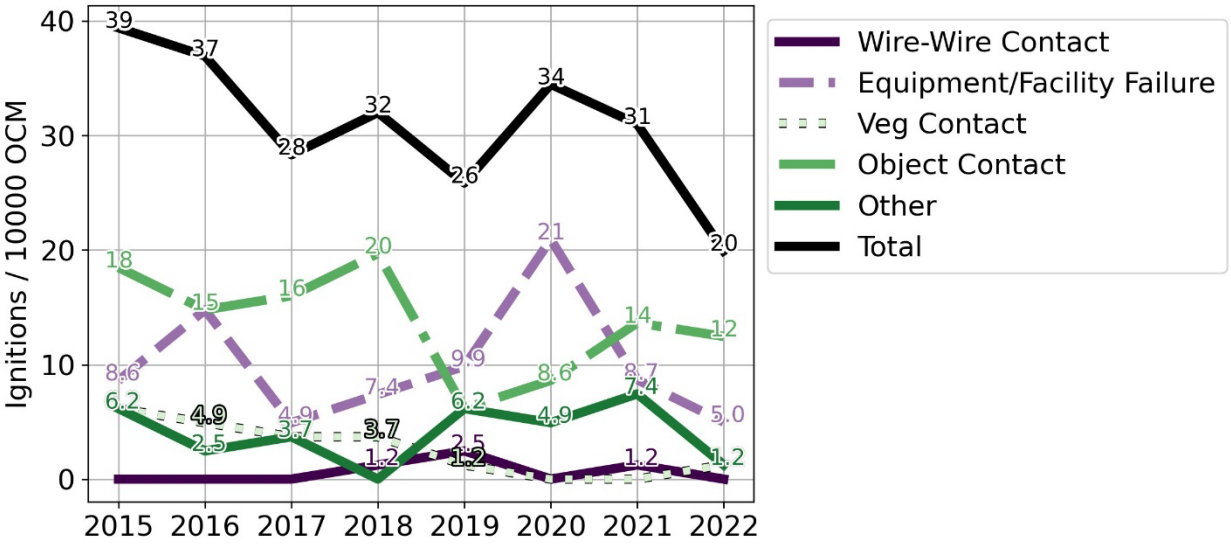
Figure 2: SDG&E Ignitions Normalized by Overhead Circuit Miles (2015-2022) by Distribution and Transmission Lines



Ignitions Normalized by Overhead Circuit Miles Delineated by Risk Driver:

To illustrate which factors are driving ignitions normalized by OCM, the ignitions are delineated by Risk Driver (Figure 3). Overall ignitions are driven mostly by ignitions due to object contact and the failure of equipment and facilities.

Figure 3: SDG&E Ignitions Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Ignitions by HFTD Tier and normalized by High Wind Warning Overhead Circuit Mile Days and Red Flag Warning Overhead Circuit Mile Days:

To see more detail on normalized ignitions by Risk Driver for each HFTD tier for both distribution lines and transmission lines, as well as all ignition analyses normalized by HWWOCMD and RFWOCMD, see Appendix E (Figure 28 through Figure 38).

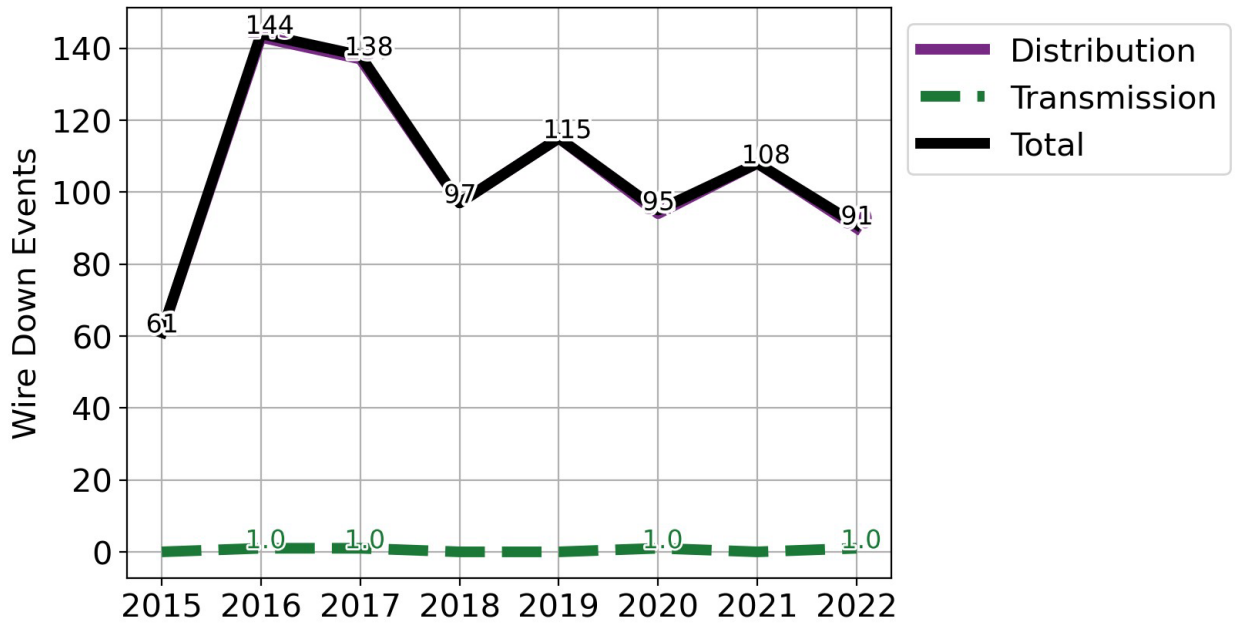
6.1.1.2 Wire Down Events Data Analysis

Wire down events are wildfire risks where a wire is touching the ground or an object or has become disconnected from its mooring. This type of event poses a risk of ignition or a danger to people if that wire is also energized with electricity. The data source for wire down information is the QDRs. (2022 Q3 QDR, Table 7.1; 2023 Q4 QDR, Table 5.)

Raw Wire Down Event Counts:

The SDG&E wire down event counts for transmission lines have been constant between 2015 and 2022 (Figure 4). For distribution lines, the wire down event counts significantly increased in 2016 compared to 2015 and have been generally trending downward since then, with slight fluctuations year-to-year. The year 2022 had the lowest number of wire down events since 2015. Although distribution ignitions have also trended down over this period, ignitions and wire down events do not appear to be strongly correlated as different years increase and decrease for each metric. For example, in 2020 wire down events decreased but ignitions increased.

Figure 4: SDG&E Wire Down Event Counts (2015-2022) by Distribution and Transmission Lines



Wire Down Events Normalized by High Wind Warning Overhead Circuit Mile Days and Red Flag Warning Overhead Circuit Mile Days:

Please see Appendix E (Figure 39 and Figure 40) for wire down events normalized by HWWOCMD and RFWOCMD.

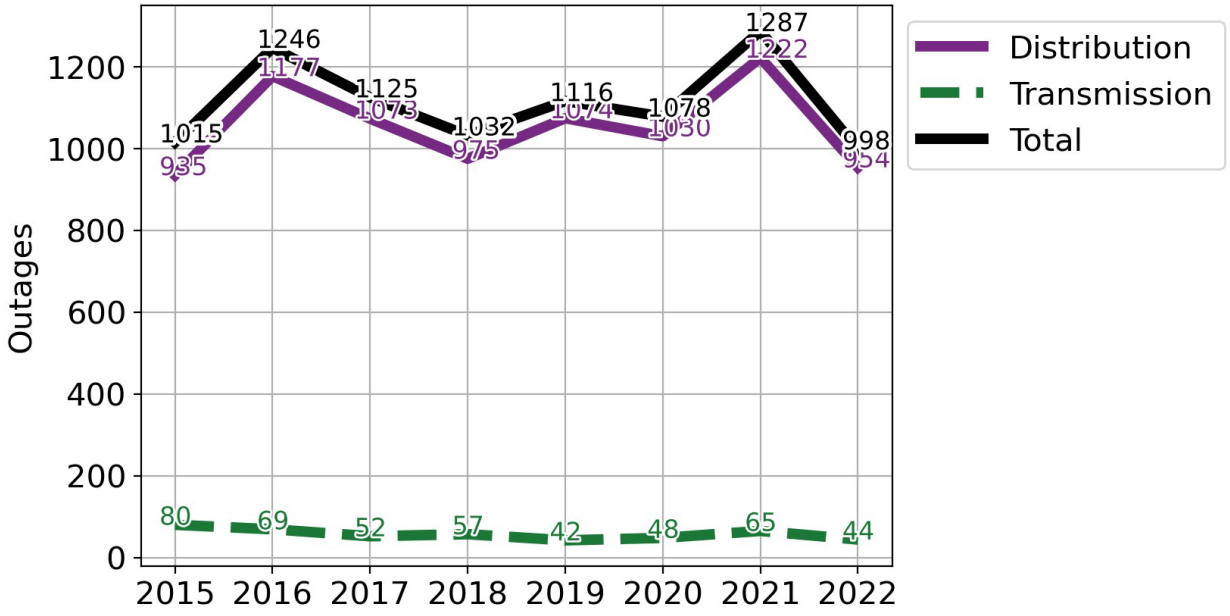
6.1.1.3 Outage Event Data Analysis

Power outages (outages) are unplanned power outage events (does not include PSPS events) tabulated by circuits and not by number of customers impacted. Outage events are tracked as outcomes that both may cause ignitions and impact customer's quality of life. The data source for outage event information is the QDRs. (2022 Q3 QDR, Table 7.1; 2023 Q4 QDR, Table 5.)

Raw Outage Event Counts:

Total unplanned outage event counts have been generally constant between 2015 and 2022, with some slight fluctuations year-to-year (Figure 5). The raw counts decreased slightly from the trend in 2022. Outage event counts for SDG&E generally held steady or decreased in 2022 for both distribution and transmission lines. Distribution line outage events make up almost all of the total.

Figure 5: SDG&E Outage Events (2015-2022) by Distribution and Transmission Lines

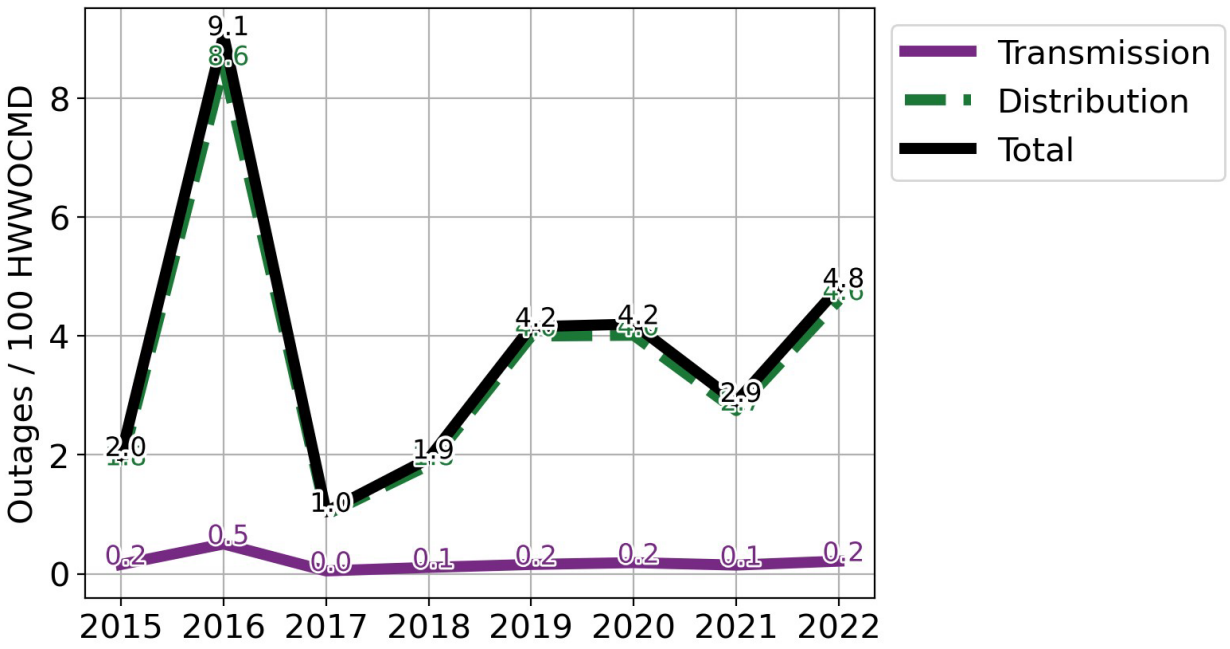


Outage Events Normalized by High Wind Warning Overhead Circuit Mile Days:

To view the outage event trends with respect to year-to-year weather variations, outage event counts have been normalized by HWWOCMD.

Once the outage event counts are adjusted for year-to-year variances in weather, outages have been increasing slightly since 2017 (Figure 6). The phenomenon is driven mostly by distribution lines as transmission events of this type are low in number and constant over the period. This finding indicates that when outage events are adjusted for weather, an upward trend may be forming and careful monitoring in subsequent years is warranted.

Figure 6: SDG&E Outage Events Normalized by HWWOCMD (2015-2022) by Distribution and Transmission Lines



Outage Events Normalized by Red Flag Warning Overhead Circuit Mile Days:

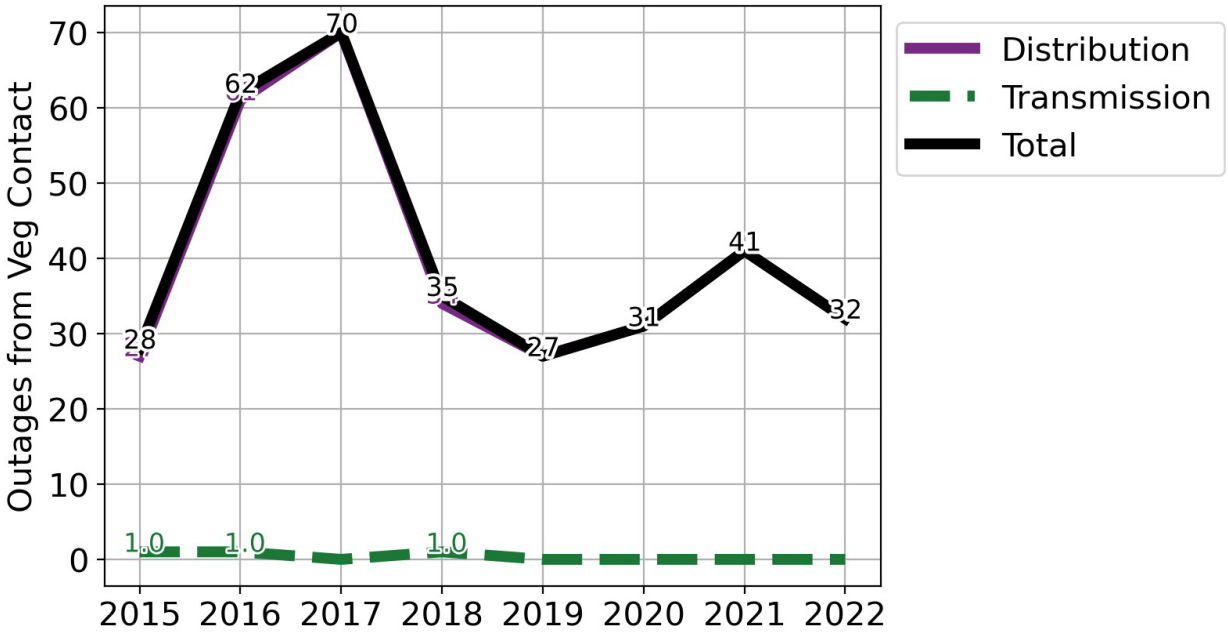
Please see Appendix E (Figure 41) for outage events normalized by RFWOCMD.

Outage Events from Vegetation Contact Counts:

Outage events caused by vegetation contact are only a small percentage of overall outage events (Figure 7 as compared to Figure 5). Outage events caused by vegetation contact have fluctuated moderately year-to-year, with a maximum in 2017 and a generally downward trend since then. This phenomenon is driven mostly by distribution lines as transmission line events of this type are low in number and constant over the period.

This indicates that outage events from vegetation contact are less than one tenth of all outages.

Figure 7: SDG&E Outage Events from Vegetation Contact (2015-2022) by Distribution and Transmission Lines



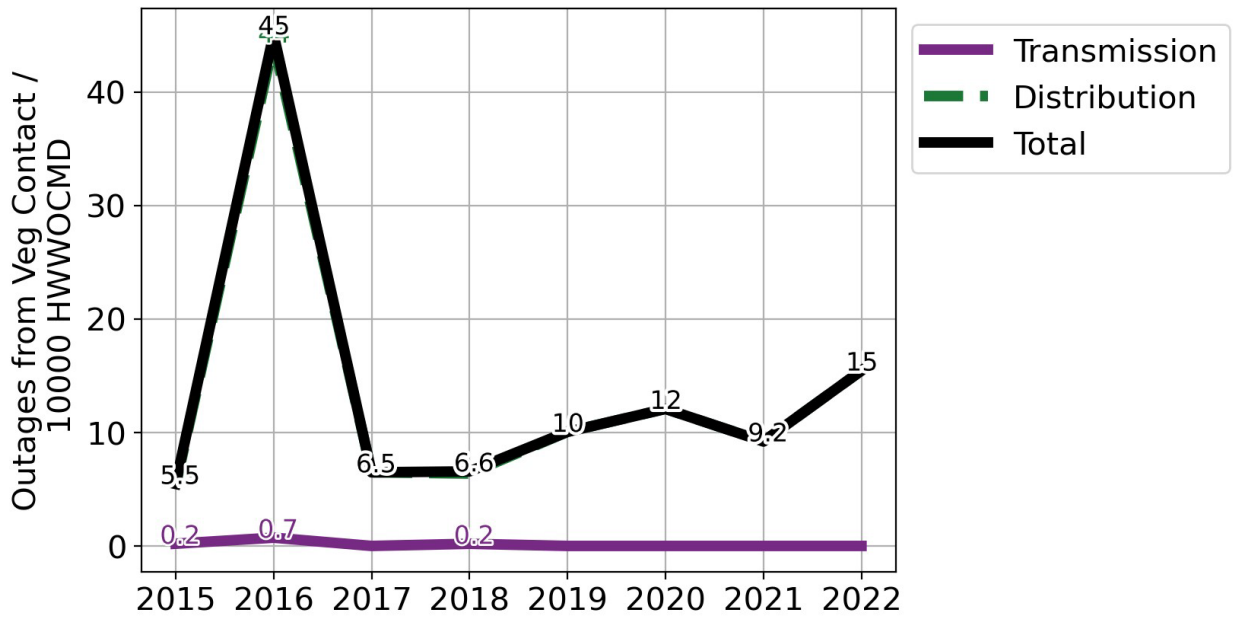
Outage Events from Vegetation Contact Counts Normalized by High Wind Warning Overhead Circuit Mile Days:

To gain insights on outage events from vegetation contacts adjusted for weather conditions, the raw counts were normalized by HWWOCMD. This perspective is important as vegetation contacts may be influenced by weather.

The normalized number of outages show an increase in 2016, with a significant decrease in 2017. Since 2017, the normalized number of outages has been trending upward slightly (Figure 8). The most recent maximum is in 2022, excepting the large number in 2016. These changes are caused mostly by distribution lines events. Transmission line events of this type are low in number and have remained constant in number over the period.

This indicates that, other than a very poor year in 2016, once adjusted for weather conditions, outage events due to vegetation contacts have been slowly increasing for distribution lines only.

Figure 8: SDG&E Outage Events from Vegetation Contacts Normalized by HWWOCMD (2015-2022) by Distribution and Transmission Lines



Outage Events from Vegetation Contact Counts Normalized by Red Flag Warning Overhead Circuit Mile Days:

Please see Appendix E (Figure 42) for outage events caused by vegetation contact normalized by RFWOCMD.

6.1.1.4 Public Safety Power Shutoff Event Data Analysis

PSPS events are planned outages used as a wildfire mitigation tool during extreme fire conditions such as hot, dry, windy days. While useful as a wildfire mitigation measure, PSPS events carry their own risks and adverse impacts on customers – particularly vulnerable customers who need electricity to survive. As such, electrical corporations take mitigating actions to reduce the frequency, scope, duration, and impacts of PSPS events.

As PSPS events are typically implemented during extreme fire conditions, the PSPS outcomes are presented first in raw count form, and then normalized by RFWOCMD to account for variances in weather across years.

The following four PSPS event parameters are presented by year and comprise the PSPS event data analysis:

- *Frequency* is measured as the number or count of all PSPS events,
- *Scope* is measured as the total number of utility circuits impacted because of all PSPS events,
- *Duration* is measured by the total number of customer-hours because of all PSPS events, and

- *Impacts* are measured by the number of critical infrastructure locations-hours impacted by all PSPS events.

The data source for PSPS events information is the QDRs. (2022 Q3 QDR, Table 11; 2023 Q4 QDR, Table 10.)

Frequency of PSPS Events:

The number of or count of PSPS events increased from zero in 2015 and 2016 to five in 2017, with the following years through 2018 fluctuating slightly. In 2022, the number of PSPS events returned to zero (Figure 9). PSPS events normalized by weather show a peak in 2019, with a general decrease since then (Figure 10). This indicates the downward trend in SDG&E's usage of PSPS events started in 2020 and not in 2021 as the raw numbers would indicate, and that SDG&E was able to maintain a general downward trend in ignitions without the use of PSPS events in 2022. Additional years of data will reveal the extent to which PSPS events continue to be a valuable wildfire mitigation strategy.

For the subsequent PSPS metrics of Scope, Duration, and Impacts, the fact that the weather adjusted trends mirror the raw counts indicates that new insights are not gained by the adjustment. Close monitoring of subsequent years' data will reveal whether PSPS tracking is useful, and whether adjusting by weather, as one would expect, provides additional insights.

Figure 9: SDG&E PSPS Event Frequency (2015-2022)

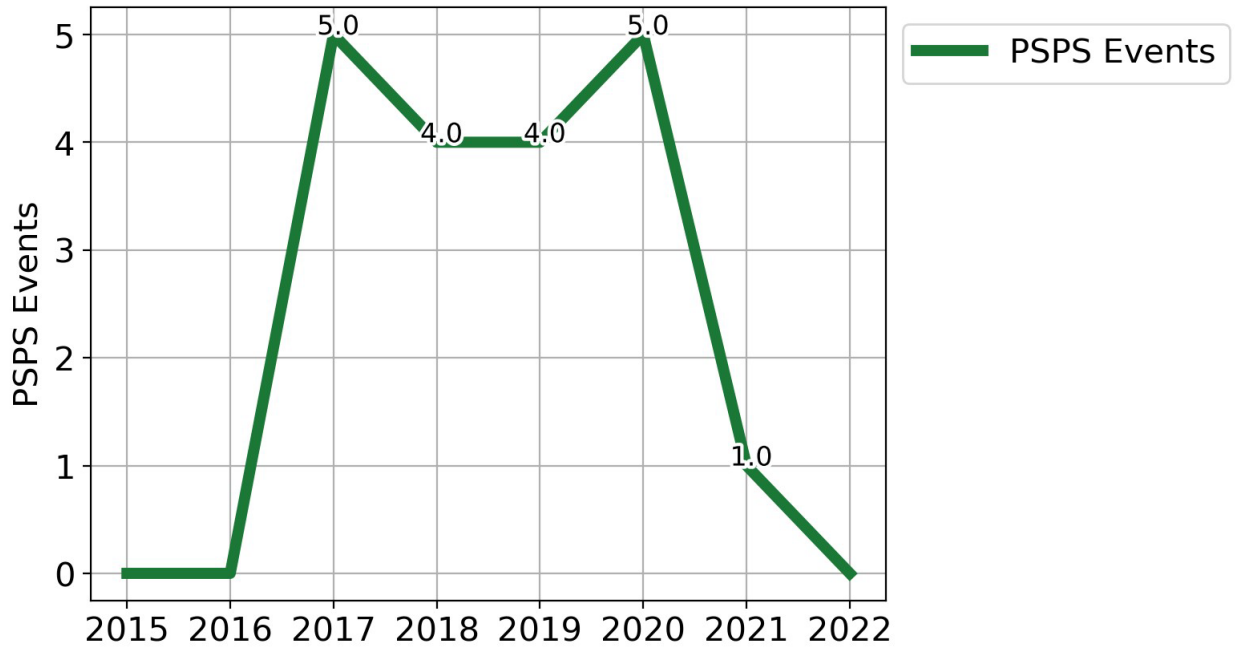
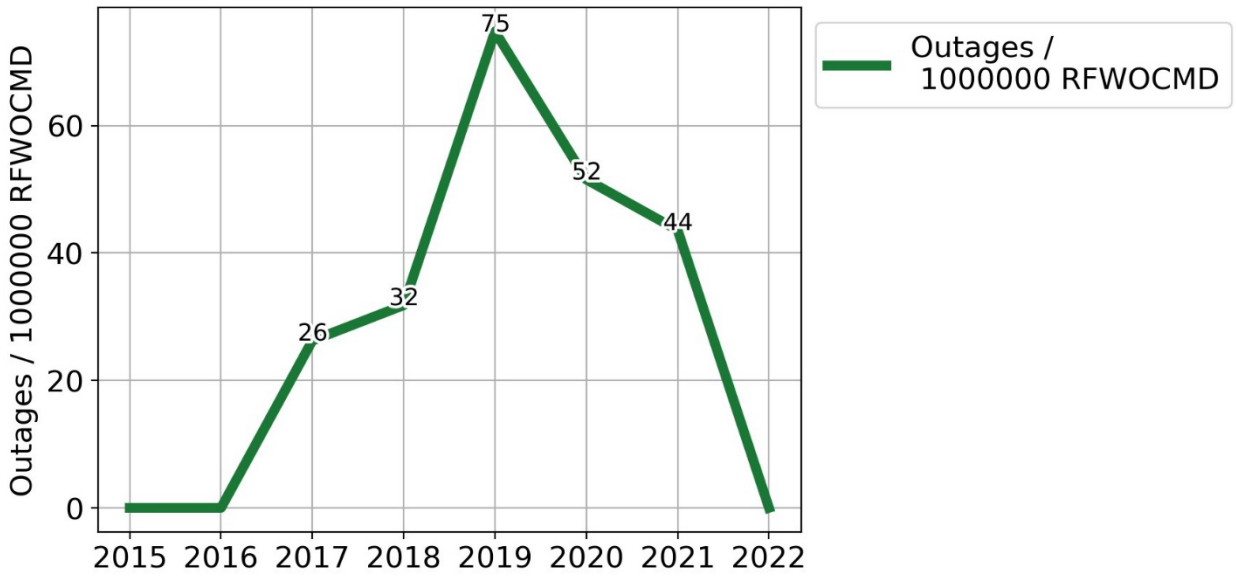


Figure 10: SDG&E PSPS Event Frequency Normalized by RFWOCMD (2015-2022)



Scope of PSPS Events:

The number of utility circuits impacted by PSPS events shows a maximum of 514 in 2020, with a significant decrease to zero in 2022 (Figure 11). When accounting for yearly weather variances, the maximum occurred in 2019, with a general trend downward since then (Figure 12).

Figure 11: SDG&E PSPS Event Scope (2015-2022)

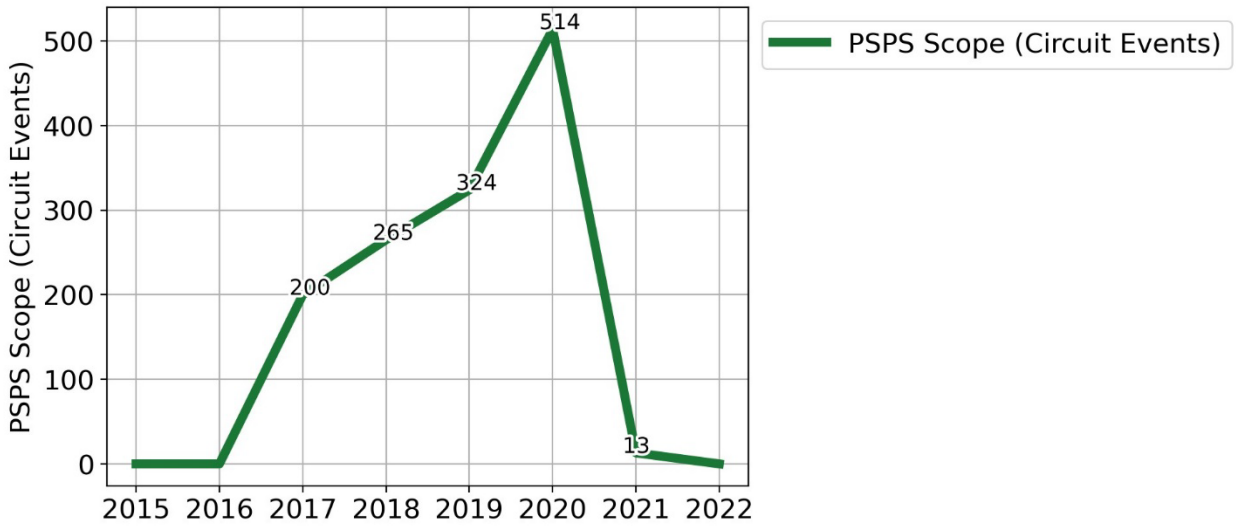
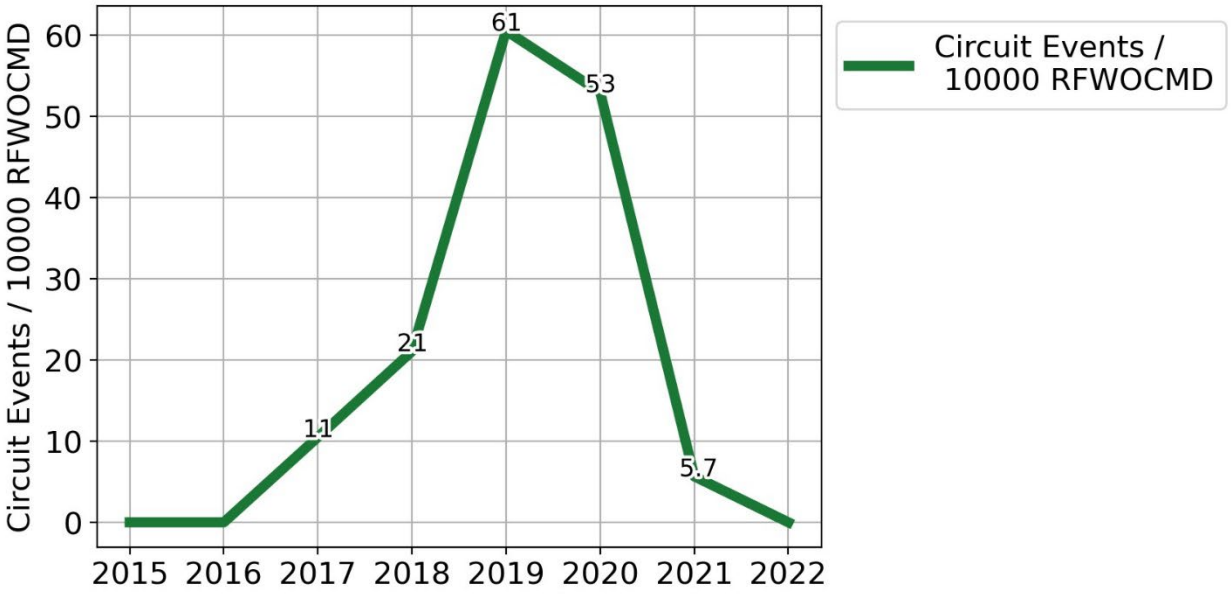


Figure 12: SDG&E PSPS Event Scope Normalized by RFWOCMD (2015-2022)



Duration of PSPS Events:

The total number of customer-hours impacted by all PSPS events for each year shows a maximum of almost 2.632 million in 2020, with a significant decrease in 2021 continuing to zero in 2022 (Figure 13). When accounting for yearly changes in weather, the normalized customer-hours show a similar trend (Figure 14).

Figure 13: SDG&E PSPS Event Duration (2015-2022)

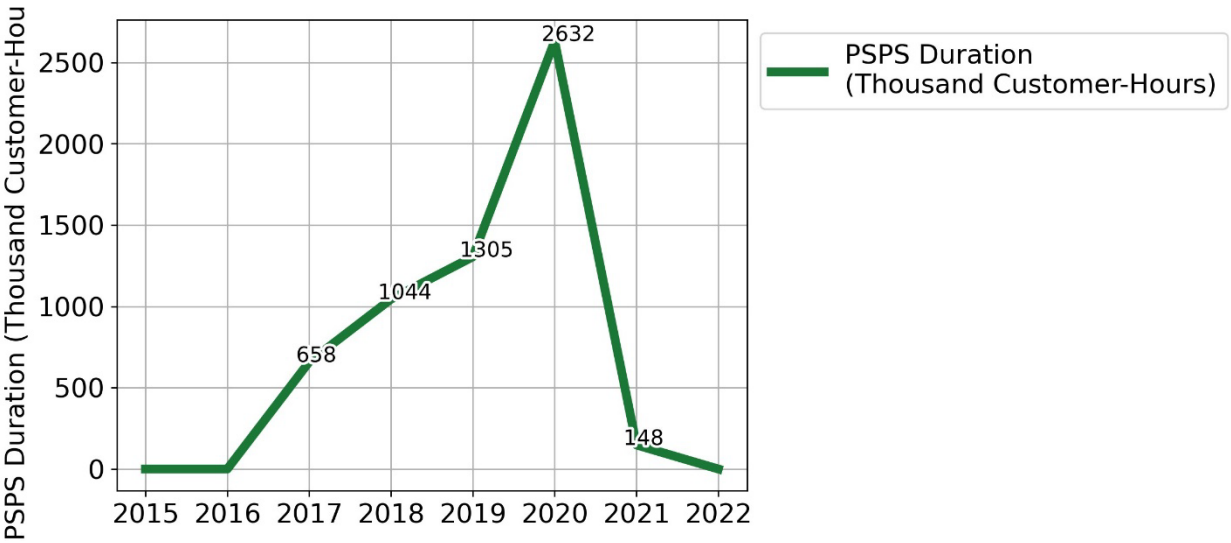
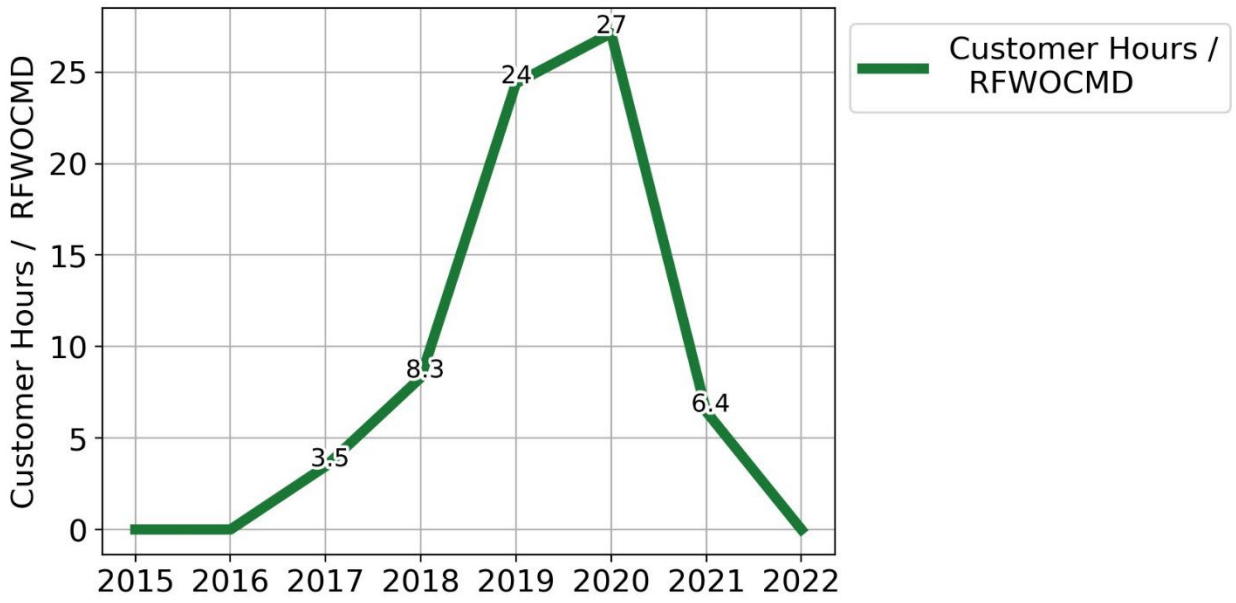


Figure 14: SDG&E PSPS Event Duration Normalized by RFWOCMD (2015-2022)



Impacts of PSPS Events:

The impacts of PSPS events or number of critical infrastructure location-hours reached a maximum of 2,360 in 2020, with a significant decrease in 2021 continuing to zero in 2022 (Figure 15). When accounting for yearly changes in weather, the normalized impacts of PSPS events also show the same results (Figure 16).

Figure 15: SDG&E PSPS Event Impacts (2015-2022)

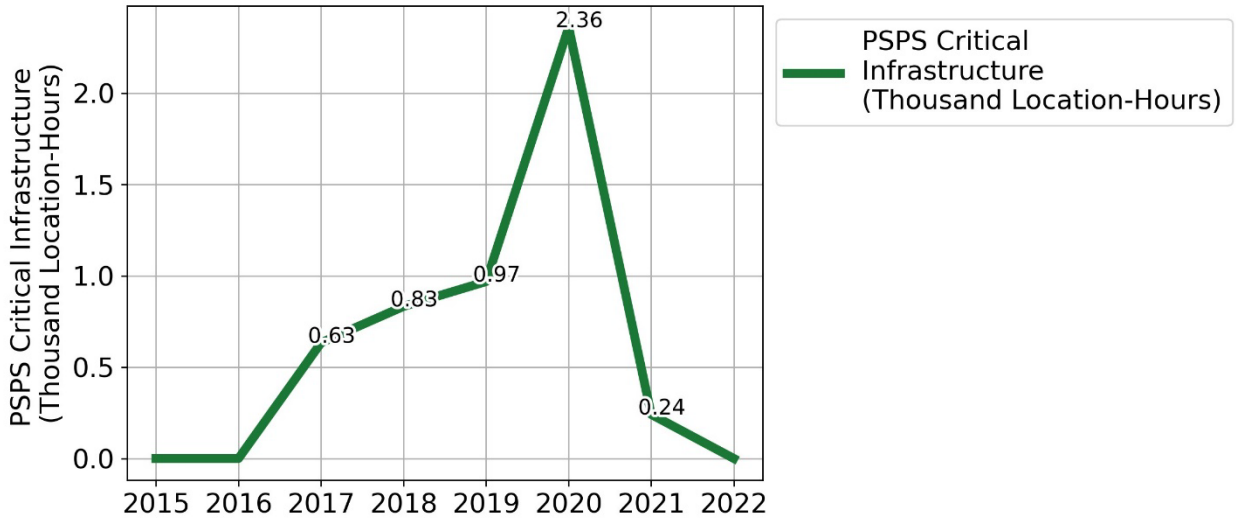
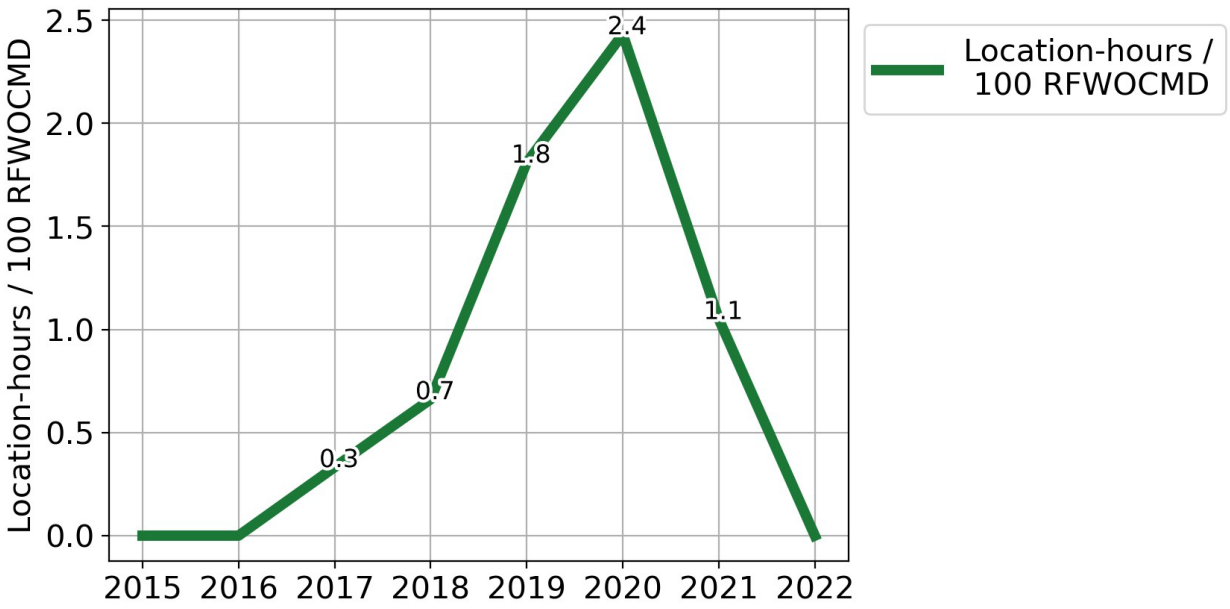


Figure 16: SDG&E PSPS Event Impacts Normalized by RFWOCMD (2015-2022)



PSPS Event Management Finding:

All four of the PSPS event outcome metrics indicate that PSPS events had the largest adverse effects in the early years of development, but that by the year of 2022, improvements in PSPS event management were gained by SDG&E.

6.1.2 Outcome Metrics

This section presents outcome metrics on electrical corporation-related wildfires including:

1. *Acres burned* – The total number of acres burned due to electrical corporation caused fires,
2. *Structures damaged/destroyed* - The total number of structures damaged or destroyed due to electrical corporation caused fires,
3. *Injuries/fatalities* - The total number of injuries and fatalities due to electrical corporation caused fires,
4. *Value of assets destroyed* - The total value of assets destroyed due to electrical corporation caused fires.

The data source for outcomes metrics information is the QDRs. (2022 Q3 QDR, Table 2; 2023 Q4 QDR, Table 2.)

Acres Burned:

The total number of acres burned by SDG&E-ignited wildfires had a maximum of 212 in 2015. Since then, the general trend has been downward with a low of less than four in 2022 (Figure 17). When accounting for yearly variance in the weather, the acres burned normalized by

RFWOCMDs showed a peak in 2015, with a significant decrease from 2016 through 2021, and another jump in 2022 to the same level as 2015 (Figure 18). The total number of RFWOCMDs in all areas are nearly zero in 2015 and 2022, which results in the large fluctuations of the normalized data presented in Figure 18.

This indicates that the raw counts of total acres burned have been decreasing over time with only a negligible increase in 2022. However, when considering the weather, total acres burned increased when compared to previous years.

Figure 17: SDG&E Total Acres Burned (2015-2022)

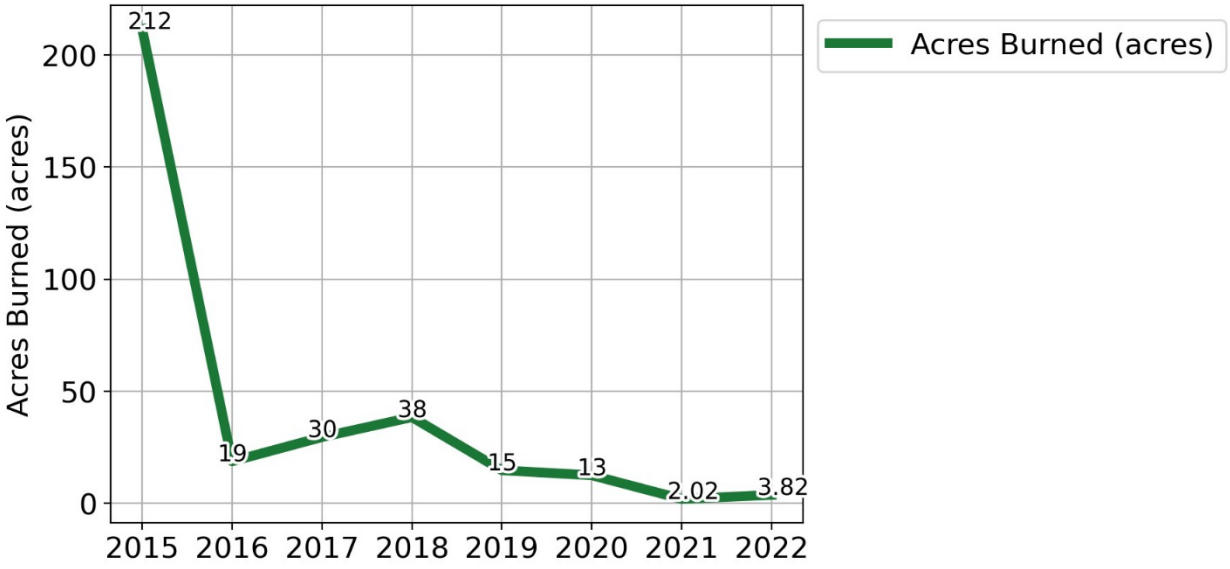
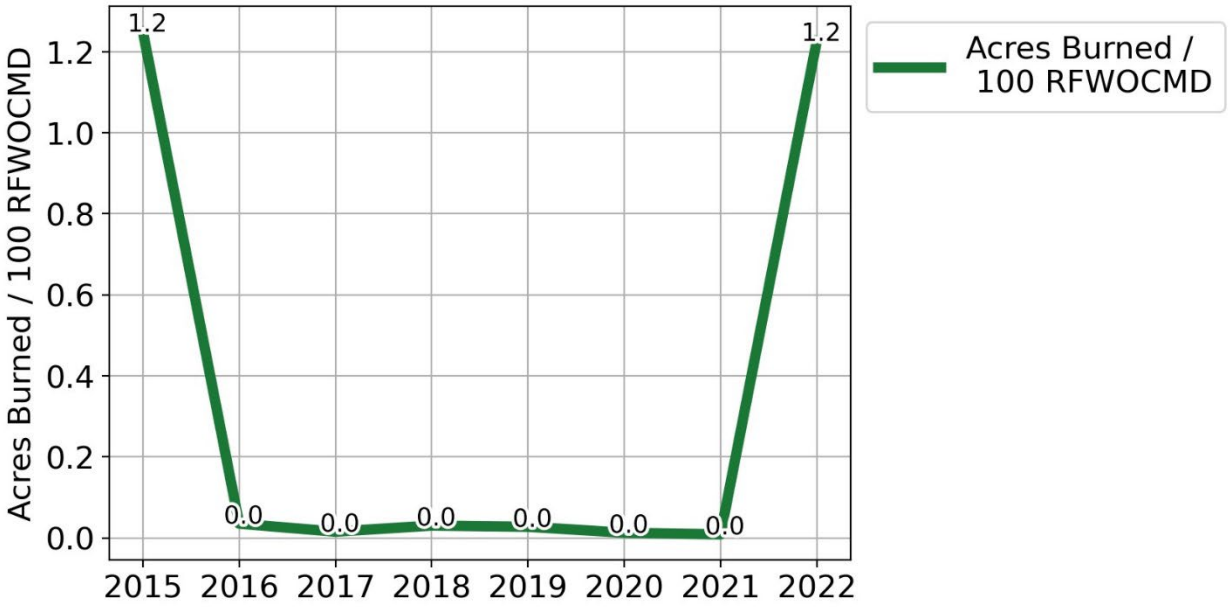


Figure 18: SDG&E Total Acres Burned Normalized by RFWOCMD (2015-2022)



Structures Damaged:

One structure was damaged or destroyed by SDG&E-ignited wildfire in 2018. No structures were damaged or destroyed in the other years including 2022 (Figure 19). Given that the number of SDG&E reported structures damaged or destroyed has been zero most years, normalizing by RFWOCMD does not provide any new insights (Figure 20).

Figure 19: SDG&E Structures Damaged or Destroyed (2015-2022)

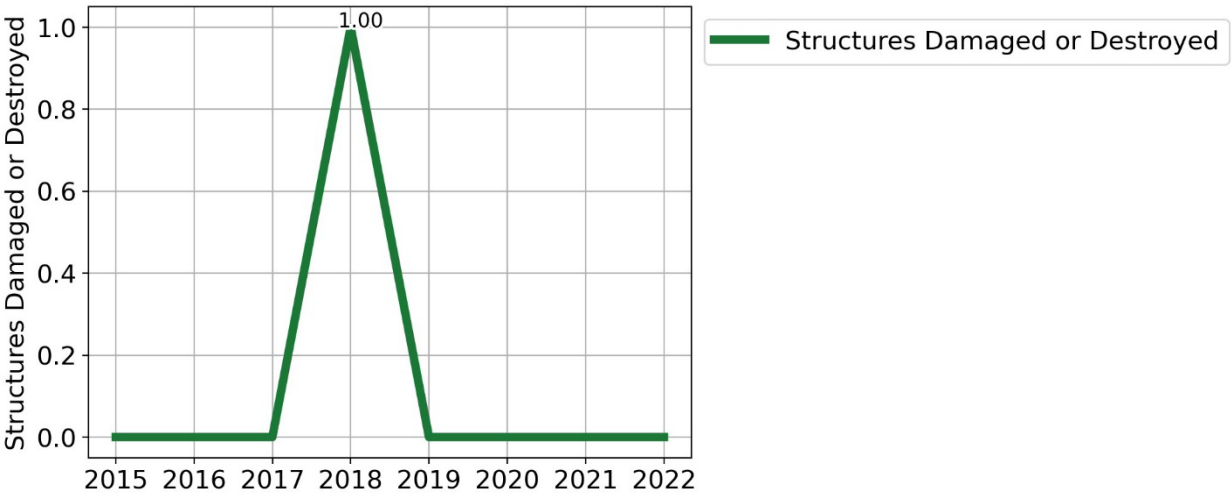
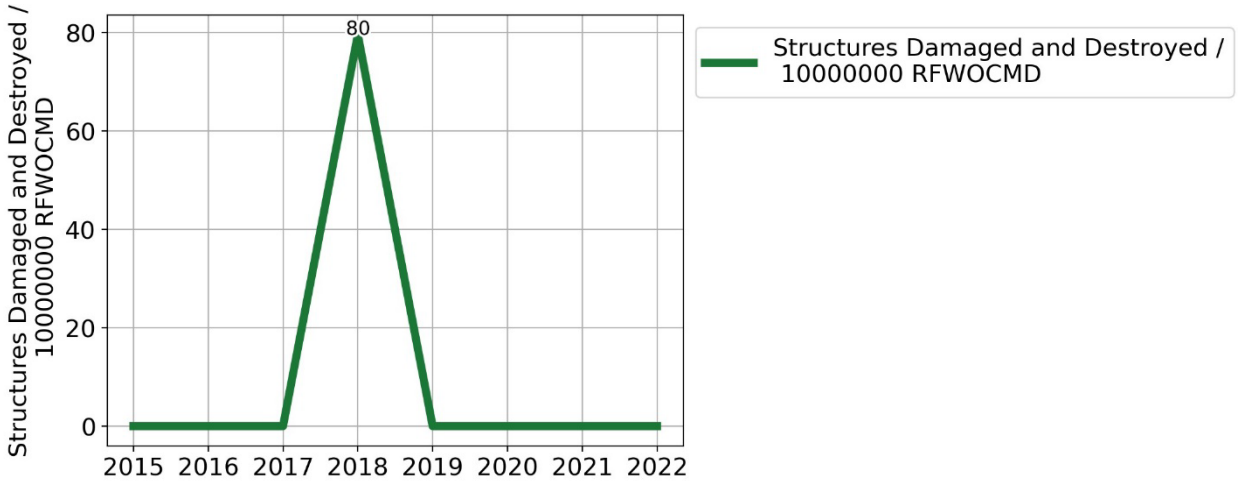


Figure 20: SDG&E Structures Damaged or Destroyed Normalized by RFWOCMD (2015-2022)



Injuries and Fatalities:

There were no injuries or fatalities reported from 2015 through 2022 (Figure 21). Given that the number of SDG&E reported injuries or fatalities has been zero for the period, normalization by RFWOCMDs does not provide any new insights (Figure 22).

Figure 21: SDG&E Injuries and Fatalities (2015-2022)

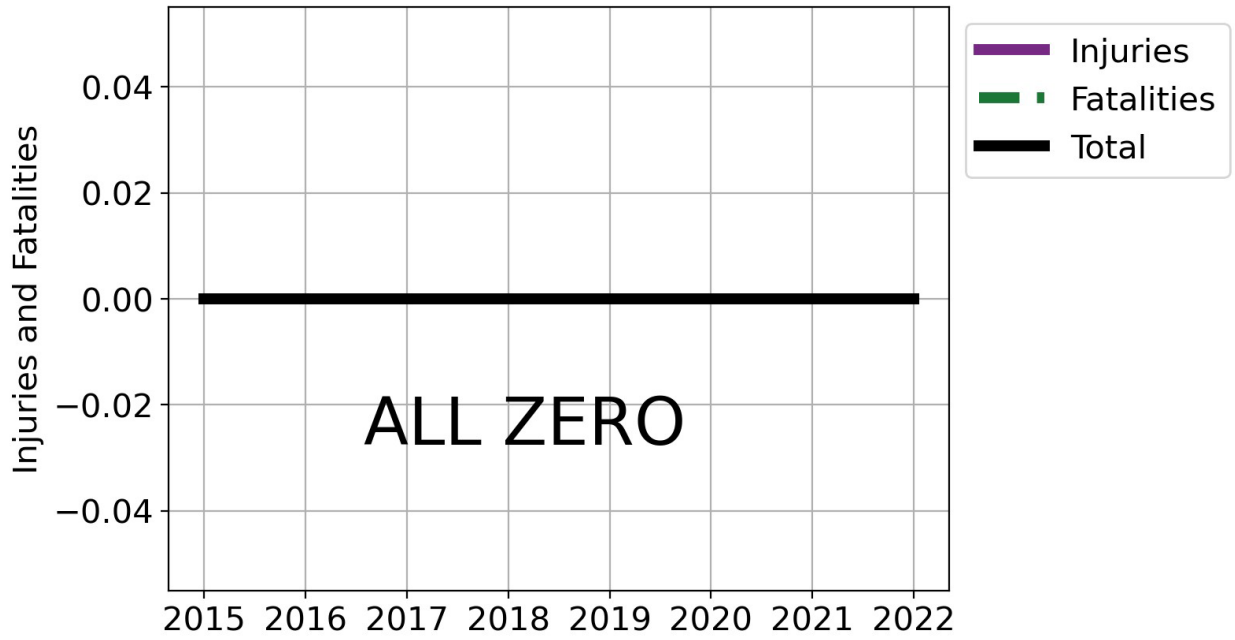
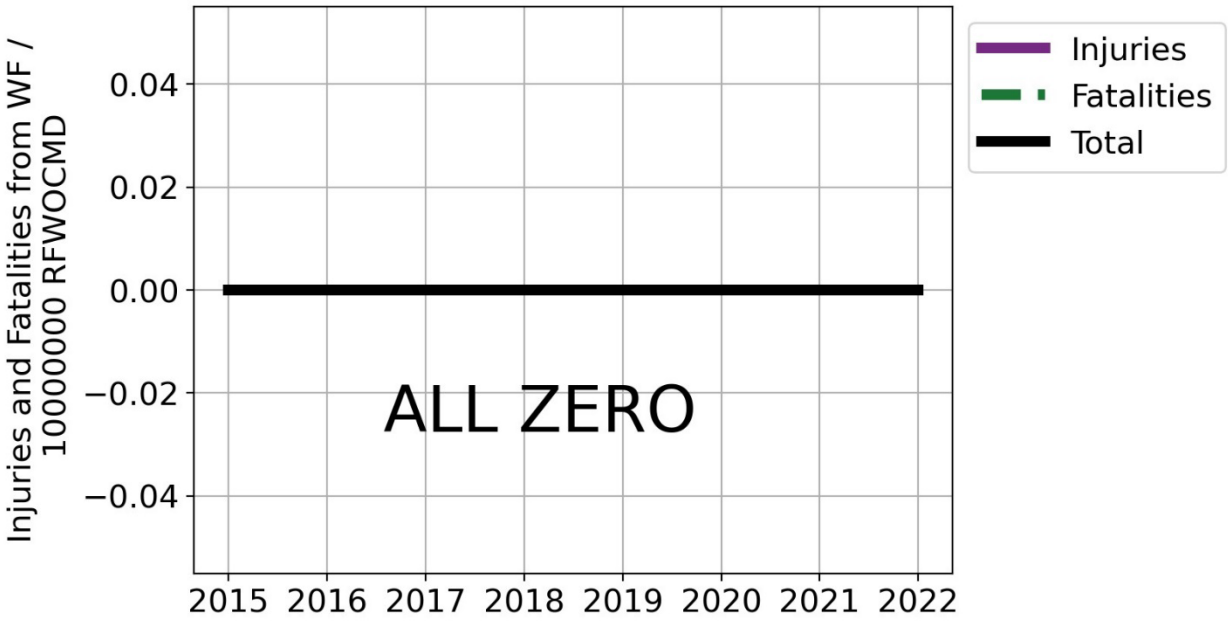


Figure 22: SDG&E Injuries and Fatalities Normalized by RFWOCMD (2015-2022)



Value of Destroyed Assets:

The value of the structure damaged or destroyed by SDG&E-ignited wildfires shows that the structure reported as damaged or destroyed in 2018 was valued at $2,900 and zero all other years including 2022 (Figure 23). Given that the SDG&E number reported of structures damaged or destroyed has been zero most years, normalizing by RFWOCMD does not provide any new insights (Figure 24).

Figure 23: SDG&E Value of Destroyed Assets (2015-2022)

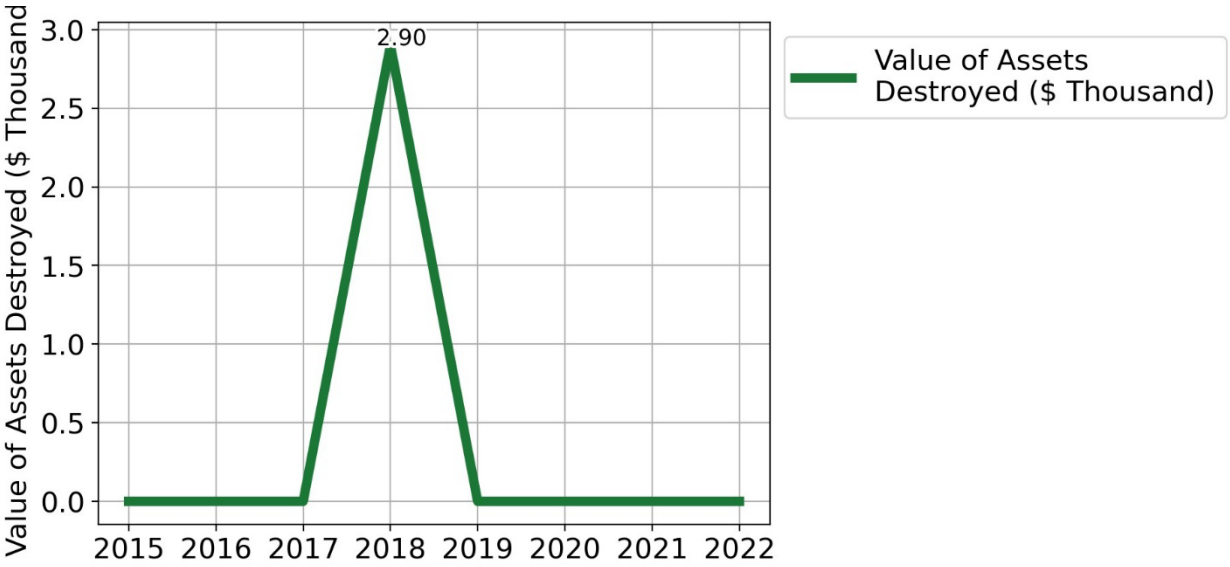
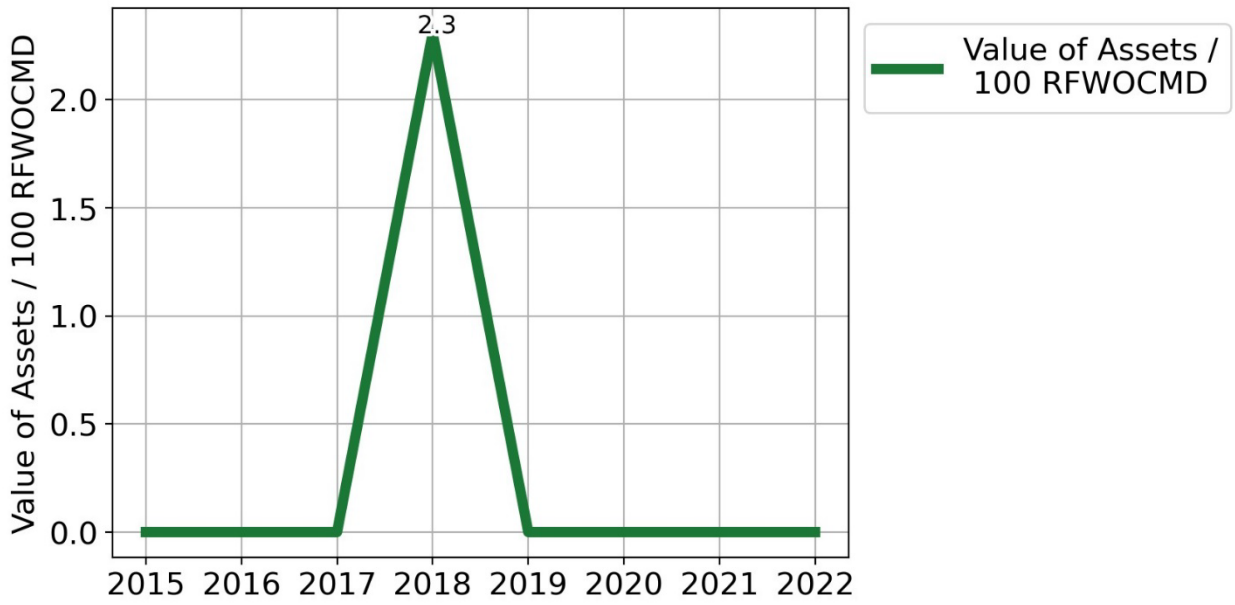


Figure 24: SDG&E Value of Destroyed Assets Normalized by RFWOCMD (2015-2022)



6.2 Issues Related to SDG&E Execution, Management, or Documentation of its WMP Implementation

Reports required by Public Utilities Code section 8386 are intended to inform Energy Safety of electrical corporations' compliance with its wildfire mitigation plan initiative activities. Because SDG&E elected not to report on work required by 12 initiatives in its EC ARC (Section 5.2), Energy Safety needed to seek more information from SDG&E about those initiatives, two of which SDG&E also did not list in the QDR (CNF Master Special Use Permit Powerline Replacement Program – 7.3.3.17.3, and Documentation and Disclosure of Wildfire-related Data and Algorithms – 7.3.7.3).

For 27 of its quantitative WMP initiatives, SDG&E reported some information that contradicted other information in its ARC or contradicted findings of the IE in the IE ARC. Those contradictions suggest that, in some instances, SDG&E failed to report information consistently and accurately during the 2022 compliance year. See Appendix A for more detail.

In reviewing the Energy Safety field inspection results, SDG&E showed a 100% correction rate and a very low violation rate of approximately one sixth of one percent.

Taken together, this identifies an area for improvement related to accurate documentation by SDG&E of its WMP implementation. SDG&E should improve the accuracy of its documentation going forward.

7. Conclusion

SDG&E completed 69 of 75 (or 92%) of its 2022 WMP Update initiatives, including nine of the top ten initiatives with the largest planned expenditures. However, SDG&E failed to meet its commitments for six of its WMP initiatives for 2022.

In general, SDG&E spent below the planned amounts on its 2022 WMP Update initiatives by a considerable amount of nearly $119 million in capital expenditures and approximately $12 million in operating expenditures for a total of $131 million (17%) in the aggregate. Despite not spending planned amounts, SDG&E claims that it met a significant portion of its quantitative targets and all of its qualitative 2022 WMP Update initiative targets. For the six missed initiatives, the proposed expenditures totaled $115 million for both capital and operating expenditures, approximately 15% of the total proposed expenditures of $770 million for all 75 initiatives.

SDG&E's performance on ignition risk and outcome metrics was generally favorable:

- Ignitions are trending down over the eight-year reporting period.
- The incidence of wire down events shows a recent downward trend.
- Outages are generally steady with a slight upward trend between 2018 and 2021 on the distribution lines.
- Outcome metrics indicate a low number of acres burned, one structure burned, no fatalities or injuries, and an average value of almost $0 in assets burned over the eight-year reporting period.

Ignition risk and outcomes metrics findings include:

- The ignition rate for transmission lines is approximately equal to that of distribution lines in 2022.
- Even though ignitions and wire down events have both been decreasing, there is no evidence the two are correlated and it is more likely both decreasing trends are a result of independent efforts by SDG&E to reduce each one.
- When outage events are adjusted for weather, an upward trend may be forming and careful monitoring in subsequent years is warranted.
- For 2022, outage events from vegetation contact are less than one tenth of all outages.
- SDG&E was able to maintain a general downward trend in ignitions without the use of PSPS events in 2022.

Energy Safety needed to seek more information from SDG&E on 12 initiatives not included in the EC ARC. For 27 of its WMP initiatives, the reporting provided by SDG&E contradicted itself, or contradicted the findings of the IE in the IE ARC, which suggests that there were reporting

consistency and accuracy issues present during the 2022 compliance year. In light of this, SDG&E should improve the accuracy of its documentation going forward.

Energy Safety acknowledges that in 2022 SDG&E undertook efforts to reduce its wildfire risk, and in many instances achieved its WMP initiative activity targets. Energy Safety found that SDG&E's missed targets did not significantly hinder SDG&E's ability to mitigate its wildfire risk.

On balance, SDG&E was largely successful in executing its plan for wildfire risk mitigation. While Energy Safety acknowledges that SDG&E achieved its overarching objectives, there are still areas for improvement and continued learning. Energy Safety will continue to monitor SDG&E's implementation of its ongoing wildfire mitigation activities and compel SDG&E to improve its ability to eliminate utility-caused catastrophic wildfires in California.

8. References

Reference	Citation
2022 Q3 QDR	San Diego Gas & Electric Company, "2022-11-01_SDGE_2022_QDR Non-Spatial Data," November 1, 2022, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53185&shareable=true.
2022 Q4 QDR	San Diego Gas & Electric Company, "2023-02-01_SDGE_2022_QDR Non-Spatial Data_R1," April 5, 2023, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53605&shareable=true.
2022 WMP	San Diego Gas & Electric Company, "2020-2022 Wildfire Mitigation Plan Update," February 11, 2022, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52033&shareable=true.
2023 Q4 QDR	San Diego Gas & Electric Company, "SDGE_2023_Q4_Tables1-15," February 9, 2024, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=56307&shareable=true.
Change Order	Office of Energy Infrastructure Safety, "Office of Energy Infrastructure Safety Decision on San Diego Gas & Electric Company's Change Order Request in relation to its 2022 Wildfire Mitigation Plan Update," February 9, 2022,

Reference	Citation
	https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53382&shareable=true.
Compliance Operational Protocols	California Public Utilities Commission, "Wildfire Safety Division – Compliance Operational Protocols," February 16, 2021, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52615&shareable=true.
Compliance Process	Office of Energy Infrastructure Safety, "2022 Compliance Process," October 2022, https://energysafety.ca.gov/wp-content/uploads/2022-wmp-compliance-process.pdf.
DR 248	Office of Energy Infrastructure Safety, "2022 Wildfire Mitigation Plan (WMP) Update Initiatives," Data Request Number: Energy Safety-DR-248, June 28, 2024, unpublished.
DR 248 Response	San Diego Gas & Electric Company, "Energy Safety Data Request: OEIS-DR-248 SDG&E Response," July 15, 2024, unpublished.
EC ARC	San Diego Gas & Electric Company, "2022 Wildfire Mitigation Plan Annual Report on Compliance," dated April 3, 2023, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53601&shareable=true.
IE ARC	Bureau Veritas North America, Inc. and C2 Group, "Final Independent Evaluator Annual Report on Compliance [for the 2022 Compliance Year]," June 30, 2023, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=54383&shareable=true.
Pub. Util. Code	Public Utilities Code, https://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=PUC&tocTitle=+Public+Utilities+Code+-+PUC.
SVM Audit and Report	Office of Energy Infrastructure Safety, "2022 Substantial Vegetation Management Audit and Report San Diego Gas & Electric Company," July 2024, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=56944&shareable=true.

Reference	Citation
WMP Decision	Office of Energy Infrastructure Safety, "Evaluation of 2022 Wildfire Mitigation Plan Update San Diego Gas & Electric Company," July 5, 2022, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52635&shareable=true.
WMP Supp. 1st Errata	San Diego Gas & Electric Company, "Supplement to First Errata to San Diego Gas and Electric Company's 2022 Wildfire Mitigation Plan," March 31, 2022, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52221&shareable=true.

DATA DRIVEN
FORWARD-THINKING
INNOVATIVE
SAFETY FOCUSED

OFFICE OF ENERGY INFRASTRUCTURE SAFETY
A California Natural Resources Agency
www.energysafety.ca.gov

715 P Street, 20th Floor Sacramento, CA
95814 916.902.6000

APPENDICES

9. Appendices

Appendix A: SDG&E Reporting Inconsistencies

Energy Safety receives data from the electrical corporations in the form of Quarterly Data Reports (QDR). These QDR submissions include information on the electrical corporation's progress toward meeting quantitative WMP initiatives. By analyzing the entire QDR dataset for 2022, Energy Safety can determine if the electrical corporation's data reflect attainment or non-attainment of quantitative WMP initiatives. Qualitative WMP initiatives are not considered in this analysis.

Differences in how SDG&E's initiative performance is reported in its WMP, QDR, EC ARC, and the IE ARC are summarized in Table 7. (2022 WMP, Table 5.2, Attachment B Table 12; 2022 Q4 QDR, Table 1; EC ARC, Appendix A; IE ARC.)

Table 7: SDG&E Quantitative WMP Initiatives with Dissonance

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Advanced Weather Monitoring and Weather Stations 7.3.2.1 Target: 20 stations	Met Target: 20 WX stations Actual: 50	Met Target: 20 weather stations Actual: 50	Met Target: 20 weather stations Actual: 50	QDR lists as 7.3.2.2.2
Air Quality Index 7.3.2.2.1 Target: 6 sensors	Met Target: 6 sensors Actual: 8	Met Target: 6 sensors Actual: 8	Met Target: 6 sensors Actual: 8	Target not included in WMP Table 12
Camera Network 7.3.2.2.2 Target: 8 cameras	Met Target: 8 cameras Actual: 12	Met Target: 8 cameras Actual: 12	Met Target: 8 cameras Actual: 12	Target not included in WMP Table 12
Wireless Fault	Met	Met	Met	EC ARC lists

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Indicators 7.3.2.3 Target: 500 wireless fault indicators	Target: 500 WFIs Actual: 545	Target: 500 wireless fault indicators Actual: 595	Target: 500 wireless fault indicators Actual: 545	different actual than QDR and IE ARC.
Covered Conductor Installation 7.3.3.3 Target: 60 miles	Met Target: 60 miles Actual: 61.23	Met Target: 60 miles Actual: 61.23	Met Target: 60 miles Actual: 58.18	IE ARC has different actual than QDR and EC ARC.
PSPS Sectionalizing Enhancements 7.3.3.8.1 Target: 10 switches	Met Target: 10 switches Actual: 12	Met Target: 10 switches Actual: 12	Met Target: 10 switches Actual: 10	IE ARC has different actual than QDR and EC ARC.
Generator Grant Programs 7.3.3.11.1 Target: 700 generators	Met Target: 700 generators Actual: 921	Met Target: 700 generators Actual: 921	Met Target: 700 generators Actual: 913	IE ARC has different actual than QDR and EC ARC.
Generator Assistance Programs 7.3.3.11.3 Target: 1,250 generators	Not met Target: 1,250 generators Actual: 140	Not met Target: 1,250 generators Actual: 140	Met Target: 1,250 generators Actual: 138	IE ARC has different actual than QDR and EC ARC.
Undergrounding of Electric Lines and/or Equipment 7.3.3.16 Target: 65 miles	No status provided Target: 65 miles Actual: 65	Met Target: 65 miles Actual: 65	Met Target: 65 miles Actual: 61.72	QDR lists as 7.3.3.19. IE ARC has different actual than QDR and

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
				EC ARC.
Traditional Hardening Distribution Overhead System Hardening 7.3.3.17.1 Target: 5 miles	Met Target: 5 miles Actual: 26.3	Met Target: 5 miles Actual: 26.3	Met Target: 5 miles Actual: 11.74	IE ARC has different actual than QDR and EC ARC.
Transmission System Hardening – Overhead, Underground, Distribution Underbuilt 7.3.3.17.2.1, 7.3.3.17.2.2, 7.3.3.17.2.3 Targets: 18.5 miles, 5.5 miles, 7.6 miles	Met, Met, Not met Targets: 18.5, 5.5, 7.6 miles Actuals: 18.28, 5.69, 0.6	Met, Met, Not met Targets: 18.5, 5.5, 7.6 miles Actuals: 18.28, 5.69, 0.6	Met, Met, Not met Targets: 18.5, 5.5, 7.6 miles Actuals: 18.28, 5.69, 0.6	EC ARC and IE ARC list all three as 7.3.3.17.2.
Distribution Communications Reliability Improvements (LTE) 7.3.3.18.1 Target: 25 base stations	Not met Target: 25 base stations Actual: 21	Not met Target: 25 stations Actual: 21	Not met Target: 25 stations Actual: 21	QDR lists as 7.3.3.17.18.1
Lightning Arrestor Removal and Replacement 7.3.3.18.2 Target: 1,848 arrestors	Met Target: 1,848 arrestors Actual: 2,710	Met Target: 1,848 lightning arrestors Actual: 2,710	Met Target: 1,848 lightning arrestors Actual: 2,710	QDR lists as 7.3.3.17.18.2.
Avian Mitigation 7.3.3.18.3	Met Target: 847 poles	Met Target: 847 poles	Met Target: 847 units of avian	Target not included in WMP Table 12.

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Target: 847 poles	Actual: 973	Actual: 973	protection equipment Actual: 973	QDR lists as 7.3.3.17.18.3. IE ARC units are different than QDR and EC ARC.
Detailed Inspections of Distribution Electric Lines and Equipment 7.3.4.1 Target: 18,177 inspections	Met Target: 18,177 inspections Actual: 17,935	Met Target: 18,177 inspections Actual: 17,935	Met Target: 18,177 inspections Actual: 17,960	IE ARC has different actual than QDR and EC ARC.
Detailed Inspections of Transmission Electric Lines and Equipment 7.3.4.2 Target: 2,087 inspections	Met Target: 2,087 inspections Actual: 2,323	Met Target: 2,087 inspections Actual: 2,323	Met Target: 2,087 inspections Actual: 2,122	IE ARC has different actual than QDR and EC ARC.
Infrared Inspections of Transmission Electric Lines and Equipment 7.3.4.5 Target: 6,154 inspections	Met Target: 6,154 inspections Actual: 6,259	Met Target: 6,154 inspections Actual: 6,259	Met Target: 6,154 inspections Actual: 6,233	IE ARC has different actual than QDR and EC ARC.
Intrusive Pole Inspections 7.3.4.6 Target: 350 inspections	Met Target: 350 inspections Actual: 967	Met Target: 350 inspections Actual: 967	Met Target: 350 inspections Actual: 1,003	IE ARC has different actual than QDR and EC ARC.

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
HFTD Tier 3 Distribution Pole Inspections 7.3.4.9.1 Target: 12,268 inspections	Met Target: 12,268 inspections Actual: 12,263	Met Target: 12,268 inspections Actual: 12,263	Unsure Target: 12,268 inspections Actual: 407	IE ARC has different actual than QDR and EC ARC.
Drone Assessments of Distribution Infrastructure 7.3.4.9.2 Target: 22,000 inspections	Met Target: 22,000 inspections Actual: 30,044	Met Target: 22,000 inspections Actual: 30,044	Met Target: 22,000 inspections Actual: 29,207	IE ARC has different actual than QDR and EC ARC.
Drone Assessments of Transmission Infrastructure 7.3.4.10.1 Target: 500 inspections	Met Target: 500 inspections Actual: 1,028	Met Target: 500 inspections Actual: 1,028	Met Target: 500 inspections Actual: 995	IE ARC has different actual than QDR and EC ARC.
Patrol Inspections of Distribution Electric Lines and Equipment 7.3.4.11 Target: 86,490 inspections	Met Target: 86,490 inspections Actual: 86,821	Met Target: 86,490 inspections Actual: 86,821	Met Target: 86,490 inspections Actual: 87,533	IE ARC has different actual than QDR and EC ARC.
Substation Inspections 7.3.4.15 Target: 330 inspections	Met Target: 330 inspections Actual: 397	Met Target: 330 inspections Actual: 397	Met Target: 330 inspections Actual: 395	IE ARC has different actual than QDR and EC ARC.

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Other Discretionary Inspection of Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations 7.3.5.9 Target: 12,500 trees trimmed or removed	Not met Target: 12,500 trees trimmed or removed Actual: 10,488	Not met Target: 12,500 trees trimmed/ removed Actual: 10,488	Not met Target: 12,500 trees Actual: 10,515	IE ARC has different actual than QDR and EC ARC. Initiative completion conclusions conflict with determination in SVM Audit & Report. See Appendix D.
Quality Assurance / Quality Control of Vegetation Inspections 7.3.5.13 Target: 15% inspections	Met Target: 15% inspections Actual: 17%	Met Target: 15% inspections Actual: 17%	Met Target: 15% of vegetation management inspections Actual: 16.7%	QDR lists as 7.5.3.13
Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment 7.3.5.16 Target: 106 vegetation management areas	Met Target: 106 vegetation management areas Actual: 105	Met Target: 106 vegetation management areas Actual: 105	Met Target: 106 inspections Actual: 105	QDR lists as 7.5.3.16. IE ARC units are different than QDR and EC ARC.
Vegetation Management to Achieve Clearances Around Electric Lines and Equipment	Met Target: 34,000 poles Actual: 35,485	Met Target: 34,000 poles brushed	Met Target: 34,000 poles Actual: 33,112	IE ARC has different actual than QDR and EC ARC.

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
7.3.5.20 Target: 34,000 poles		Actual: 35,485		

Appendix B: SDG&E EC ARC Information on WMP Initiative Activity Attainment

Summarized in Table 8 is each of SDG&E's 73 initiative targets from its 2022 WMP Update, and SDG&E's self-reporting on compliance contained in its EC ARC.

Table 8: SDG&E WMP Initiative Activity Attainment Information from EC ARC[8]

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
A Summarized Risk Map That Shows the Overall Ignition Probability and Estimated Wildfire Consequence (7.3.1.1)	Plan to continue enhancements on WRRM and WRRM-Ops that include upgrading fuel moisture inputs into fire behavior modeling, upgrading the forecaster interface, and incorporating data into a PSPS decision support tool. Enhancements planned for WiNGS-Planning and WiNGS-Ops include completing automation, developing user interface and visualization tools, improving the models with new data, and integration of Technosylva and weather data.	SDG&E reported it met its goals, including: The transitioning of models from static Microsoft Excel files to the cloud allowed for centralized, dynamic data that improved transparency, reproducibility, and allowed a more agile risk assessment. Continuing to add new sources of information, new features, and enhanced user experience. Moving the WiNGS-Planning model output to a visual platform which allowed for dissemination of the model and enhanced design scenario building to better guide investment planning decisions. Moving the WiNGS-Ops model output dynamic risk modeling to a visual platform which will allow for easy access to information during

[8] The initiatives listed are those that SDG&E provided a discussion for in its EC ARC. The total number of initiatives differs from what is listed in Table 2, as Energy Safety requested additional information on two initiatives via a data request.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		events and strengthen confidence in PSPS decision-making. Technosylva's Wildfire Analyst Enterprise (WFA-E) product has been updated to conduct modeling, deliver modeling outputs, and monitor.
Advanced Weather Monitoring and Weather Stations (7.3.2.1)	Install 20 weather stations.	SDG&E reported that 50 weather stations were installed due to available inventory and crew availability to perform the work.
Air Quality Index (7.3.2.2.1)	Quantitative aspects: • Install six AQI sensors purchased in 2021 at key locations. • Procure 12 additional AQI sensors. Qualitative aspects: • Provide training on sensor calibration and maintenance. • Develop and implement a notification system.	SDG&E reported that eight sensors were installed at 133% of target. SDG&E did not provide any updates on the procurement of the 12 additional sensors. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.
Satellite-based Remote Sensing - Camera Network (7.3.2.2.2)	Quantitative aspects: • Install eight cameras. Qualitative aspects: • Continue efforts to coordinate satellite-based alerts with the	SDG&E reported 12 cameras were installed at 150%, noting that installations were carried over from 2021 due to permitting delays.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	ground-based camera network.	
Wireless Fault Indicators (7.3.2.3)	Install 500 wireless fault indicators.	SDG&E completed 595 installations at 119% of target.
Fire Potential Index (7.3.2.4.1)	Continue to advance fire and weather science through partnerships with academia.	SDG&E reported that the SDSC weather model visualization is complete, and models and parameters were added frequently. SDG&E leveraged University of Wisconsin space-based fire alerts and noted they are collaborative with the AI smoke detection camera network. Scripps Oceanography has completed a long-range advanced weather model for SDG&E that determines the probability and severity of Santa Anas.
Santa Ana Wildfire Threat Index (7.3.2.4.2)	Increase resolution of the modeling used to generate the Santa Ana Wind Threat Index (SAWTI).	SDG&E reported that new super computers and subsequent weather modeling upgrades to create a higher resolution baseline are on track. SDG&E will continue to work with academia and the fire agencies to further develop fire science for integration into SAWTI.
High-Performance Computing Infrastructure (7.3.2.4.3)	Add two new High Performance Computing Clusters (HPCCs) to enhance forecasting capabilities.	SDG&E acquired, configured, and installed two new HPCCs in Fall 2022.
Personnel Monitoring Areas of Electric Lines and Equipment in	Review additional consistencies in updating digital maps along with enhancements to field	SDG&E reported that no potential PSPS conditions were present in 2022. Extreme fire potential index was present, but after assessment

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Elevated Fire Risk Conditions (7.3.2.5)	navigation for use by field personnel during patrols and observations.	and in line with procedures, no personnel staging was necessary.
Capacitor Maintenance and Replacement Program (7.3.3.1)	Install 40 SCADA capacitors.	SDG&E installed 58 capacitors at 145% of a target of 40 due to lower labor costs and increased job efficiency.
Covered Conductor Installation (7.3.3.3)	Install 60 miles of covered conductor.	SDG&E completed 61.23 miles at 102.05% of target, due to completing work more efficiently than forecasted.
Distribution Pole Replacement and Reinforcement, Including with Composite Poles (7.3.3.6)	SDG&E notes it does not have specific targets set for this initiative as all replacement work is reactive and based on findings from the various asset inspection programs from the "Asset Inspections" category.	SDG&E reported that no changes were made to this program in 2022, and did not provide additional discussion to support how reactive replacement work was conducted in 2022 based on findings from asset inspection programs.
Expulsion Fuse Replacement (7.3.3.7)	Replace 227 expulsion fuses.	SDG&E completed 231 expulsion fuse replacements at 101.76% of target.
PSPS Sectionalizing Enhancements (7.3.3.8.1)	Install 10 sectionalizing devices.	SDG&E installed 12 devices (switches) due to available inventory and crew availability to perform the work.
Microgrids (7.3.3.8.2)	Quantitative aspects: • Complete permanent renewable solution for four microgrids. Qualitative aspects:	SDG&E completed a permanent renewable solution for one microgrid, citing delays in acquiring appropriate and sufficient land rights for the microgrid projects.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	• Implement off grid (box power) solution for a cathodic protection water system that has a 2-mile line through the HFTD. • Install new non-toxic, non-flammable iron and saltwater batteries.	Spend was shifted from 2022 into 2023 and 2024. SDG&E noted that PSPS impact to customers is mitigated through existing generators. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.
Installation of System Automation Equipment (7.3.3.9)	Quantitative aspects: • Enable eight circuits with Advanced Protection. Qualitative aspects: • Expand the functionality of WDD and EFD demonstration projects based on initial 2021 results. • Enhance the coordination with expanding initiatives such as strategic undergrounding and covered conductor to refine scoping of APP circuits, thereby optimizing the deployment schedule for both HFTD Tier 2 and HFTD Tier 3.	SDG&E reported completing three circuits due to delays acquiring approvals of easement requests caused by external process change. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Maintenance, Repair, and Replacement of Connectors, Including Hotline Clamps (7.3.3.10)	Replace 1,650 hotline clamps.	SDG&E reported replacing 1,903 hotline clamps at 115.33% of target.
Generator Grant Programs (7.3.3.11.1)	Quantitative aspects: • Provide 700 generators to Medical Baseline (MBL) and Access and Functional Needs (AFN) customers impacted by PSPS. Qualitative aspects: • Strengthen the process of promoting participation and delivering resources in partnership with Tribal community partners. • Develop plans to offer dedicated backup battery units during active PSPS events to additional AFN population and Tribal communities. • SDG&E's program team revisited the delivery model and subsequently reduced the target as part of	SDG&E reported issuing 921 generators compared to a target of 700. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	SDG&E's approved Change Order Report.	
Standby Power Programs (7.3.3.11.2)	Quantitative aspects: • Provide 412 whole facility generators to customers impacted by PSPS. Qualitative aspects: • Continue to reduce permitting times by beginning projects earlier in the year, learning and adjusting to the more stringent and increased safety standards, and building and maintaining relationships with the County to ensure a natural flow of communication. • Streamline program planning by identifying a larger target audience and creating a marketing schedule to ensure customers are invited earlier and more often. • Collaborate with program contractor to codesign marketing material and customer	SDG&E reported completion of 376 generators provided at 91.26% of target. SDG&E did not provide an explanation for its missed target, but provided context that indicates this is likely due to no PSPS events experienced. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	information pieces, staff up certified installers to accommodate larger customer pipeline, and send project leads earlier and more often. • Develop a customer survey to better understand customer needs and potential gaps in program experience. • Use WiNGS-Planning to prioritize regions and specific customers.	
Generator Assistance Programs (7.3.3.11.3)	Quantitative aspects: • Provide 1,250 generator rebates to customers impacted by PSPS within HFTD. Qualitative aspects: • Continue evaluating rebate process options to maximize customer options. • Identify additional portable battery and power station options for the program. • Continue pursuing additional marketing	SDG&E reported completion of 140 generator rebates at 11.2% of target. SDG&E noted that in 2022, favorable weather reduced anticipation of PSPS resulting in lower-than-expected customer participation. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	and outreach channels.	
Undergrounding of Electric Lines and/or Equipment (7.3.3.16)	Quantitative aspects: • Complete 65 miles of undergrounding. Qualitative aspects: • Reduce trench dimensions where possible to reduce costs and schedule impacts. • Create permitting strike team to manage and expedite WMP-related permitting and agency approvals. • Re-evaluate Strategic Undergrounding program contracting strategy to address resource constraints and workload increase.	SDG&E reported 65 miles were completed. SDG&E reported more efficient construction, and projects completed in 2022 that did not run into any subsurface conditions that required significant re-routes or alternate construction methods. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.
Traditional Hardening Distribution Overhead System Hardening (7.3.3.17.1)	Quantitative aspects: • Harden 5 miles of the overhead traditional distribution system Qualitative aspects: • Fully transition the ESH project prioritization process to WiNGS-Planning	SDG&E reported completing 26.3 miles at 526% of target. The increase in miles completed was a combination of trailing work from 2021 that fell into 2022 and additional availability to shift resources to complete the additional overhead mileage.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		SDG&E did not provide additional discussion with respect to its progress on qualitative targets.
Transmission System Hardening – Overhead, Underground, and Distribution Underbuilt (7.3.3.17.2.3)	Harden 18.5 miles of the overhead transmission system, 5.5 miles of the underground transmission system, and 7.6 miles of the distribution underbuilt transmission system.	Overhead system hardening: • SDG&E reported 18.28 miles completed against a target of 18.5 miles, or 98.81% of target. Underground system hardening: • SDG&E reported 5.69 miles completed against a target of 5.5 miles, or 103% of target. Distribution underbuilt: • 0.6 miles completed against a reported target of 7.6 miles, or 7.89% of target. SDG&E noted it did not achieve its target due to permitting delays.
CNF Master Special Use Permit (MSUP) Powerline Replacement Program – Underground and Overhead (7.3.3.17.3)	Construction commenced on the CNF Program in late 2016 and was completed in 2021. All construction and close out activities such as QA/QC reviews were also completed in 2021, however SDG&E reported it would conduct post project environmental work in the future.	SDG&E did not discuss progress over this initiative in its EC ARC.
Distribution Communications Reliability	Install 25 LTE communication network base stations.	SDG&E reported 21 stations completed due to a variety of permitting activities that delayed

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Improvements (LTE) (7.3.3.18.1)		construction for a number of sites in 2022. US Forest Service, city, and county jurisdictions played a role in delaying sites.
Lightning Arrestor Removal and Replacement (7.3.3.18.2)	Replace 1,848 lightning arrestors.	SDG&E reported 2,710 completed due to available inventory and crew availability to perform the work.
Avian Mitigation (7.3.3.18.3)	Install 847 avian protection poles.	SDG&E reported 973 completed due to available inventory and crew availability to perform the work.
Detailed Inspections of Distribution Electric Lines and Equipment (7.3.4.1)	Perform 18,177 detailed distribution system inspections as part of the compliance maintenance program.	SDG&E reported 17,935 completed at 98.67% of target. It reported increased capital expenditure due to the acceleration of pole replacements resulting from inspections.
Detailed Inspections of Transmission Electric Lines and Equipment (7.3.4.2)	Perform 2,087 detailed transmission system inspections.	SDG&E reported 2,323 inspections completed at 111.31% of target. The increased inspections were a result of completing inspections prior to the targeted date.
Infrared Inspections of Distribution Electric Lines and Equipment (7.3.4.4)	Perform 12,000 distribution infrared inspections.	SDG&E reported 12,264 completed at 102.2% of target.
Infrared Inspections of Transmission Electric Lines and Equipment (7.3.4.5)	Perform 6,154 transmission infrared inspections.	SDG&E reported 6,259 inspections completed at 101.71% of target.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Intrusive Pole Inspections (7.3.4.6)	Perform 350 intrusive pole inspections as part of the compliance maintenance program.	SDG&E reported 967 inspections completed at 276.29% of target.
LiDAR Inspections of Distribution Electric Lines and Equipment (7.3.4.7)	Complete LiDAR inspections for all circuits within the HFTD. Use captured data to implement vegetation risk analysis. Use results for emergency operations during red flag and other extreme events. Complete additional pre-LiDAR and post-LiDAR design and analysis as system hardening projects continue to roll out.	SDG&E reported that in 2022, LiDAR data was captured and processed on all circuits in the HFTD. LiDAR data was used to perform vegetation risk analysis on selected circuits within the HFTD. Because the entire HFTD was captured, a large-scale LiDAR collection initiative will not be implemented again for several years. However, LiDAR will continue to be captured to support pole loading calculations needed for system hardening projects such as covered conductor and traditional overhead hardening and corrective work orders involving pole or crossarm replacements.
LiDAR Inspections of Transmission Electric Lines and Equipment (7.3.4.8)	Continue to use LiDAR inspections of transmission lines to supplement post-construction analysis of grid hardening efforts as well as vegetation analysis.	SDG&E reported it performed LiDAR inspections on all distribution circuits, and transmission LiDAR was captured on an as-needed basis to support design work for other grid hardening and structure replacement initiatives.
HFTD Tier 3 Distribution Pole Inspections (7.3.4.9.1)	Perform 12,268 HFTD Tier 3 distribution pole inspections.	SDG&E reported 12,263 completed, 99.96% of target.
Drone Assessments of Distribution	Quantitative aspects:	SDG&E reported 30,044 completed, at 136.56% of target. Additional

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Infrastructure (7.3.4.9.2)	• Perform 22,000 drone assessments of distribution infrastructure. Qualitative aspects: • Continue to refine and expand SDG&E's damage detection models. • Streamline the process of gaining government agency authorizations from California State Parks, as well as coordination with sensitive customers. • Develop processes and procedures to incorporate the use of drones into SDG&E's routine inspection program.	drone inspections were performed in coastal canyon areas within the wildland urban interface (WUI).
Drone Assessments of Transmission Infrastructure (7.3.4.10.1)	Quantitative aspects: • Perform 500 drone assessments of transmission infrastructure. Qualitative aspects: • Continue to refine transmission DIAR Program based on consequence of failure	SDG&E reported 1,028 completed at 205.6% of target. Additional drone inspections were performed in coastal canyon areas within the WUI.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	and probability of failure. • Expand intelligent image processing to build models for transmission facilities asset identification and damage detection in 2022 using the images collected.	
Additional Transmission Aerial 69kV HFTD Tier 3 Visual Inspection (7.3.4.10.2)	Perform 1,654 aerial 69kV HFTD Tier 3 visual transmission system inspections.	SDG&E reported 1,649 completed at 99.70% of target.
Patrol Inspections of Distribution Electric Lines and Equipment (7.3.4.11)	Perform 86,490 patrol inspections of distribution lines and equipment.	SDG&E reported 86,821 completed at 100.38% of target.
Patrol Inspections of Transmission Electric Lines and Equipment (7.3.4.12)	Perform 6,312 patrol inspections of transmission lines and equipment.	SDG&E reported 6,445 completed at 102.11% of target.
Quality Assurance/ Quality Control of Inspections (7.3.4.14)	Conduct all 2022 audits as inspections and repairs are completed.	SDG&E completed 100% of the QA/QC audits for the electric distribution system in 2022. SDG&E performed 896 audits on the overhead distribution system.
Substation Inspections (7.3.4.15)	Perform 330 substation inspections.	SDG&E reported 397 completed at 120.30% of target.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Additional Efforts to Manage Community and Environmental Impacts (7.3.5.1)	Grow the company sustainability initiative to provide 10,000 trees annually in collaboration with customers and local agencies. Implement a Tree Rebate Program targeted at underserved communities to promote the planting of trees where climate equity is compromised. Establish an interactive company website to educate customers about program participation. Develop and expand a customer survey regarding vegetation management operations to gather additional feedback on tree trimming operations. Develop internal, quarterly newsletters to engage internal business units and raise awareness of vegetation management operations. Continue to work collaboratively with state and federal agencies on the scope and effectiveness of sound vegetation management operations.	SDG&E reported it provided approximately 9,560 trees to customers in 2022 as part of its incentive to remove incompatible trees growing near power lines and promote sustainable tree planting. An additional 2,047 trees were provided as part of the Community Tree Rebate Program (CTRP). The CTRP was successfully implemented in 2022, targeting underserved communities to promote the planting of trees where climate equity is compromised. The program included an interactive customer portal which helps educate customers about the program and guide their application process. SDG&E received the Tree Line USA® recognition for the twentieth consecutive year in 2022. Tree Line USA is awarded by the National Arbor Day Foundation to utilities that demonstrate best practices in utility arboriculture, and how trees and utilities can effectively co-exist for the benefit of communities. SDG&E redesigned its customer survey initiative to better incentivize customer engagement in Q2, 2022, and initiated a quarterly newsletter for internal SDG&E departments on Vegetation Management operations in Q2, 2022. SDG&E engaged external agencies such as California State Parks and

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		US Forest Service on VM scoping activities; participated in IOU discussions for best practice; and continued its risk study with the Supercomputing Center related to outage risk analysis and clearances.
Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.2)	Quantitative aspects: • Perform 491,822 detailed tree trimming inspections. Qualitative aspects: • Explore the use of the WiNGS-Planning risk model to evaluate the effectiveness of vegetation management operations risk models to support future prioritization and implementation of tree trimming. • Modify the annual schedule for off-cycle inspections within the HFTD to occur closer to the beginning of the region's peak fire season (September), while allowing enough time to complete any backlog items. • Continue to collaborate on multi-year vegetation	SDG&E reported 509,110 completed at 103.52% of target. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	management enhanced clearance study with joint IOUs. • Further integrate VRI into inspection activities for the HFTD. • Engage third-party review of inspection activities to gauge the effectiveness and efficiency of scheduling. • Continue additional inspection activities throughout 2022. • Proactively manage Century plants within transmission corridors through biological means (herbicide use).	
Fuel Management and Reduction of "Slash" from Vegetation Management Activities (7.3.5.5)	Quantitative aspects: • Clear 500 poles as part of fuel management activities. Qualitative aspects: • Fuels Treatment activity - Continue to assess cost/benefit as well as research alternatives such as use of fire retardants, engage third party to study the methodology and	SDG&E reported 500 completed at 100% of target. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	effectiveness of the fuels treatment activity, and provide customer engagement and awareness earlier in the year to streamline authorization to perform. • Vegetation Abatement activity - Expand the acreage to be abated by goat grazing in sections of the Transmission corridors within Chula Vista, Oceanside, Escondido, and Harmony Grove. • Fuels Reduction Grant activity – Complete treatment of wildland fuels in proximity to electric facilities.	
LiDAR Inspections of Vegetation Around Distribution Electric Lines and Equipment (7.3.5.7)	Quantitative aspects: • Complete 730 miles of remote sensing inspections of vegetation around distribution lines and equipment. Qualitative aspects: • Develop a centralized enterprise repository where LiDAR data and	SDG&E reported 738 Circuit Line Miles completed at 101.30% of target. SDG&E did not provide additional discussion with respect to its progress on qualitative targets.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	associated files will be uploaded, stored, and accessed to set the stage for running analytics and Artificial Intelligence on LiDAR data. • Engage with other IOUs on their use and integration of remote sensing technologies within their vegetation management programs. • Engage with satellite vendors to determine current status of technology, and capabilities for augmentation and integration with vegetation management operations.	
Other Discretionary Inspection of Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations (7.3.5.9)	Trim or remove 12,500 trees as part of enhanced inspections, patrols and trimming activities.	SDG&E reported 10,488 trees trimmed or removed at 83.90% of target. The implementation of enhanced clearances is neither predetermined nor performed on all targeted tree species. Rather, SDG&E identifies trees that cannot be maintained with routine clearance and/or present a potential threat to conductor by branch-break as candidates for enhanced clearance.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
Quality Assurance / Quality Control of Vegetation Inspections (7.3.5.13)	Conduct QC over 15% of vegetation inspections.	SDG&E reported 17% completed at 102.00% of target.
Recruiting and Training Vegetation Management Personnel (7.3.5.14)	Expand line-clearance tree trimming training class established in 2021 to develop classroom and field curriculum courses for pre-inspection. Review SDG&E's training programs to determine the applicability of species identification in conjunction with other vegetation activities and encourage personnel to identify genus/species. Expand third-party pre-inspection auditing scope to include validation of genus/species.	In collaboration with the San Diego Community College District (SDCCD), utility industry representatives and the California Conservation Corps, two separate 5-week training courses for the Clearance Qualified Tree Trimming Program were completed in 2022. SDG&E also began collaborating on an expansion of this training program to include curriculum for Pre-inspectors.
Remediation of At-risk Species (7.3.5.15)	SDG&E will continue to refine its vegetation management practices for at-risk species based on research results, and by working with database developers to add genus-species identification within the inventory database tree records.	In 2022 SDG&E continued to update its new Genus-species attribute fields within the tree inventory database. Third party auditing now includes accuracy of Genus-species attribute field. SDG&E also noted its ongoing collaborative study with San Diego Supercomputing Center to develop risk assessment and predictive modeling tool using Vegetation Management tree data and

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		meteorological data, and bi-weekly joint IOU meetings as required by OEIS to benchmark and develop BMPs for outage tracking and clearance standards.
Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment (7.3.5.16)	Inspect 106 vegetation management areas (VMAs) and remove trees with strike potential.	SDG&E reported 105 areas completed at 99.06% of target.
Vegetation Inventory System (7.3.5.19)	Investigate integration of new work management system with other inter-departmental systems to streamline workflows. Research opportunities to share inventory data with external stakeholders for cross-activity initiatives.	SDG&E continued modification and process improvements to its inventory system (Epoch) through system enhancements, additional tree attributes, additional mapping layers, and improved upload capabilities. The addition of new Genus and species attribute fields improved identification granularity within the tree records. Additional new map layers and updated photo imagery within Epoch improved situational awareness and field planning. New Scheduling Work Orders (SWOs) specific to the off-cycle HFTD patrol activity allowed better planning, documentation, and reporting. New mapping capabilities to electronically track and document inspection progression were implemented.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		New data fields to electronically record customer refusals and other deferred work negated the need for hard copy forms. SDG&E created a refusal/deferred work dashboard.
Vegetation Management to Achieve Clearances Around Electric Lines and Equipment (7.3.5.20)	Perform pole brushing on 34,000 poles.	SDG&E reported 35,485 poles cleared at 104.37% of target.
Crew-accompanying Ignition Prevention and Suppression Resources and Services (7.3.6.3)	Conduct regular activities. Utilize fire prevention resources throughout service territory, refine program with training qualifications of personnel serving on CFRs, and review utility activities annually.	SDG&E reported it supported the activities of San Diego personnel as at-risk operations and maintenance work was performed during days with elevated or extreme FPI. Over 12 daily resources supported the activities, and the crews focused on fire prevention and ignition mitigation.
Personnel Work Procedures and Training in Conditions of Elevated Fire Risk (7.3.6.4)	Review and update Operations and Maintenance Wildland Fire Prevention Plan (ESP 113.1). Conduct training on fire prevention. Refine procedures to prevent ignitions from equipment or activities.	SDG&E reviewed and revised ESP 113.1 and conducted training with field crews on the content of the plan.
Protocols for PSPS Re-energization (7.3.6.5)	Continue to explore ways to reduce post-event patrol times to reduce impacts of	SDG&E reviewed protocols and was prepared to follow its patrol and restoration process, committing to a

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	PSPS events on SDG&E customers.	24-hour patrol and restoration period even once the risk passed. However, protocols were not tested due to the lack of PSPS events in 2022.
PSPS Events and Mitigation of PSPS Impacts (7.3.6.6)	Continue capital projects including traditional hardening, undergrounding, covered conductor, microgrids, and generator programs to reduce future scope and impact of PSPS events. WiNGS-Planning modeling will enable segment-based estimates around wildfire risk and PSPS impacts.	SDG&E reported it experienced no PSPS events in 2022. SDG&E continued system hardening projects and generator programs to reduce scope and impact of PSPS events. SDG&E incorporated several updates and enhancements to the WiNGS-Planning model. Data quality was enhanced by more accurately capturing hardening miles within the HFTD, improving the methodology behind calculating the overhead-to-underground mileage conversion contingency factor, and updating the data incorporated from WRRM. Updated data such as the effectiveness of different mitigations at reducing wildfire and PSPS risk and refreshing historical ignition counts to enhance the model's estimated ignition rates were also incorporated.
Aviation Firefighting Program (7.3.6.7.1)	Outfit Sikorsky S-70M Firehawk purchased in 2021 to become a firefighting resource, with expectations	Due to certification requirements of the Federal Aviation Administration (FAA), SDG&E reported that it estimates this helicopter will be in service in late 2023/early 2024.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	to place into service in late 2022. Install wire crossing hazard placards to increase the safety of helicopter patrols on distribution and transmission circuits within the HFTD.	In 2022, SDG&E provided the following availability and dispatches: • Air Crane - zero days unavailable • Blackhawk - zero days unavailable
Centralized Repository for Data (7.3.7.1)	Continue documentation for the central catalog of metric logics to provide improved transparency. Initiate DGF and documentation standards for data models and predictive analytics algorithms. Collaborate on implementation of OEIS GeoDatabase schema with Asset Management. Deliver data governance education for data owners and data stakeholders. Continue to conduct internal mock-audit checks of existing documentation.	SDG&E continued the automation process for metrics tables, to the SDG&E HANA Central Data Repository (CDR). In Q1, 72 non-spatial metrics were automated, with 12 repointed to the OEIS common schema. Metrics Table 12 spatial and non-spatial data was centralized, bringing the total to 470 metrics supported in HANA CDR. By early Q4, 602 metrics were automated, with 516 repointed to the OEIS data schema. SDG&E reported creation and review of new and existing Master Logic Manual or Automated documentation in parallel with data centralization and automation initiatives. Internal mock audits were conducted by WM DG PM in draft state for new metrics, and by random sample for those existing. By early Q4 2022, 581 metrics had associated Data Governance (DG) documentation. WM and AM PM leads partnered with SDG&E Data Governance Office to

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		develop documentation and processes for data users across the enterprise. WM and AM Leads also began implementation of Collibra, the searchable backend platform that will reside within the HANA CDR. Collibra Working Groups and Training Meetings began midyear; WMP portfolio scoped to be the first data set ingested into the self-service tool.
Collaborative Research on Utility Ignition and/or Wildfire (7.3.7.2)	Establish lasting partnerships with the at least three members of the academic community to sponsor ongoing wildfire mitigation-related data and collaborative research through internship programs to further expose students to data driven wildfire mitigation within utility companies.	SDG&E developed a collaborative white paper and presented it to the International Council on Large Electric System (aka CIGRE) late in 2022. This study has been made available for all members of the international CIGRE organization. The findings from the study provide an opportunity for electric utilities worldwide that are managing risk of wildfire to enhance current practices or for utilities for whom this risk is emerging, a starting point for preparing a comprehensive wildfire risk management plan.
Documentation and Disclosure of Wildfire-related Data and Algorithms (7.3.7.3)	Complete further refinements to the original probability of failure (PoF) model in SDG&E's wildfire risk assessment to expand probability of ignition (PoI) models based on different risk drivers (i.e., different assets and different causes). Continue migration of models into the cloud platform to	SDG&E did not discuss progress over this initiative in its EC ARC.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	enable more dynamic updates to those models.	
Ignition Management Program (7.3.7.4.1)	Refine the ignition event information gathering process. Continue to make progress on PoI by gathering data on both ignitions and near ignition events and communicating that information to decision makers during project planning and during extreme fire weather events.	SDG&E's Ignition Management Program followed up on evidence of heat reports and successfully integrated data into an enterprise-wide database. In addition, the requirements for 4hr, 12hr, 1 day, and 30-day reporting/notification requirements in regulatory document 29300 were implemented as a part of the IMP program. Training and efforts to further mature the program continued to increase the efficiency and produce positive outcomes.
Reliability Database (7.3.7.4.2)	Continue to work toward migrating current Access database to an AWS IT-supported application for outage coding. SAIDIDAT+ initiative target implementation date of late Q2 2022.	SDG&E implemented SAIDIDAT+ in Q3 2022.
Allocation Methodology Development and Application (7.3.8.1)	Investment Prioritization: • Expand the investment prioritization prototype development to electric distribution projects, including wildfire-driven projects.	Investment Prioritization: • SDG&E implemented an Investment Prioritization tool for electric transmission, distribution, and substation and piloted its use in production. Operating units were trained on the use of the tool and project teams are now expanding the tool

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	• Develop PoC for electric distribution portfolio optimization approach. • Develop associated business processes to implement the tool with electric distribution business units. WiNGS-Planning: • Complete WiNGS-Planning automation. • Develop user interface/visualization tool for WiNGS-Planning to enhance grid hardening planning process. • Improve WiNGS-Planning model with new data and models such as PoI models. • Migrate WiNGS-Planning model to the cloud for advanced analysis. • Initiate third-party model review. • Initiate egress analysis and explore ways to incorporate it into WiNGS-Planning model.	to other enterprise business units. WiNGS-Planning: • SDG&E progressed the automation of WiNGS-Planning with updates to model attribution. A segment specific lifecycle cost savings methodology was developed to improve assessment of projected hardening increasing specificity to investment prioritization. The lifecycle cost has been incorporated into the WiNGS-Planning 2.0 model. • Other asset- level model enhancements are being reviewed to update data and integrate into the WiNGS-Planning model to improve prioritization efforts.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	Incorporate lifecycle cost analysis into WiNGS-Planning.	
Adequate and Trained Workforce for Service Restoration (7.3.9.1)	Continue comprehensive training program to support outage restoration, patrols, inspections and maintenance, and risk events. Enhance personnel training by incorporating virtual reality (VR) training into existing curriculums. Plans are to build an Electric Safety Center within Skills Training Center to enhance safety-specific training initiatives.	SDG&E completed all training to meet internal WMP goals and environmental and safety compliance management program (ESCMP) requirements. In addition to conducting and completing comprehensive training programs, SDG&E reported the following key accomplishments for 2022: • Developed Electric Safety Center. • Integrated incident command system (ICS) into Lineman and Line Assistants new hire training. • Over 230 qualified electric worker (QEW) employees completed PSPS VR training to encompassing patroller and observer roles and ICS. • Integrated VR into training for inspection and maintenance programs. • Conducted PSPS and Fire Seasonal Readiness training at all operating districts. • Deployed Contractor Orientation including training on equipment and standards.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
		• Implemented a SharePoint page enabling contractor access to all Standard Practice requirements. • Presented Arc & Spark demonstrations at three community Fire Fairs. • Completed over 6,800 safety field visits.
Community Outreach, Public Awareness, and Communications Efforts (7.3.9.2)	Integrate recommendations associated with SDG&E's Compliance Report Regarding Surveys and Metrics to Determine Effectiveness of 2021 Outreach into planning efforts. Use customer feedback solicited to inform Compliance Report on Effectiveness of 2021 Outreach to refine and improve public education messaging and tactics. Expand Tribal and AFN campaigns to reach and communicate with a greater number of hard-to-reach vulnerable populations. Strengthen enhanced partnerships with Indian Health Councils and provide ongoing support to mitigate the impacts of PSPS events.	SDG&E discussed multi-channel marketing campaigns during joint IOU monthly meetings as related to a statewide AFN public education campaign. SDG&E engaged with local broadcast media and utilized various mediums to reach the public, including AFN communities, and Limited English Proficient residents, to provide wildfire safety and emergency preparedness information, PSPS awareness and PSPS education. Project teams collaborated with stakeholders and subject matter experts in accessible communications to explore additional platforms that can assist with accessible communications. Throughout the year, SDG&E also completed various Mini-Wildfire Safety Fairs with key community partners and CBOs within SDG&E's Energy Solutions Partner Network.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	Expand and strengthen partnerships with CBOs. Evaluate partnerships with local school districts to enhance public education efforts, including school newsletters and communications to parents, as well as leveraging established school communication platforms (emails, text messages and collateral materials).	
Customer Support in Emergencies (7.3.9.3)	In 2022, SDG&E plans to focus on strengthening existing partnerships while also building new partnerships with organizations that represent the needs of customers with AFN, with an emphasis on the deaf and blind communities, seniors, and the non-English speaking population. SDG&E continues to identify organizations with quick response capacity that can meet the needs of customers across the region during PSPS activations. SDG&E is exploring expanded food resource options with the San Diego Food Bank (a Community Information Exchange partner of 211 San Diego) and resiliency solutions for those impacted in the HFTD during PSPS. SDG&E plans to develop	SDG&E established relationships with more than five new Energy Solutions Partners (ESP) and developed targeted marketing campaigns to reach individuals with AFN. Existing partnerships were renewed with key support vendors including 211 San Diego, 211 Orange County, and Facilitating Access to Coordinated Transportation (FACT). SDG&E identified the need for and implemented Video Remote Interpreting (VRI) resource and training to all CRC and Branch Office staff, allowing for complex conversations and information sharing in American Sign Language (ASL) and non-English languages. ASL translators via video chat, or non-English translators (voice only) are available 24/7 to equally provide important information and to

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	targeted marketing campaigns to individuals with AFN, broader marketing efforts as well as trainings and materials for CBOs. SDG&E is preparing to explore opportunities to provide for targeted resiliency items to households with individuals with AFN (e.g., lights, sensors, cooler bags, gas cards, battery powered blenders.) SDG&E will continue to work with stakeholders and experts to identify accessibility enhancement opportunities.	engage in conversations with all customers. New PSPS preparedness partnerships were developed with the San Diego Center for the Blind the San Diego County Library to distribute PSPS preparedness information throughout 33 locations. SDG&E conducted virtual presentations on PSPS support services, customer programs and accessibility resources with ASL and Spanish interpreters to the Regional Center of San Diego and Imperial County, Regional Center of Orange County and the State Council of Developmental Disabilities San Diego and Imperial County. Three in-person presentations and one virtual presentation was provided to the San Diego Center for the Blind.
Disaster and Emergency Preparedness Plan (7.3.9.4)	SDG&E plans to update its CERP based on lessons learned. Additional annexes and standard operating procedures will be developed to support the CERP as new emergent risks arise.	SDG&E finalized the new comprehensive plan. The name of the plan was updated to comply with new GO166 rules and is titled the Company Emergency and Disaster Preparedness Plan (CEADPP).
Preparedness and Planning for Service Restoration (7.3.9.5)	Develop a formal mutual assistance training program to include automating processes where possible to	SDG&E began the automation process in Q1 and continued the automation efforts throughout the year.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	streamline deployment and demobilization.	Training with partners was conducted in Q4.
Protocols in Place to Learn from Wildfire Events (7.3.9.6)	SDG&E plans to continue the After-Action Review (AAR) program expansion activities and related initiatives to enhance the strong safety and growth mindset culture. This objective will be accomplished by integrating the AAR program's continuous quality improvement processes with those of the Safety Management System (SMS). The future state of the AAR process will include root cause analysis, and both qualitative and quantitative risk assessment. This enhanced process will allow for improved benchmarking, metrics, systematic enhancements, and cross-functional learning/information sharing on all events.	SDG&E executed three training exercises with subsequent after-action review processes to create learning opportunities and strengthen preparedness and response during a PSPS event. These learning opportunities will be incorporated into future training and exercises, and in select instances, have already been incorporated into PSPS procedures. The AAR program expanded to include action planning and root cause analysis as a part of the menu of services included to strengthen overall stakeholder and internal Emergency Management Department emergency response and readiness. The AAR program identified, assessed, and completed action planning for lessons learned from the SDG&E PSPS Functional Exercise in August. Lessons learned and subsequent corrective actions gleaned from 2022 PSPS exercises were documented and shared to be further incorporated into 2023 pre-season training curriculum.
Community Outreach, Public Awareness, and Communications Efforts (Emergency) (7.3.10.1)	Augment public education and outreach to AFN and Tribal communities in a more customized manner. Refine processes and procedures based on	SDG&E hosted six webinars about PSPS, safety during a PSPS event, and how to be prepared for the threat of wildfire. Webinars were held for Public Safety Partners,

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	stakeholder and community feedback. Enhance identification of AFN customers for the purposes of targeting outreach, communications, and solutions. Enhance collaboration with community partners, including Fire Safe Councils, local Fire Departments, Community Emergency Response Teams (CERT), AFN partners, Tribal nations, local town organizations, and other CBOs in order to educate on PSPS, emergency response, and programs available to all communities.	Critical Facilities partners, Municipalities, and other partners. SDG&E hosted more than 50 Mini-Wildfire Safety Fairs, which are small community events that enhance coordination efforts with Fire Safe Councils, CBOs, CERT Teams, Fire Departments, and Tribal Governments to focus on educating and preparing customers for wildfires in hard to reach and rural communities, with a focus on customers with AFN. SDG&E expanded fully accessible customer emergency notifications (ASL video, English voice, and accessible text) to unplanned power outages in addition to PSPS notifications. Implementation of Video Remote Interpreting (VRI) application for Customer Service Field technicians began in the fourth quarter of 2022.
PSPS Communication Practices (7.3.10.1.1)	Continue to collaborate with AFN councils and working groups and other stakeholders to identify and implement opportunities for enhancement. This includes new opportunities with established partners at local Tribal Councils; Other resources that serve Native American communities will be explored. Expand 2022 wildfire safety and PSPS outreach communications to	Continued technology communication enhancements, including: • Enhanced PSPS website to improve the customer experience, site performance and reliability, and increase accessibility and translating all online wildfire safety and PSPS collateral (digital versions of printed materials) into the 22 prevalent languages.

2022 WMP Update Initiative	2022 WMP Update Activity Target	2022 Actual (EC ARC)
	Native American communities. Work to develop new communications in a culturally appropriate and relevant manner.	• Further refined and expanded the SDG&E Alerts (PSPS) mobile app based on user feedback. • Refined the Public Safety Partner Portal communication platform. • Launched a parallel PSPS app for the portal.
Cooperation with Suppression Agencies (7.3.10.3)	Maintain coordination with agencies in the SDG&E service territory.	SDG&E participated in numerous meetings and planning committees along with responding to incidents.

Appendix C: SDG&E EC ARC Information on WMP Initiative Expenditures

Summarized in Table 9 is the forecast and actual expenditure for each category of initiatives from SDG&E's 2022 WMP Update, and SDG&E's self-reporting on expenditure contained in its EC ARC.

Table 9: SDG&E WMP Initiative Expenditures Information from EC ARC

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
A Summarized Risk Map that Shows the Overall Ignition Probability and Estimated Wildfire Consequence Along the Electric Lines and Equipment	7.3.1.1	$3,939,750	$3,734,870	$204,880
Advanced Weather Monitoring and Weather Stations	7.3.2.1	$525,260	$539,460	($14,200)
Air Quality Index	7.3.2.2.1	$0	$0	$0
Satellite-Based Remote Sensing (Camera Network)	7.3.2.2.2	$0	$3,290	($3,290)
Wireless Fault Indicators	7.3.2.3	$686,750	$845,970	($159,220)
Fire Potential Index	7.3.2.4.1	$4,553,910	$3,450,230	$1,103,680
Santa Ana Wildfire Threat Index	7.3.2.4.2	$0	$0	$0
High-Performance Computing Infrastructure	7.3.2.4.3	$5,500,000	$5,224,320	$275,680

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Personnel Monitoring Areas of Electric Lines and Equipment in Elevated Fire Risk Conditions	7.3.2.5	$0	$0	$0
Capacitor Maintenance and Replacement Program	7.3.3.1	$3,230,750	$3,509,430	($278,680)
Covered Conductor Installation	7.3.3.3	$125,237,290	$92,732,850	$32,504,440
Distribution Pole Replacement and Reinforcement, Including with Composite Poles	7.3.3.6	$0	$0	$0
Expulsion Fuse Replacement	7.3.3.7	$734,000	$631,390	$102,610
PSPS Sectionalizing Enhancements	7.3.3.8.1	$1,909,680	$2,382,670	($472,990)
Microgrids	7.3.3.8.2	$14,916,360	$4,001,320	$10,915,040
Installation of System Automation Equipment	7.3.3.9	$12,937,920	$23,974,430	($11,036,510)
Maintenance, Repair, and Replacement of Connectors, Including Hotline Clamps	7.3.3.10	$4,320,560	$1,781,400	$2,539,160
Generator Grant Programs	7.3.3.11.1	$10,400,000	$3,550,400	$6,849,600
Standby Power Programs	7.3.3.11.2	$10,350,000	$12,043,420	($1,693,420)

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Generator Assistance Programs	7.3.3.11.3	$1,828,000	$758,990	$1,069,010
Undergrounding of Electric Lines and/or Equipment	7.3.3.16	$189,893,240	$126,850,640	$63,042,600
Traditional Hardening Distribution Overhead System Hardening	7.3.3.17.1	$16,489,870	$26,516,750	($10,026,880)
Overhead Transmission Fire Hardening	7.3.3.17.2.1	$0	$0	$0
Underground Transmission Fire Hardening (Transmission)	7.3.3.17.2.2	$0	$0	$0
Overhead Transmission Fire Hardening (Distribution Underbuilt)	7.3.3.17.2.3	$4,272,710	$3,237,210	$1,035,500
Distribution Communications Reliability Improvements (LTE)	7.3.3.18.1	$70,641,540	$45,891,650	$24,749,890
Lightning Arrestor Removal and Replacement	7.3.3.18.2	$2,877,050	$3,296,740	($419,690)
Avian Mitigation	7.3.3.18.3	$3,081,200	$1,866,460	$1,214,740
Detailed Inspections of Distribution Electric Lines and Equipment	7.3.4.1	$12,561,790	$15,120,210	($2,558,420)

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Detailed Inspections of Transmission Electric Lines and Equipment	7.3.4.2	$576,110	$489,840	$86,270
Infrared Inspections of Distribution Electric Lines and Equipment	7.3.4.4	$174,570	$158,930	$15,640
Infrared Inspections of Transmission Electric Lines and Equipment	7.3.4.5	$0	$0	$0
Intrusive Pole Inspections	7.3.4.6	$24,000	$39,410	($15,410)
LiDAR Inspections of Distribution Electric Lines and Equipment	7.3.4.7	$3,000,000	$3,000,120	($120)
LiDAR Inspections of Transmission Electric Lines and Equipment	7.3.4.8	$0	$0	$0
HFTD Tier 3 Distribution Pole Inspections	7.3.4.9.1	$384,100	$342,420	$41,680
Drone Assessments of Distribution Infrastructure	7.3.4.9.2	$78,402,380	$96,963,720	($18,561,340)
Drone Assessments of Transmission Infrastructure	7.3.4.10.1	$0	$0	$0
Additional Transmission Aerial 69kV HFTD Tier 3 Visual Inspection	7.3.4.10.2	$0	$0	$0

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Patrol Inspections of Distribution Electric Lines and Equipment	7.3.4.11	$278,770	$285,060	($6,290)
Patrol Inspections of Transmission Electric Lines and Equipment	7.3.4.12	$0	$0	$0
Quality Assurance/ Quality control of Inspections	7.3.4.14	$0	$0	$0
Substation Inspections	7.3.4.15	$0	$0	$0
Additional Efforts to Manage Community and Environmental Impacts	7.3.5.1	$1,000,000	$872,170	$127,830
Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment	7.3.5.2	$55,699,520	$59,775,660	($4,076,140)
Fuel Management and Reduction of "Slash" from Vegetation Management Activities	7.3.5.5	$6,377,490	$7,895,530	($1,518,040)
LiDAR Inspections of Vegetation Around Distribution Electric Lines and Equipment	7.3.5.7	$0	$0	$0
Other Discretionary Inspection of Distribution Electric Lines and Equipment,	7.3.5.9	$0	$0	$0

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Beyond Inspections Mandated by Rules and Regulations				
Quality Assurance / Quality Control of Vegetation Inspections	7.3.5.13	$0	$0	$0
Recruiting and Training Vegetation Management Personnel	7.3.5.14	$0	$0	$0
Remediation of At-risk Species	7.3.5.15	$0	$0	$0
Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment	7.3.5.16	$0	$0	$0
Vegetation Inventory System	7.3.5.19	$0	$0	$0
Vegetation Management to Achieve Clearances Around Electric Lines and Equipment	7.3.5.20	$5,800,000	$6,104,910	($304,910)
Crew-accompanying Ignition Prevention and Suppression Resources and Services	7.3.6.3	$3,229,600	$3,073,870	$155,730
Personnel Work Procedures and Training in Conditions of Elevated Fire Risk	7.3.6.4	$0	$0	$0
Protocols for PSPS Re-energization	7.3.6.5	$0	$0	$0

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
PSPS Events and Mitigation of PSPS Impacts	7.3.6.6	$0	$0	$0
Aviation Firefighting Program	7.3.6.7.1	$32,996,920	$18,833,320	$14,163,600
Centralized Repository for Data	7.3.7.1	$28,468,410	$16,298,400	$12,170,010
Collaborative Research on Utility Ignition and/or Wildfire	7.3.7.2	$0	$0	$0
Documentation and Disclosure of Wildfire-related Data and Algorithms	7.3.7.3	$3,992,730	$3,680,400	$312,330
Ignition Management Program	7.3.7.4.1	$0	$0	$0
Reliability Database	7.3.7.4.2	$0	$0	$0
Allocation Methodology Development and Application	7.3.8.1	$4,785,880	$3,966,630	$819,250
Risk Spend Efficiency Analysis Not Include PSPS	7.3.8.3	$0	$1,485,830	($1,485,830)
Adequate and Trained Workforce for Service Restoration	7.3.9.1	$0	$0	$0
Community Outreach, Public Awareness, and Communications Efforts	7.3.9.2	$24,018,840	$15,147,330	$8,871,510

2022 WMP Update Initiative Activity	2022 WMP Update Identifier	2022 Expense Forecast	2022 Expense Actual	2022 Expense (Over)/Under Spend (EC ARC, Appendix A)
Customer Support in Emergencies	7.3.9.3	$0	$0	$0
Disaster and Emergency Preparedness Plan	7.3.9.4	$0	$0	$0
Preparedness and Planning for Service Restoration	7.3.9.5	$0	$0	$0
Protocols in Place to Learn from Wildfire Events	7.3.9.6	$0	$0	$0
Community Outreach, Public Awareness, and Communications Efforts (Emergency)	7.3.10.1	$600,000	$398,250	$201,750
PSPS Communication Practices	7.3.10.1.1	$16,426,000	$14,882,550	$1,543,450
Cooperation with Suppression Agencies	7.3.10.3	$0	$0	$0
CNF MSUP Powerline Replacement Program (Transmission)	7.3.3.17.3	$0	$0	$0
CNF (Distribution Underground)	7.3.3.17.3	$617,550	$717,760	($100,210)
CNF (Distribution Overhead)	7.3.3.17.3	$2,652,540	$3,086,960	($434,420)
TOTAL		**$770,393,040**	**$639,443,170**	**$130,949,870**

Appendix D: Substantial Vegetation Management Audit and Report of SDG&E

On July 2, 2024, Energy Safety issued its SVM Audit and Report for SDG&E. (SVM Audit and Report.) The purpose of the SVM Audit and Report is to assesses whether SDG&E met its quantitative commitments and verifiable statements in its 2022 WMP Update related to vegetation management.

The findings from Energy Safety's SVM Audit and Report are detailed in Table 10. (SVM Audit and Report, Table 1.)

Table 10: Energy Safety Findings from SDG&E 2022 SVM Audit and Report of WMP Vegetation Management Initiatives

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.1	Additional Efforts to Manage Community and Environmental Impacts	Performed All Work Required
7.3.5.2	Detailed Inspections and Management Practices or Vegetation Clearances around Distribution Electrical Lines and Equipment	Performed All Work Required
7.3.5.3	Detailed Inspections and Management Practices for Vegetation Clearances Around Transmission Electric Lines and Equipment	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.2 for this initiative)
7.3.5.4	Emergency Response Vegetation Management due to Red Flag Warning or Other Urgent Climate conditions	Performed Required Work

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.5	Fuels Management (Including All Wood Management) and Reduction of "Slash" from Vegetation Management Activities	Performed Required Work
7.3.5.6	Improvement of Inspections	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.2 for this initiative)
7.3.5.7	Remote Sensing Inspections of Vegetation Around Distribution Electric Lines and Equipment	Performed Required Work
7.3.5.8	Remote Sensing Inspections of Vegetation Around Transmission Electric Lines and Equipment	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.7 for this initiative)
7.3.5.9	Other Discretionary Inspections of Vegetation Around Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.2 for this initiative)

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.10	Other Discretionary Inspections of Vegetation Around Transmission Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.9 for this initiative)
7.3.5.11	Patrol Inspections of Vegetation Around Distribution Electric Lines and Equipment	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.2 for this initiative)
7.3.5.12	Patrol Inspections of Vegetation Around Transmission Electric Lines and Equipment	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.2 for this initiative)
7.3.5.13	Quality Assurance / Quality Control of Vegetation Management	Performed Required Work
7.3.5.14	Recruiting and Training of Vegetation Management Personnel	Performed Required Work

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.15	Identification and Remediation of "At-Risk Species"	Performed Required Work
7.3.5.16	Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment	Performed Required Work
7.3.5.17	Substation Inspections	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.15 for this initiative)
7.3.5.18	Substation Vegetation Management	Performed Required Work (2022 WMP Update says to refer to work performed under initiative 7.3.5.15 for this initiative)
7.3.5.19	Vegetation Management System	Performed Required Work
7.3.5.20	Vegetation Management to Achieve Clearances Around Electric Lines and Equipment	Performed Required Work
7.3.5.21	Vegetation Management Activities Post-Fire	Performed Required Work

Appendix E: Performance Metrics Appendix Figures

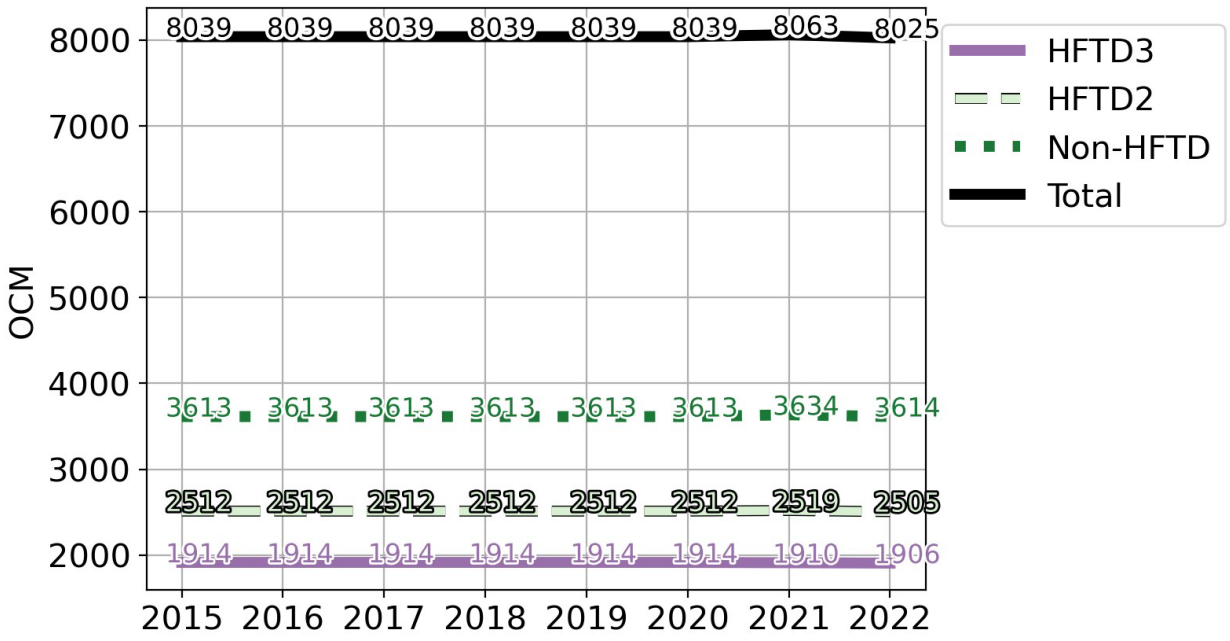
Data for this appendix comes from the QDRs as reported by SDG&E. (2022 Q3 QDR, Tables 6, 7.1, 7.2, and 8; 2023 Q4 QDR, Tables 4, 5, 6, and 7.)

9.1.1 Normalizing Metrics

Overhead Circuit Miles:

The number of overhead circuit miles (OCM) has remained constant with only small changes between 2015 and 2022 (Figure 25).

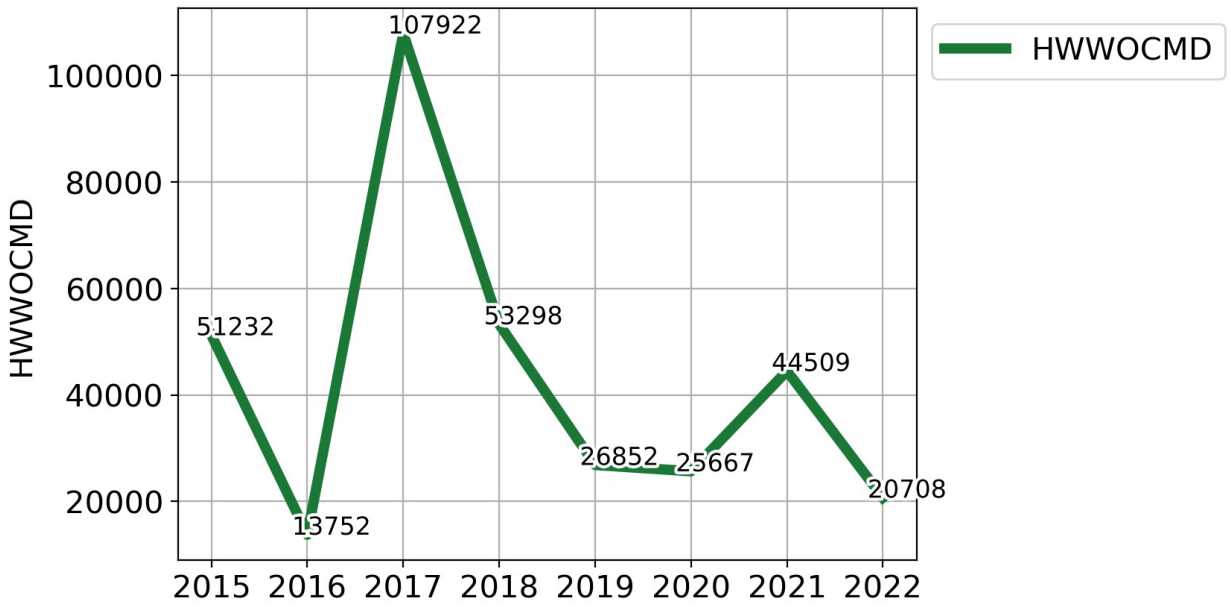
Figure 25: SDG&E Overhead Circuit Miles (2015-2022)



High Wind Warning Overhead Circuit Mile Days:

The number of high wind warning overhead circuit mile days (HWWOCMD) have fluctuated significantly between 2015 and 2022, with the lowest in 2016 and the highest in 2017 (Figure 26). Since 2017, the general trend is downward.

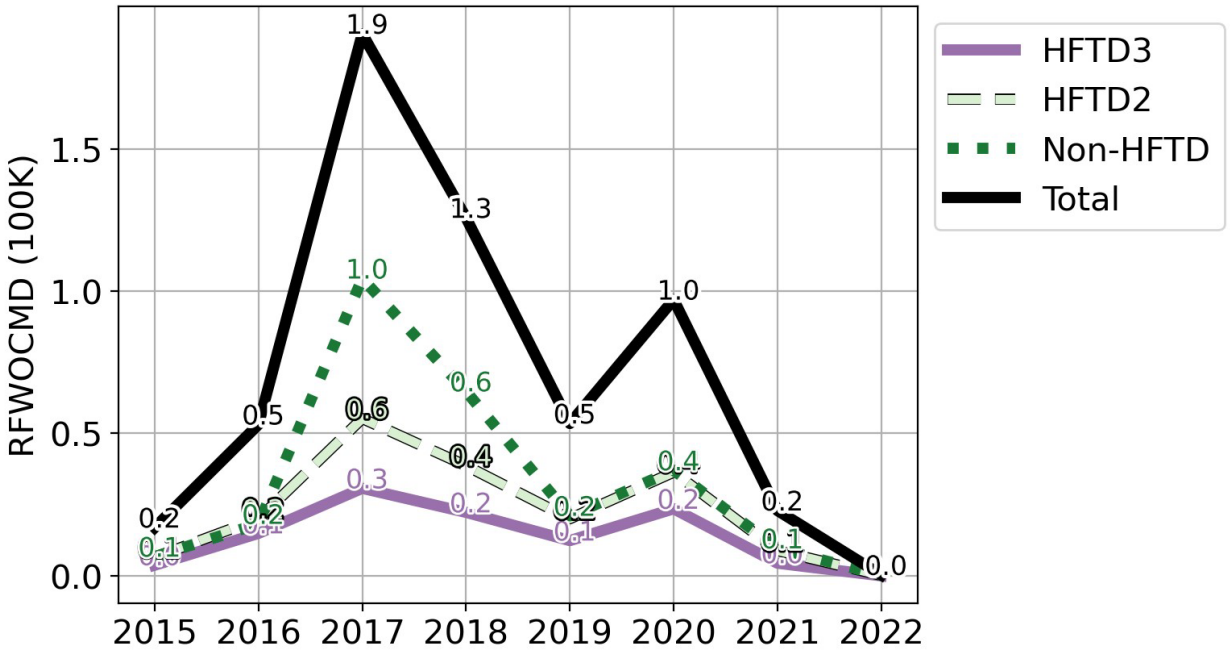
Figure 26: SDG&E High Wind Warning Overhead Circuit Mile Days (2015-2022)



Red Flag Warning Overhead Circuit Mile Days:

The number of red flag warning overhead circuit mile days (RFWOCMD) has fluctuated between 2015 and 2022, with a peak in 2017 and a general downward trend since then (Figure 27). The total number of RFWOCMDs in all areas decreased to nearly zero in 2022, which results in large fluctuations of the normalized data presented in subsequent figures.

Figure 27: SDG&E Red Flag Warning Overhead Circuit Mile Days (2015-2022) by HFTD Locations

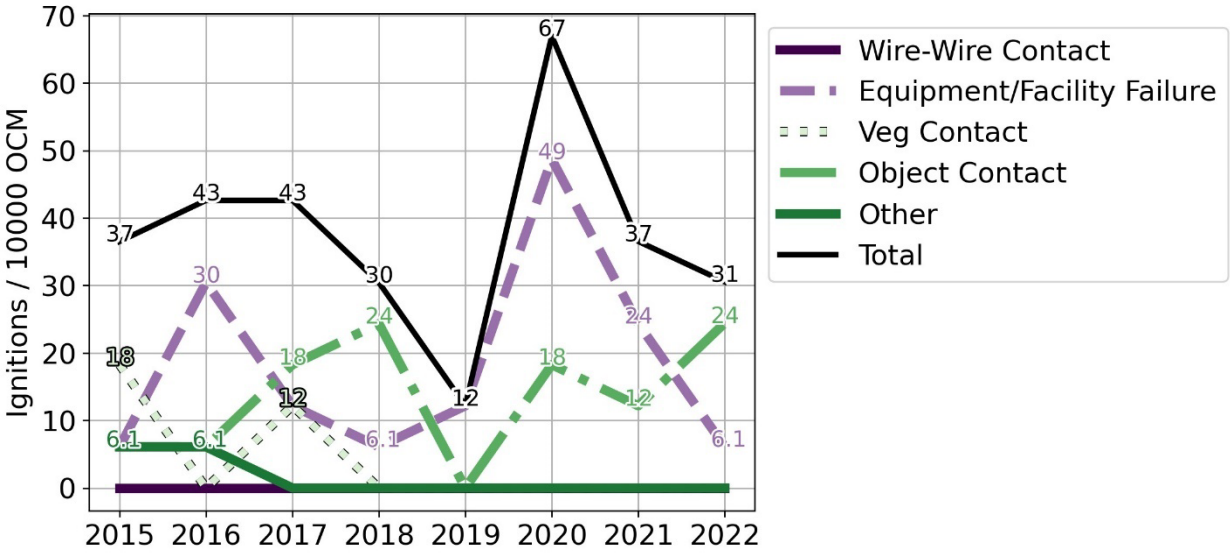


9.1.2 More Detailed Ignition Risk Findings

Distribution Ignitions Normalized by OCM in HFTD Tier 3 Delineated by Risk Driver:

Distribution ignitions in HFTD Tier 3 areas normalized by OCM showed improvements from 2015 to a low in 2019 until a large maximum occurred in 2020. Since 2020, these ignitions have dropped to a new low in 2022 (Figure 28).

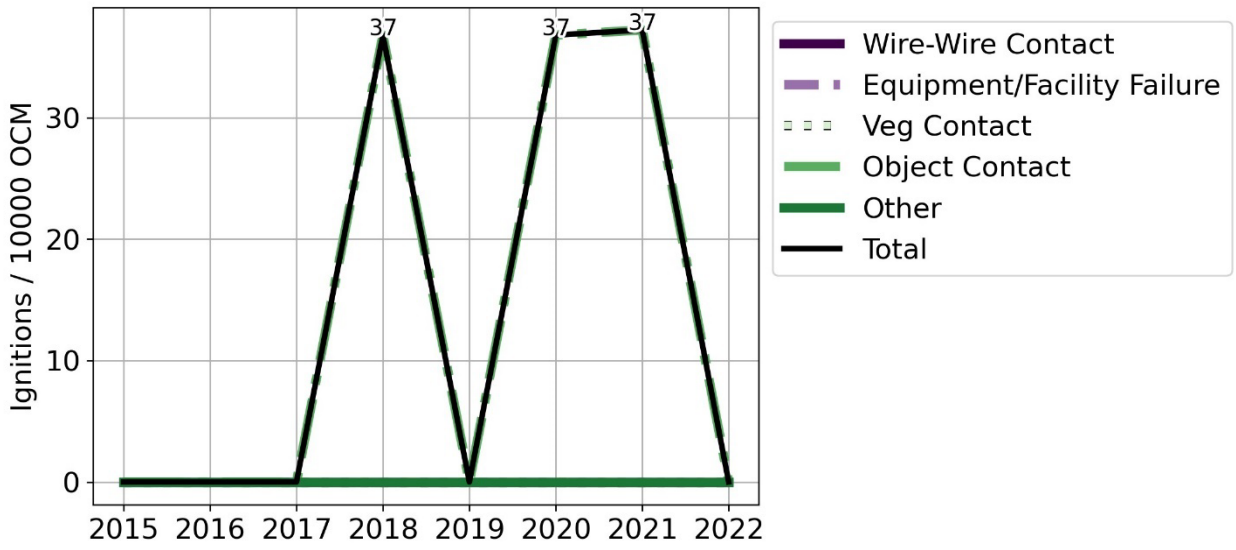
Figure 28: SDG&E Distribution Ignitions in HFTD Tier 3 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Transmission Ignitions Normalized by OCM in HFTD Tier 3 Delineated by Risk Driver:

Transmission ignitions in HFTD Tier 3 areas normalized by OCM fluctuated from zero to 37 between 2015 and 2022, ending with zero in 2022, with no clear overall trend (Figure 29). Ignitions were driven by object contact and no other risk drivers, thus the total yearly values equal the object contact values.

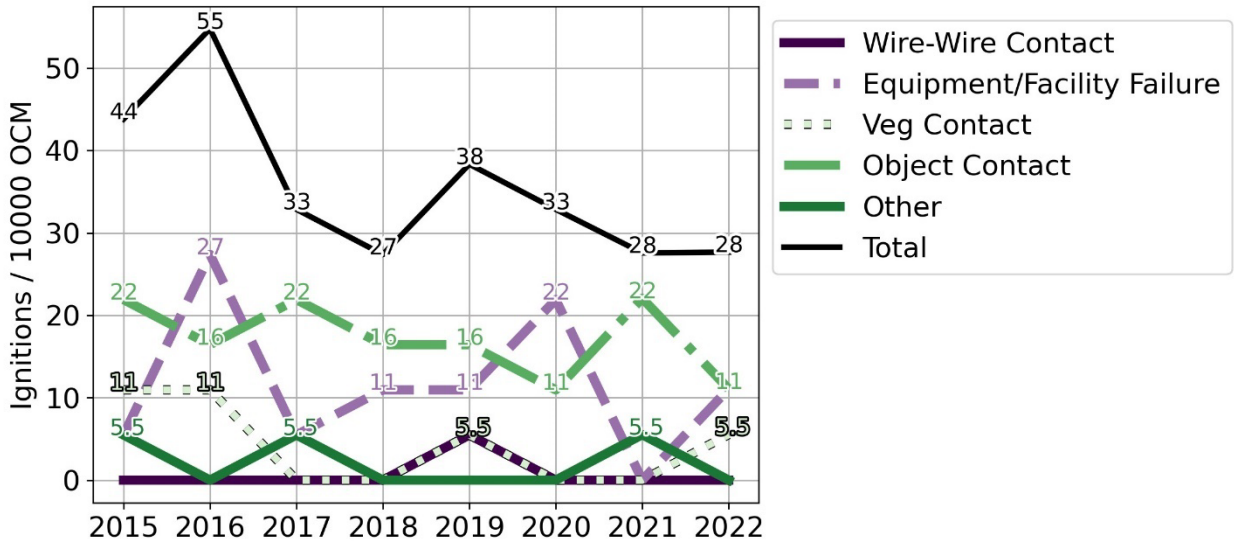
Figure 29: SDG&E Transmission Ignitions in HFTD Tier 3 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Distribution Ignitions Normalized by OCM in HFTD Tier 2 Delineated by Risk Driver:

Distribution ignitions in HFTD Tier 2 areas normalized by OCM fluctuated year-to-year between 2015-2022. There is a general downward trend since 2016 ending at near minimum in 2022. The two risk drivers that contribute primarily to the total are object contacts and equipment or facility failures (Figure 30).

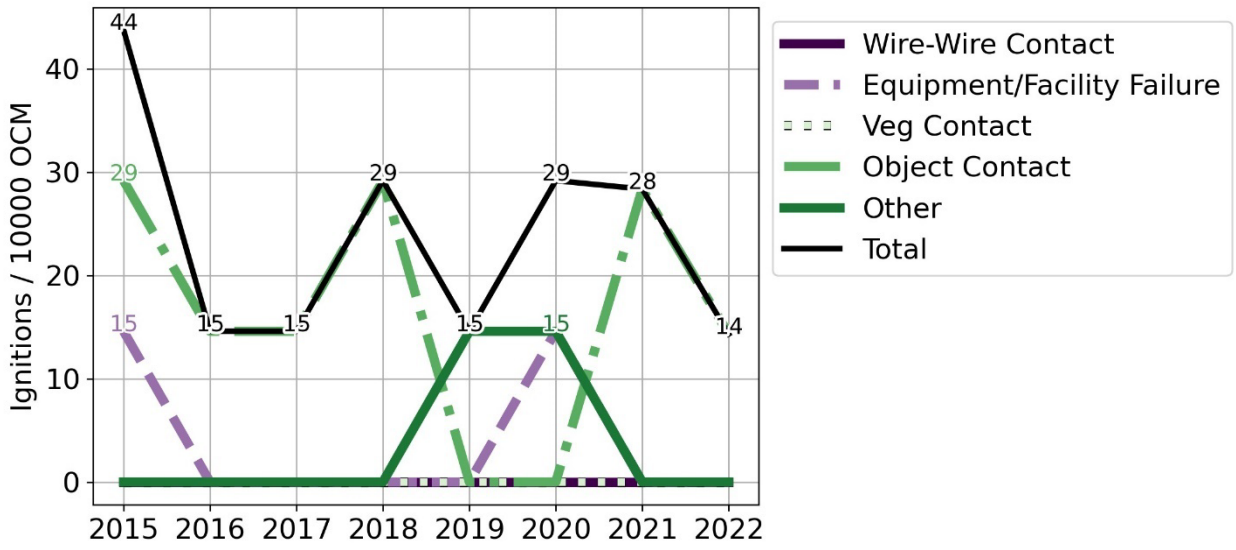
Figure 30: SDG&E Distribution Ignitions in HFTD Tier 2 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Transmission Ignitions Normalized by OCM in HFTD Tier 2 Delineated by Risk Driver:

Transmission ignitions in HFTD Tier 2 areas normalized by OCM show fluctuations year-to-year with object contacts being the most influential to the overall total trends (Figure 31).

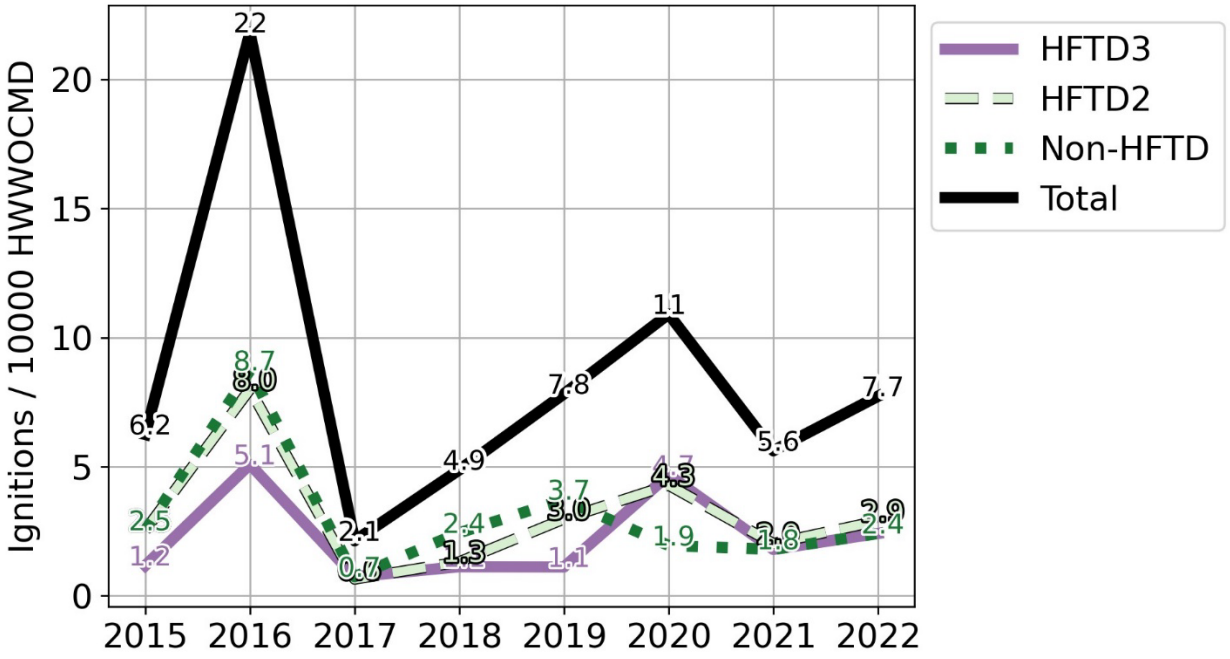
Figure 31: SDG&E Transmission Ignitions in HFTD Tier 2 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Ignitions Normalized by High Wind Warning Overhead Circuit Mile Days:

To account for year-by-year variations in weather, ignitions were normalized by HWWOCMD (Figure 32). The normalized ignition totals significantly increased in 2016 compared to 2015, followed by another significant decrease in 2017, and a general trend upward since 2017. No one HFTD tier appears to be the main driver of the normalized ignition totals.

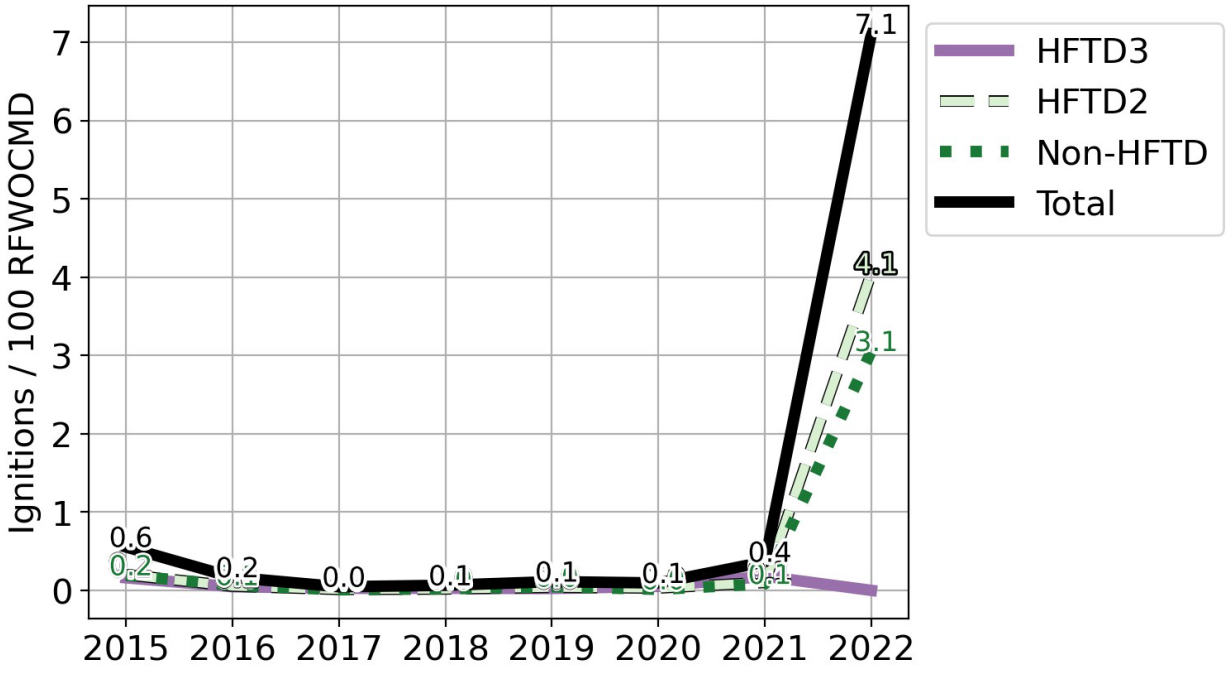
Figure 32: SDG&E Ignitions Normalized by HWWOCMD (2015-2022) Delineated by HFTD



Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days by HFTD Tiers:

The total number of ignitions normalized by RFWOCMD increased significantly from 2021 to 2022 (Figure 33). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw ignitions. Additionally, given that there were zero RFWOCMDs in the HFTD Tier 3 area in 2022, a value of zero was assumed for 2022 HFTD Tier 3 areas when normalizing by RFWOCMD.

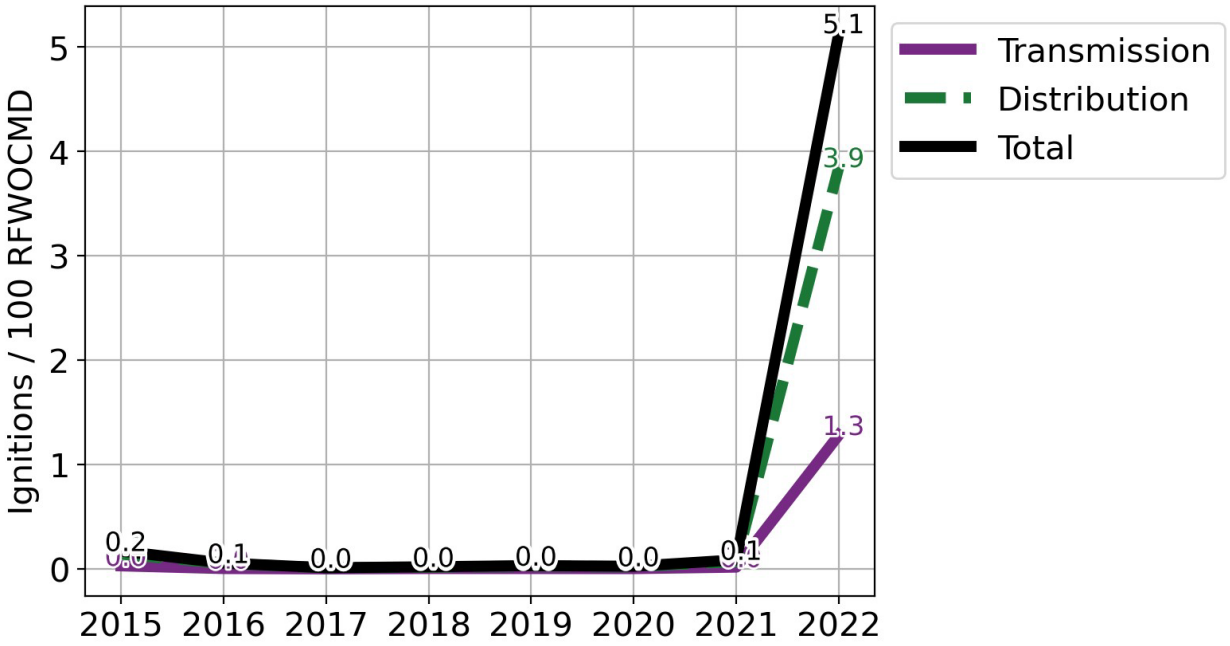
Figure 33: SDG&E Ignitions Normalized by RFWOCMD (2015-2022) by HFTD Tiers



Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days by Distribution and Transmission Lines:

Ignitions normalized by RFWOCMD by distribution and transmission lines show a significant increase from 2021 to 2022 (Figure 34). In 2022, the total number of RFWOCMDs was nearly zero, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw ignitions.

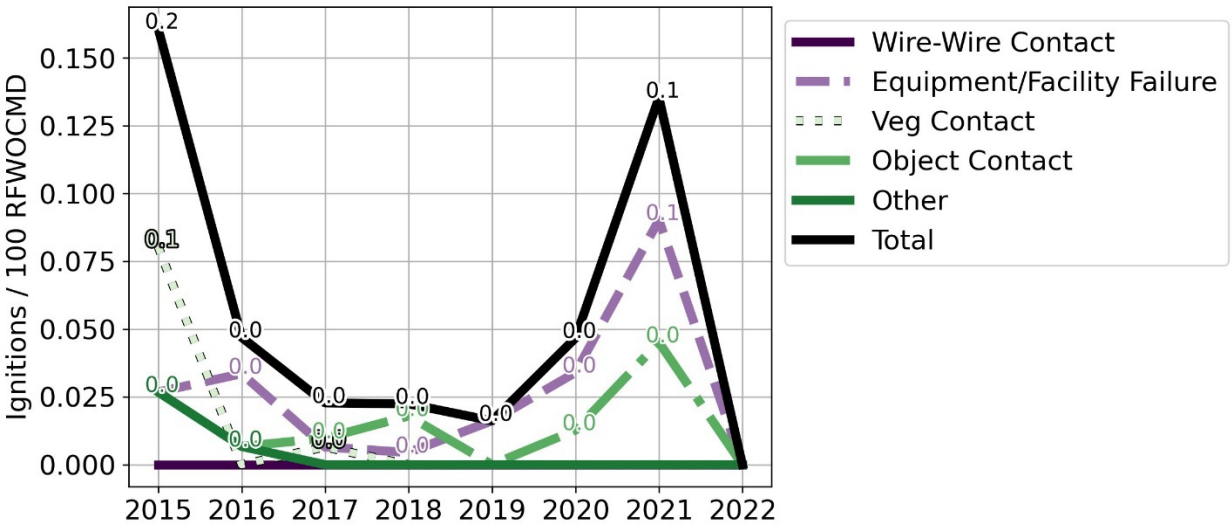
Figure 34: SDG&E Ignitions Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines



Distribution Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in HFTD Tier 3 Delineated by Risk Driver:

Distribution ignitions in HFTD Tier 3 areas normalized by RFWOCMD show an upward trend from 2019 to 2021 (Figure 35). Equipment or facility failures first and object contacts second are driving these trends. Given that there were zero RFWOCMDs in the HFTD Tier 3 area in 2022, a value of zero was assumed for ignitions in 2022 HFTD Tier 3 areas when normalizing by RFWOCMD.

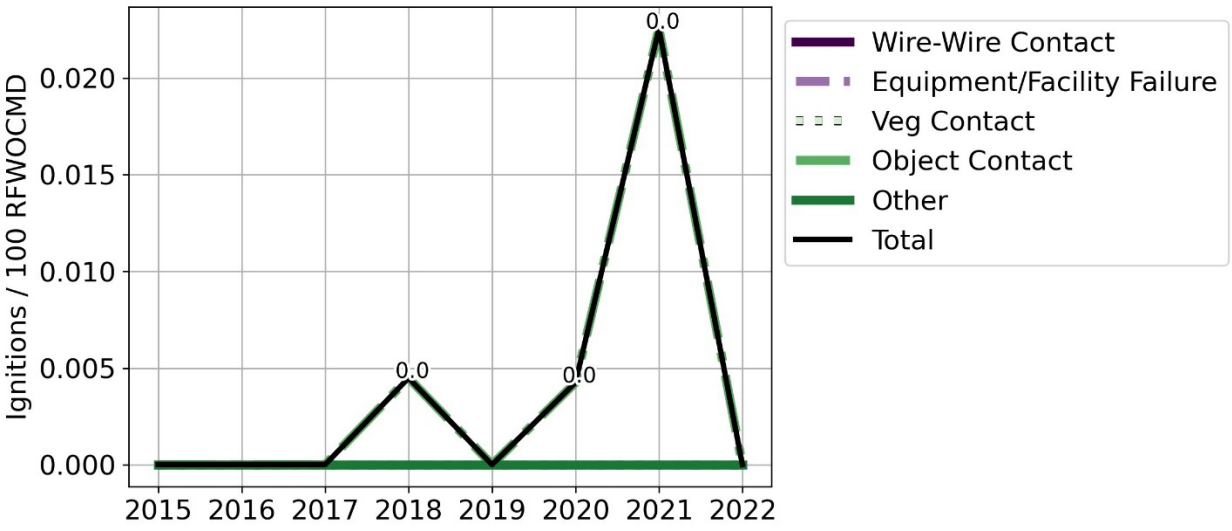
Figure 35: SDG&E Distribution Ignitions in HFTD Tier 3 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Transmission Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in HFTD Tier 3 Delineated by Risk Driver:

Transmission ignitions in HFTD Tier 3 areas normalized by RFWOCMD show an upward trend from 2019 to 2021 (Figure 36). There were no transmission ignitions in HFTD Tier 3 areas in 2022, hence the decrease in 2022 to zero for all risk drivers. Ignitions were driven by object contact and no other risk drivers during other years, thus the total yearly values equal the object contact values.

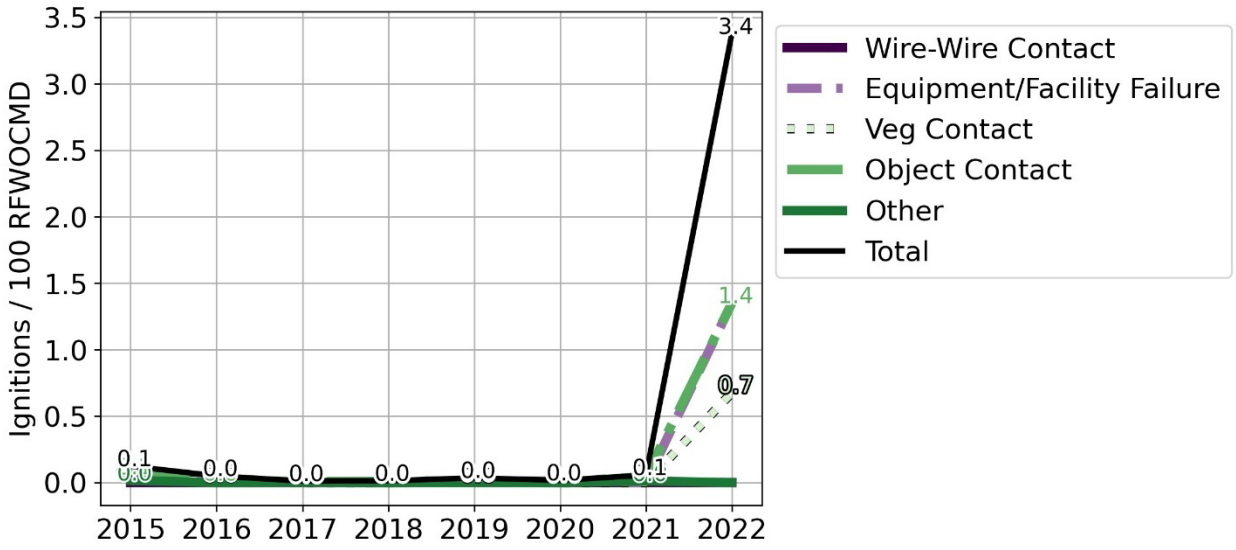
Figure 36: SDG&E Transmission Ignitions in HFTD Tier 3 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Distribution Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in HFTD Tier 2 Delineated by Risk Driver:

Distribution ignitions in HFTD Tier 2 areas normalized by RFWOCMD show an increase from 2021 to 2022 (Figure 37). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw ignitions.

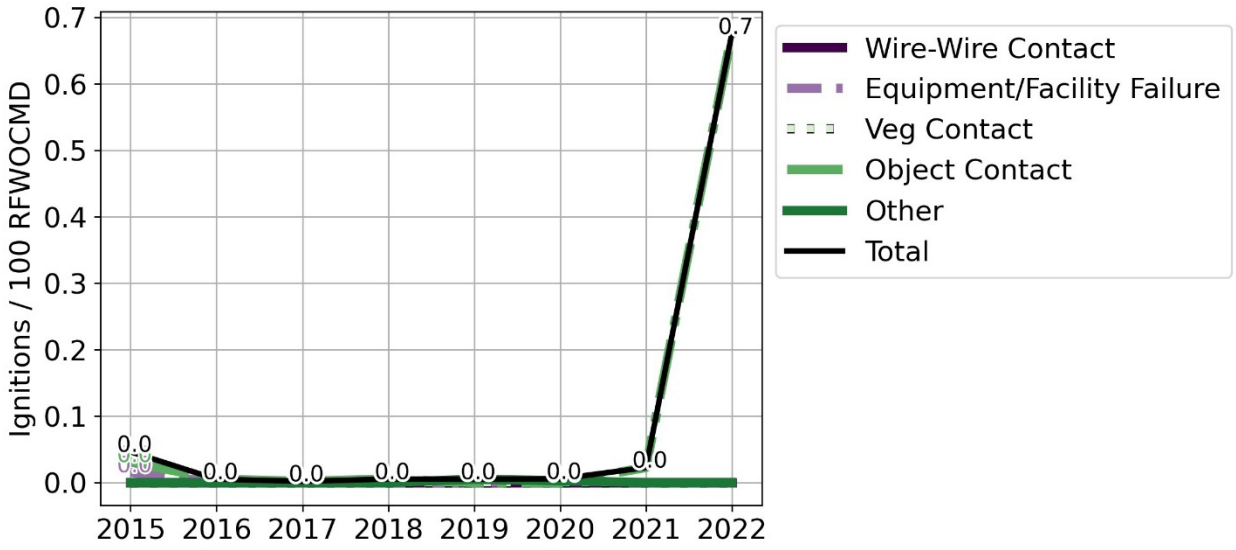
Figure 37: SDG&E Distribution Ignitions in HFTD Tier 2 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Transmission Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in HFTD Tier 2 Delineated by Risk Driver:

Transmission ignitions in HFTD Tier 2 areas normalized by RFWOCMD show an increase from 2021 to 2022 (Figure 38). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw ignitions.

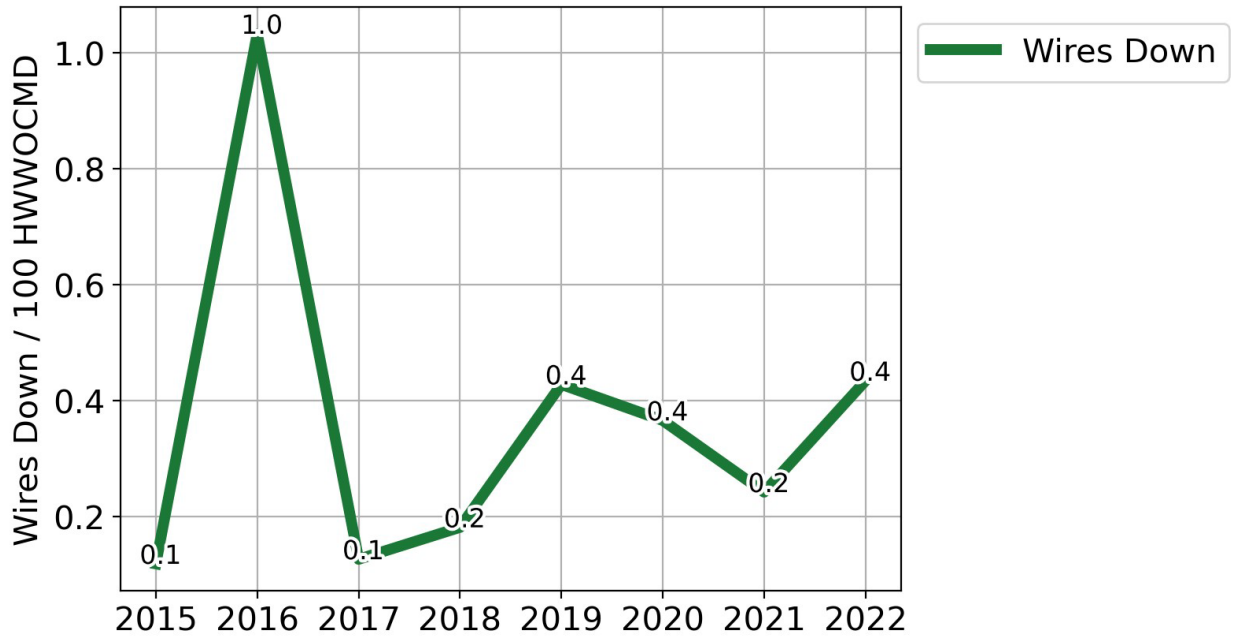
Figure 38: SDG&E Transmission Ignitions in HFTD Tier 2 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Wire Down Events Normalized by High Wind Warning Overhead Circuit Mile Days:

When accounting for weather conditions that typically cause downed wires, the number of wire down events normalized by HWWOCMD shows a general upward trend since 2015, including a large increase in 2016 (Figure 39).

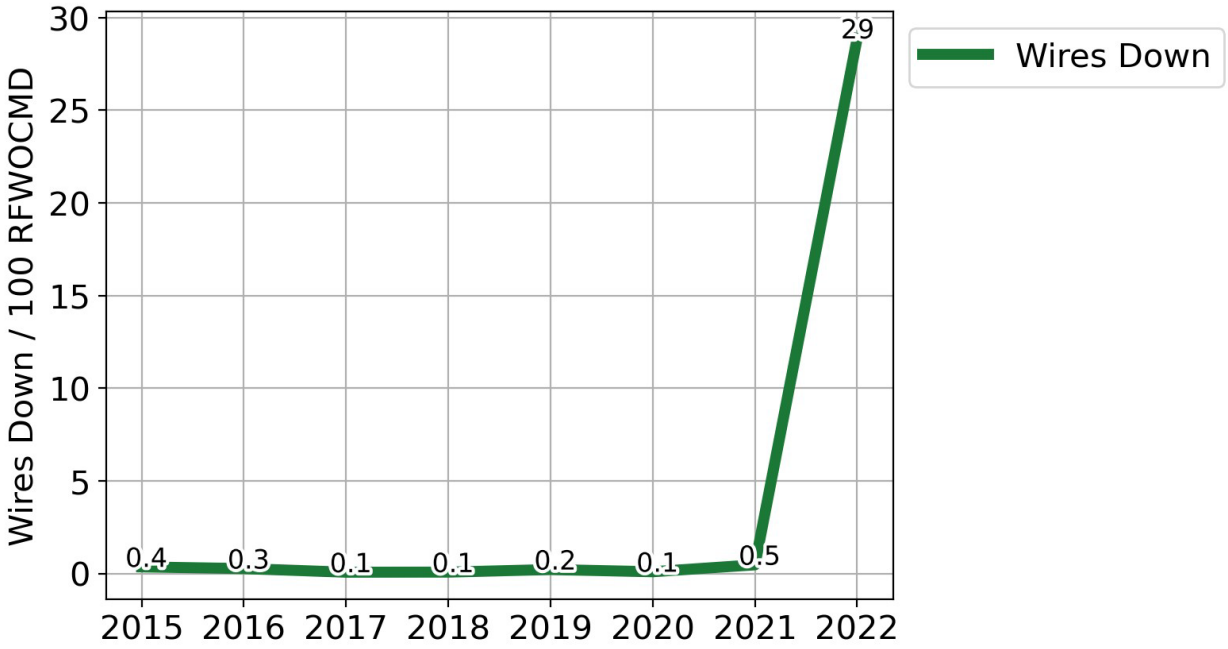
Figure 39: SDG&E Wire Down Events Normalized by HWWOCMD (2015-2022)



Wire Down Events Normalized by Red Flag Warning Overhead Circuit Mile Days:

Wire down events normalized by RFWOCMD increased significantly from 2021 to 2022 (Figure 40). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the raw number of wire down events.

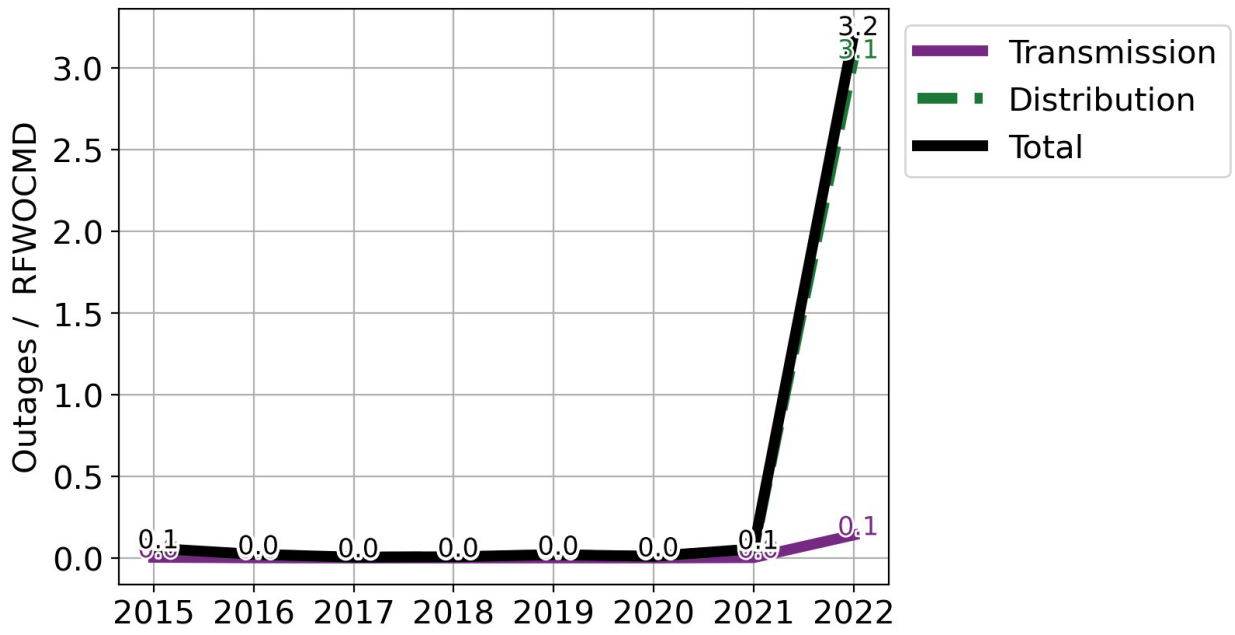
Figure 40: SDG&E Wire Down Events Normalized by RFWOCMD (2015 to 2022)



Outage Events Normalized by Red Flag Warning Overhead Circuit Mile Days:

Unplanned outage events normalized by RFWOCMD show a significant increase from 2021 to 2022 (Figure 41). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw outage events.

Figure 41: SDG&E Total Outages Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines



Outages Due to Vegetation Contact Normalized by Red Flag Warning Overhead Circuit Mile Days:

Unplanned outages due to vegetation contact normalized by RFWOCMD show a significant increase from 2021 to 2022 (Figure 42). In 2022, the number of RFWOCMDs was very low compared to other years, which results in a seemingly relatively large increase when the data are normalized due to dividing by a very small number. The increase does not indicate an increase in the number of raw outage events due to vegetation contact.

Figure 42: SDG&E Outages from Vegetation Contacts Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines