

San Diego Gas & Electric Company's
Quarterly Report on
2021 Wildfire Mitigation Plan for
Q1 2021

May 3, 2021



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I. Introduction

Pursuant to Ordering Paragraph (OP) 8 of California Public Utilities Commission (Commission or CPUC) Resolution WSD-002, San Diego Gas & Electric Company (SDG&E or Company) submits its Quarterly Report (QR or Report) on its 2020 Wildfire Mitigation Plan (WMP) for Q1 2021, covering completed work for January 1 through March 31, 2021.¹ A copy of this Report is being provided to the Director of the Commission's Wildfire Safety Division (WSD) and is being served to the California Department of Forestry and Fire Protection (CAL FIRE) and the service list of Rulemaking (R.) 18-10-007.

In this QR, SDG&E addresses the two Class B Deficiencies related to its 2020 WMP, which are applicable to all electric utilities – Condition Guidance-9: Insufficient Discussion of Pilot Programs, and Condition Guidance-10: Data Issues-General. SDG&E provides the information requested and describes the steps it has taken or is taking to comply with the Class B deficiencies that the WSD identified in Resolution WSD-002.

¹ Resolution WSD-002, Guidance Resolution on 2020 Wildfire Mitigation Plans Pursuant to Public Utilities Code Section 8386 (June 11, 2020) at p. 45-46, Ordering Paragraph 8.

A. Condition Guidance-9: Insufficient Discussion of Pilot Programs

In its quarterly report, each electrical corporation shall detail:

- i. all pilot programs or demonstrations identified in its WMP;*
- ii. status of the pilot, including where pilots have been initiated and whether the pilot is progressing toward broader adoption;*
- iii. results of the pilot, including quantitative performance metrics and quantitative risk reduction benefits;*
- iv. how the electrical corporation remedies ignitions or faults revealed during the pilot on a schedule that promptly mitigates the risk of such ignition or fault, and incorporates such mitigation into its operational practices; and*
- v. a proposal for how to expand use of the technology if it reduces ignition risk materially.*

In its 2020 WMP, SDG&E identified 11 pilot programs/demonstrations, including: Covered Conductor, Distribution Infrared Inspections, Expanded Generator Grant Program (now referred to as the Generator Assistance Program), Advanced Protection – Falling Conductor Protection, Strategic Undergrounding, Drone Assessment, Circuit Ownership, Vegetation Management LiDAR, Ignition Management, Fuels Management, and Vehicle Tracking. SDG&E provides the following information for each pilot as required by Condition Guidance 9. The following information builds upon the information provided in SDG&E’s WMP Quarterly Report, submitted on December 9, 2020,² and SDG&E’s 2021 WMP Update, submitted on February 5, 2021.³

Covered Conductor (WMP Section 5.3.3.3)

As discussed in the 2021 WMP Update, the pilot of SDG&E’s covered conductor project has concluded and SDG&E will pursue this as a full-fledged program going forward. Additional progress regarding the program is available in SDG&E’s Quarterly Initiative Update (QIU) for Q1 2021 submitted on May 3rd, 2021.

Distribution Infrared Inspections (WMP Section 5.3.4.4)

Status of Pilot: SDG&E completed 1,241 Infrared inspections of distribution equipment in Q1 of 2021. That is on target for the expected Q1 inspections, and SDG&E remains on target to have 6,000 inspections completed through Q2. Quantitative targets are being tracked in SDG&E’s QIU. These inspections are now being performed in the Tier 2 HFTD after piloting the technology in Tier 3 last year.

Results of Pilot: SDG&E remains in the early stages of the infrared program implementation on its distribution system, which enables identification of issues such as hot connections and other issues that cannot be detected with traditional visual inspections. SDG&E continues to track

² San Diego Gas & Electric Company’s Quarterly Report on 2020 Wildfire Mitigation Plan for Q4 2020 (December 9, 2020)

³ San Diego Gas & Electric Company’s 2020-2022 Wildfire Mitigation Plan Update (February 5, 2021)

findings per inspection figures and will utilize a model to estimate the effectiveness of these inspections relative to other inspection programs.

Remedy of Ignitions/Faults Revealed During Pilot: SDG&E's thermography team consists of individuals trained as linemen and electricians who evaluate the program's thermal results and structures. With their knowledge of the electrical system, thermography, and the results, the team can appropriately assess the potential risk for more accurate prioritization. The thermography team provides a report of their findings and prioritization to the distribution compliance team to include with their maintenance prioritization. In cases where larger potential concerns exist, a phone call directly to the responsible district will be made to provide an immediate assessment and repair when deemed necessary. This process ensures identified risks are appropriately prioritized.

Expanded Use of Technology: If the program proves successful, the timeline and resource allocation would be further evaluated to find the optimal inspection cycle and if specific locations require an alternate cycle.

Expanded Generator Grant Program (WMP Section 5.3.3.11.2)

As discussed in the 2021 WMP Update, the pilot of SDG&E's Expanded Generator Grant Program has concluded with the 2020 program now called "Generator Assistance Program" (GAP). The GAP program was designed to expand access to commercially available backup generation options to a wider customer audience in the HFTD's. The first year of the program tested the customer demand for traditional portable fuel generators as a means to enhance perceived and actual resilience to PSPS outages. The pilot results of the program far exceeded initial goals with 1,300 backup generators purchased through this rebate program during 2020. The overwhelming popularity of the program and customer feedback received during the year, especially during the peak PSPS event season in late 2020, led SDG&E to expand the backup technologies offered to include both cleaner Inverter Generator products, as well as Portable Power Stations for the 2021 program. SDG&E will pursue this as a full-fledged program with the GAP 2021 program which will re-launch to SDG&E customers in May 2021. Annual customer feedback surveys will continue to guide the mix of products offered for this program in future years as well as a new "Resiliency Audit" option for customers to self-assess their readiness and offer additional feedback on future offerings that can increase customer resilience in this expanded HFTD market focus. Additional progress regarding the program is available in SDG&E's Quarterly Initiative Update (QIU) for Q1 2021 submitted on May 3rd, 2021.

Advanced Protection – Falling Conductor Protection (WMP Section 5.3.3.2)

Status of Pilot: The Falling Conductor Protection (FCP) pilot is still in the stages of strategic deployment within Tier 3 of the HFTD under "test mode" operation. In this mode, the Advanced Protection devices utilized for FCP will operate as designed, identify potential broken conductor conditions, and send various tripping signals and alarms to their respective endpoints, without actually operating any devices. This test mode is specifically designed to

gauge the performance of this platform of broken wire detection without incurring any unnecessary negative impacts to reliability. In Q1 of 2021, two more circuits were enabled with FCP. SDG&E is on track to meet the goal of two circuits per quarter, for a total of eight circuits enabled in 2021. Quantitative targets are being tracked in SDG&E's QIU.

The Early Fault Detection project has completed the installation of sensors at 17 locations on a distribution circuit. Planned usage is to direct patrols or inspections when the sensors detect any anomalies. SDG&E will continue to investigate the technology to determine if it is appropriate for broader implementation.

Results of Pilot: FCP has been shown to operate correctly and sufficiently in both the lab and field commissioning environments. Currently, SDG&E is measuring performance by the amount of broken wire events that occur within the zone of protection of FCP circuits. If a broken conductor were to occur on a circuit operating in test mode, SDG&E would measure performance by the reaction of the Advanced Protection devices to that event, and whether the devices would have acted to isolate the event. To date, broken conductor events have not occurred in a FCP zone of protection, thus ultimate field performance measurements have not yet been realized.

Remedy of Ignitions/Faults Revealed During Pilot: SDG&E will use the data it receives from FCP broken conductor events to perform incident reviews, as it currently does with other protection operations throughout the system. The event record data produced by Advanced Protection devices will assist SDG&E subject matter experts in performing detailed event analysis to make recommendations to the various SDG&E planning, design, and construction organizations in situations where material improvements can be made outside of the protection scheme operation.

Expanded Use of Technology: SDG&E will continue to expand this technology throughout its service territory with a focus on areas prone to wildfire. SDG&E is planning to deploy this technology in the HFTD Tier 3 by 2026. Once that is complete, SDG&E plans to deploy the technology within the HFTD Tier 2.

Strategic Undergrounding (WMP Section 5.3.3.16)

As discussed in the 2021 WMP Update, the pilot of SDG&E's Strategic Undergrounding program has concluded, and SDG&E will pursue this as a full-fledged program going forward. Additional progress regarding the program is available in SDG&E's Quarterly Initiative Update (QIU) for Q1 2021 submitted on May 3rd, 2021.

Drone Distribution Assessment (WMP Section 5.3.4.9.2)

Status of Pilot: The drone distribution assessment pilot program has flown and assessed 37,310 structures of the nearly 40,000 overhead distribution structures within the HFTD Tier 3. No structures have yet been flown in Q1 2021 because the program was performing drone

inspections of transmission structures in Q1. The program is still on track to perform 22,000 inspections through year end 2021. Quantitative targets are being tracked in SDG&E's QIU.

Results of Pilot: Through 2020, SDG&E estimated a reduction of 0.804 ignitions in Tier 3 where the inspections were performed. SDG&E will continue into Tier 2 of the HFTD with future inspections and evaluate the performance and estimated reduction of ignitions in Tier 2 in future years.

Remedy of Ignitions/Faults Revealed During Pilot: Issues identified by drone assessments are categorized as either emergency (0-3 days) or priority/non-critical (30 days to 1 year) and are remediated within those time frames.

Expanded Use of Technology: Based on the findings described in the table above, SDG&E plans on continuing this drone program beyond the pilot phase. At this point, SDG&E plans to expand the drone program to complete the Tier 2 of the HFTD in the next two years, as well as the portions of its transmission system within the HFTD. SDG&E is planning for a five-year cycle for the drone program once all initial inspections are completed in the HFTD.

Circuit Ownership (WMP Section 5.3.4.9.3)

As discussed in the 2021 WMP Update, the pilot of SDG&E's Circuit Ownership project has concluded, and SDG&E will pursue this as a full-fledged program going forward. Additional progress regarding the program is available in SDG&E's Quarterly Initiative Update (QIU) for Q1 2021 submitted on May 3rd, 2021.

Vegetation Management LiDAR (WMP Section 5.3.5.7)

Status of Pilot: SDG&E plans to continue researching LiDAR as a tool for post-trim auditing and change detection in trees and equipment throughout 2021. SDG&E is in the process of finalizing a bid package to perform LiDAR flights and data processing in 2021. SDG&E will work with the selected vendor to generate a timeframe for the data capture and processing. Additional data processing will be performed in HFTD areas at risk of possible vegetation contact to check for any potential clearance issues. Qualitative targets for this program are tracked in SDG&E's QIU.

Results of Pilot: SDG&E recently received the calculated clearance results of the LiDAR analysis on the Palomar pilot, which identified some tree-to-line clearances that required validation for minimum clearance compliance. In October of 2020, SDG&E Certified Arborists visited the field to review the analysis and validate the LiDAR findings. The field validation found that most vegetation clearance issues identified via the LiDAR analysis were accurately reported. Some of the LiDAR findings initially thought to identify non-compliant conditions were associated with secondary voltage lines, where there are no minimum clearance requirements. With this new information, SDG&E is working to refine the LiDAR analysis techniques to better distinguish between primary and secondary lines to apply applicable corresponding clearance requirements.

Remedy of Ignitions/Faults Revealed During Pilot: No clearance violations or immediate trim needs were identified as part of this pilot. As previously discussed, the clearances of less than four feet were on covered secondaries and services (low voltage lines), where there are no minimum clearance requirements. If clearance issues were identified, they would be resolved per the normal vegetation inspection and follow up trim process.

Expanded Use of Technology: SDG&E utilizes LiDAR for transmission and distribution design as a core part of the design process. Based on the current progress of this pilot, SDG&E is seeing potential use cases as a QA/QC tool for vegetation management inspections.

Ignition Management Program (WMP Section 5.3.7.4.1)

Status of Pilot: SDG&E's Ignition Management Program (IMP) is managed by a Fire Ignition Management Program Coordinator. The purpose of this pilot program is to identify areas of improvement to reduce the risk and occurrence of fire ignitions. The IMP has identified databases throughout the Company, and it is working to consolidate the information into a single source. The information will be utilized to conduct analytics and identify modes of failure as well as potential mitigation owners. In addition, the IMP follows up on all reported ignitions and equipment failures to conduct an analysis to determine the cause of each ignition. The IMP team works closely with SDG&E engineering subject matter experts (SMEs) by providing site analysis data to support equipment failure analysis. This data is used in conjunction with the data collected from other internal stakeholders for use in determining failure modes and future analytics. In Q1 2021, SDG&E continued to refine process documents and connect mitigation owners with data repositories. The program also followed up on evidence of heat reports and continued to work through the process of refining the procedures for data gathering. Qualitative targets for this program are tracked in SDG&E's QIU.

Results of Pilot: The program continues to progress toward broader adoption and is based on the data gathering process that has been put in place and continues to be refined. Data, along with the events initiating the data, are being documented and filtered through the program and the program manager. The program has documented and followed-up on 197 reports with findings being communicated to the appropriate SME.

Remedy of Ignitions/Faults Revealed During Pilot: The process is constantly being refined, and the program has established the initial path for analysis to be communicated to ignition mitigation owners. SDG&E plans to integrate the findings of the program into its decision-making process for WMP risk reduction and hardening initiatives.

Expanded Use of Technology: When ignitions or near ignitions have been identified through the IMP processes, SDG&E's Electric Engineering SME failure analysis team is notified, and a systematic analysis is conducted to determine the cause of the failure. When the cause of the failure is determined, the mode of failure is tracked for trends and reported to the mitigation owner to remedy the failure. The IMP is building a process to analyze failures that will include a Failure Mode Effect Criticality Analysis to further analyze data collected in the IMP process.

Fuels Management (WMP Section 5.3.5.5)

Status of Pilot: SDG&E's Fuels Management program consists of three activities: Fuels Treatment, Vegetation Abatement, and Fuels Reduction Grants. Fuels Treatment's quantitative targets are tracked in SDG&E's QIU. The pilot portion of SDG&E's Fuels Management program is the Fuels Reduction Grants activity. For this activity, SDG&E continues to conduct in-person audits of the award recipients and completed audits of all grants issued in 2020. SDG&E is currently working to award future grants that will run through 2021.

Results of Pilot: Success of this pilot is measured based on the completion of the projects associated with the award recipients. Additionally, SDG&E is establishing a selection process based on scoring criteria. This project has strengthened the fire defense of the service territory and has made the pilot successful thus far.

Remedy of Ignitions/Faults Revealed During Pilot: This program is a partnership with the community designed to reduce the consequence of ignitions. Additionally, the program increases the resiliency of the areas where work is performed by reducing the impact to the utility infrastructure and the surrounding communities.

Expanded Use of Technology: After fuels reduction work is completed, the program is gathering imagery and supplemental information to support future decision making. Analysis of this data will focus on areas impacted by significant wind events and PSPS. The analysis will overlay areas where electric facilities, fuels, and topography have a direct association to fire ignition potential and growth, with an aim to enhance community protection.

Vehicle Tracking (WMP Section 5.3.9.4.7)

As discussed in the 2021 WMP Update, the pilot of SDG&E's Vehicle Tracking project has concluded, and SDG&E will pursue this as a full-fledged program going forward. Additional progress regarding the program is available in SDG&E's 2021 WMP Update submitted on February 5, 2021.

B. Condition Guidance-10: Data Issues - General

Electrical corporations shall ensure that all future data submissions to the WSD adhere to the forthcoming data taxonomy and schema currently being developed by the WSD. Additionally, each electrical corporation shall file a quarterly report detailing:

- i. locations where grid hardening, vegetation management, and asset inspections were completed over the prior reporting period, clearly identifying each initiative and supported with GIS data,*
- ii. the type of hardening, vegetation management and asset inspection work done, and the number of circuit miles covered, supported with GIS data*
- iii. the analysis that led it to target that specific area and hardening, vegetation management or asset inspection initiative, and*
- iv. hardening, vegetation management, and asset inspection work scheduled for the following reporting period, with the detail in (i) – (iii).*

SDG&E continues to support the WSD's desire to develop and require a consistent data taxonomy and schema for all electric utilities to use for WMP data submissions. Through the Quarterly Data Report (QDR) SDG&E is providing both spatial and non-spatial data to comply with this condition. SDG&E's Q1 2021 QDR will be filed on May 3rd, 2021.