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

To: Stakeholders for San Diego Gas and Electric's 2020 Annual Report on Compliance

November 23, 2022

Enclosed is the Draft 2020 Annual Report on Compliance (ARC) for San Diego Gas and Electric's (SDG&E) 2020 Wildfire Mitigation Plan (WMP).

On November 23, 2022, this draft ARC is hereby published for public review and comment. Opening comments must be submitted no later than December 13, 2022. Reply must be submitted no later than December 23, 2022.[1]

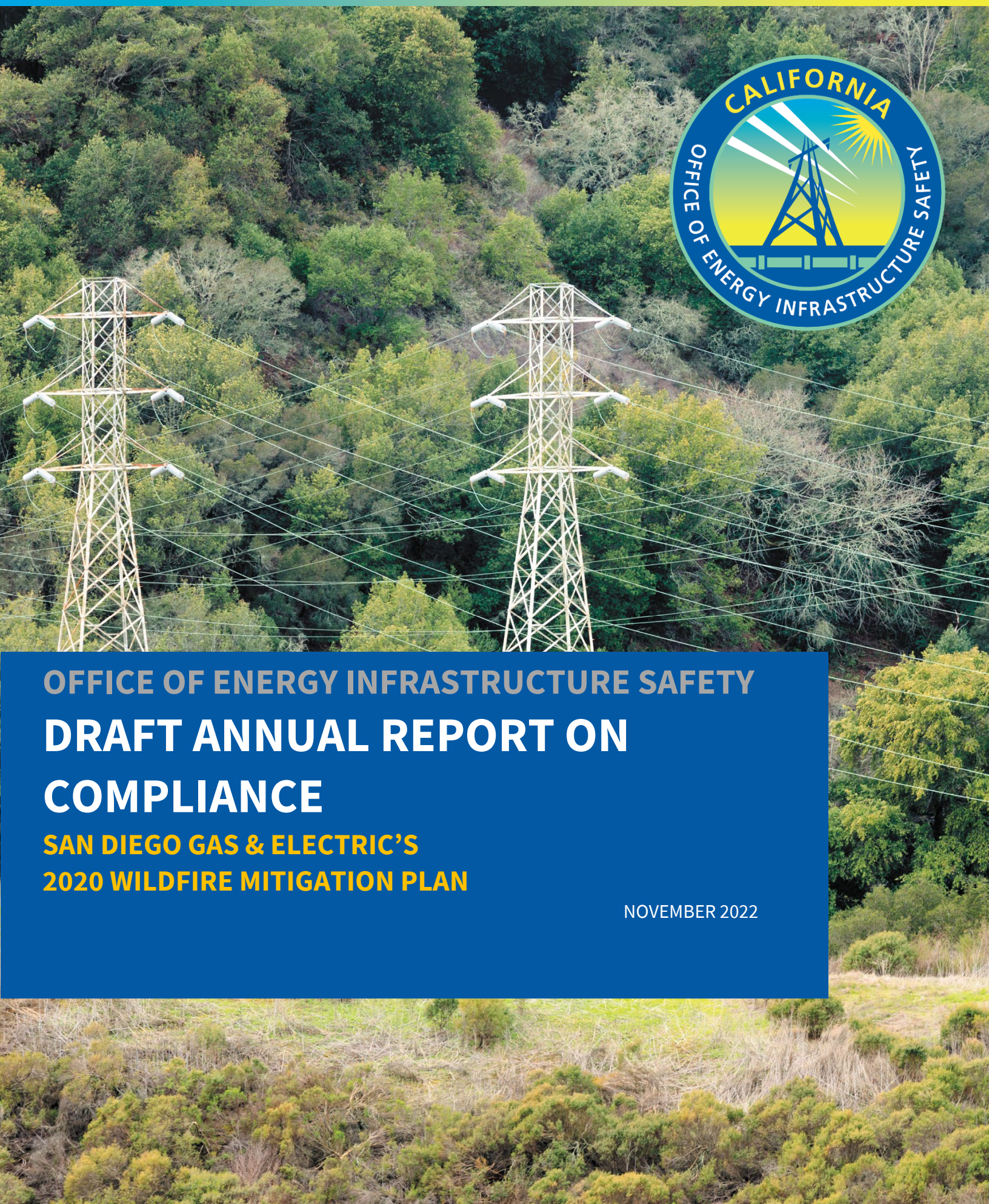
Comments must be submitted to Energy Safety's e-filing system in the 2020 ARC docket (#2020-ARC).[2]

Sincerely,

Koko Tomassian
Program Manager, Compliance Assurance Division
Office of Energy Infrastructure Safety
California Natural Resource Agency

[1] Dates falling on a Saturday or holiday as defined in Government Code Section 6700 have been adjusted to the next business day in accordance with Government Code Section 6707.

[2] Submit comments to the 2020-ARC docket via the Energy Safety e-filing system here: https://efiling.energysafety.ca.gov/EFiling/DocketInformation.aspx?docketnumber=2020-ARC (accessed November 23, 2022).



OFFICE OF ENERGY INFRASTRUCTURE SAFETY

DRAFT ANNUAL REPORT ON COMPLIANCE

SAN DIEGO GAS & ELECTRIC'S 2020 WILDFIRE MITIGATION PLAN

NOVEMBER 2022

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The Office of Energy Infrastructure Safety (Energy Safety) is tasked with evaluating and either approving or denying Wildfire Mitigation Plans (WMP) 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 plans.

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. Therefore, as detailed in the Compliance Framework set forth in this Annual Report on Compliance (ARC), Energy Safety's evaluation of San Diego Gas & Electric's (SDG&E) performance to its 2020 WMP went beyond a "check-box" exercise of looking at whether SDG&E met its initiative targets and instead wholistically evaluated whether SDG&E's performance in 2020 reduced the risk of SDG&E equipment igniting a catastrophic wildfire.

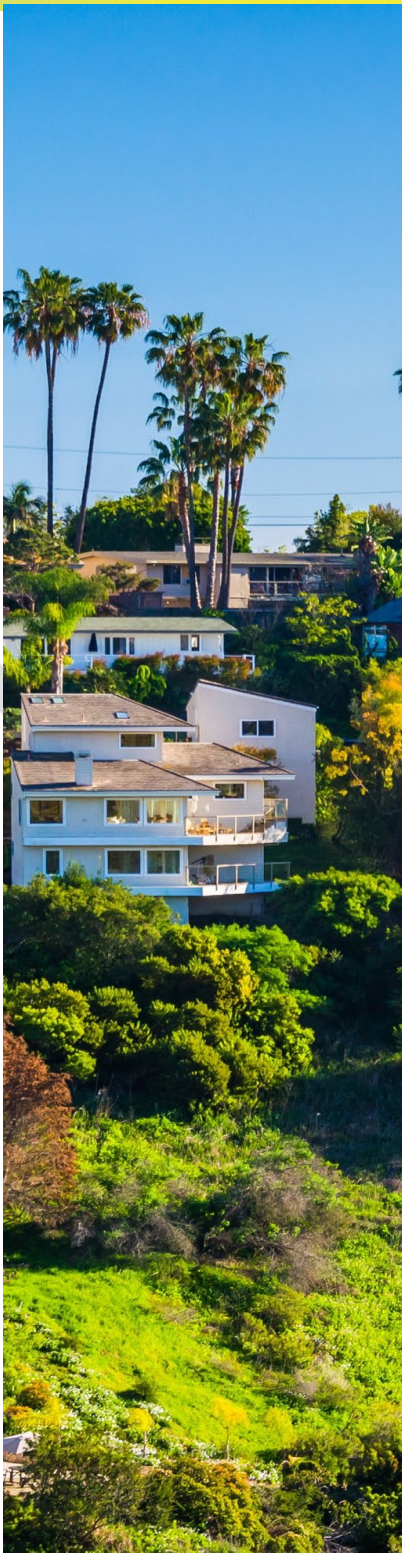
Energy Safety's compliance review process is conducted through a variety of means including audits, field inspections, and analysis of data submitted by SDG&E to Energy Safety. Substantial compliance with a WMP includes meeting not only its program targets and plan objectives, but also reducing risk. As such, Energy Safety also evaluated several performance metrics, including ignition and Public Safety Power Shutoff (PSPS) risk, as well as metrics that reveal the risk on the system from unresolved conditions discovered during SDG&E's inspections of its infrastructure. Energy Safety also performed an analysis that compared SDG&E's performance during the 2020 WMP compliance period to trends and performance from previous years.[1] Finally, Energy Safety reviewed SDG&E's self-assessment in its Electrical Corporation Annual Report on Compliance (EC ARC) and the findings of its independent evaluator.

After considering all the sources of information before it, Energy Safety finds that SDG&E substantially complied with its 2020 WMP during the compliance period, January 1 to December 31, 2020.

Overall, Energy Safety finds that SDG&E completed the vast majority (95%) of its key 2020 WMP initiatives, including nine out of the top 10 initiatives with the most allocated spend, and that the impacts of its failures did not materially hinder SDG&E's ability to mitigate its wildfire risk.

When compared to five-year averages from 2015 through 2019, SDG&E's normalized wire down events, unplanned outages, and vegetation-caused outages decreased notably across

[1] Energy Safety looked at previous year performances dating back to 2015, where available and reported in SDG&E's data submissions, or any year thereafter for which data was available and reported.



both its transmission and distribution infrastructure. Energy Safety also finds that SDG&E took action to resolve and remedy conditions identified on its system in a timely manner.

However, SDG&E did experience a concerning increase of ignitions in Tier 3 HFTD areas on its distribution infrastructure in 2020 and an increase in normalized wire down events on its transmission infrastructure. In addition, while the normalized scope and frequency of PSPS events decreased from 2019 to 2020, Energy Safety's analysis of PSPS data show that those PSPS events were longer, impacted more customers, and had increased impacts on critical infrastructure. Finally, as shown in Section 5.5.1.1, when analyzing SDG&E's hardening work relative to the circuit risk scores provided by SDG&E, Energy Safety finds SDG&E conducted over 90% of its hardening work reviewed in the bottom quintile of risk. However, considering the extensive system hardening that SDG&E has been able to complete since it began wildfire mitigation efforts following its 2007 wildfires, Energy Safety finds that additional analysis is required to determine whether SDG&E is effectively prioritizing the deployment of its mitigation efforts in areas of highest risk.

Taken together, the metrics above paint a nuanced picture and underscore why Energy Safety must rely on a broader dataset than one year to determine the effectiveness of wildfire mitigations. Energy Safety acknowledges that SDG&E undertook significant efforts to reduce its wildfire risk, and in many instances, SDG&E achieved its objectives and targets.

On balance, SDG&E was largely successful in executing an actionable and adaptive 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.

2.0 INTRODUCTION

This Annual Report on Compliance (ARC) presents the Office of Energy Infrastructure Safety's (Energy Safety's) statutorily mandated assessment of SDG&E's compliance with its 2020 Wildfire Mitigation Plan (WMP).[2] Mitigation of wildfire risk is a highly dynamic and circumstantial endeavor that varies as a function of climate, weather, topography, and fuel conditions. The factors impacting catastrophic wildfire risk vary both

[2] Pub. Util. Code, § 8386.3(c).

temporally and geographically. Just as the mitigations to address an electrical corporation's wildfire risk are specifically unique to the dynamics of its territory, location, infrastructure, and various other temporal factors, Energy Safety's assessment of compliance with WMPs is equally tailored to the electrical corporation's unique scenario and circumstances.

San Diego Gas & Electric (SDG&E) submitted its 2020 WMP on February 7, 2020. Energy Safety reviewed the plan and issued a conditional approval on June 10, 2020.

2.1 Background

In 2019, following the devastating wildfires in 2017 and 2018, the California Legislature passed several bills increasing regulatory supervision of electrical corporations' efforts to reduce utility-related wildfires. Assembly Bill (AB) 1054 and AB 111 created Energy Safety and tasked it with reviewing WMPs submitted annually by electrical corporations and ensuring compliance with those plans.[3] Energy Safety's primary objective is to ensure that electrical corporations reduce wildfire risk and comply with energy infrastructure safety measures.[4]

2.2 Legal Authority

Energy Safety is responsible for overseeing compliance with electrical corporations' WMPs.[5] Energy Safety has broad authority to obtain and review information and data and to inspect property, records, and equipment of every electrical corporation in furtherance of its duties, powers, and responsibilities.[6] In addition to performing an overall assessment of compliance[7] with the WMP, Energy Safety audits each electrical corporation's vegetation management work for compliance with WMP requirements[8] and performs other reviews and audits. Energy Safety may rely upon metrics[9] to evaluate WMP Compliance, including performance metrics adopted by the California Public Utilities Commission (CPUC).[10] Annually, in consultation with Energy Safety, the CPUC adopts a wildfire mitigation plan compliance process.[11] The CPUC adopted the 2020 Compliance Process via Resolution WSD-012 on November 23, 2020.[12]

---

[3] The legislation which created Energy Safety mandated that the office be formed on January 1, 2020, as the Wildfire Safety Division (WSD) of the California Public Utilities Commission (CPUC) and transition to Energy Safety under the California Natural Resources Agency (CNRA) on July 1, 2021 – 18 months after being formed.
[4] Gov. Code, § 15475.1.
[5] Pub. Util. Code, § 8386.3(c).
[6] Gov. Code, § 15475.
[7] Pub. Util. Code § 8386.3(c)(4).
[8] Pub. Util. Code § 8386.3(c)(5)(A).
[9] Pub. Util. Code §§ 326(a)(2), 8389(b)(1)
[10] Pub. Util. Code § 8389(d)(4).
[11] Pub. Util. Code § 8389(d)(3).
[12] https://energysafety.ca.gov/wp-content/uploads/docs/compliance-process/20201008-compliance-staff-proposal_final.pdf

2.3 Annual Compliance Process Cadence

Pursuant to Public Utilities Code section 8385(a)(1), a "compliance period" means a period of approximately one year. In its Compliance Operational Protocols issued on February 16, 2021, Energy Safety defined the compliance period for 2020-2022 WMPs as January 1 to December 31 for each calendar year of the three-year WMP.[13]

Public Utilities Code section 326(a)(3) instructs that Energy Safety utilize visual inspection of electrical corporation infrastructure and wildfire mitigation programs as a means of assessing WMP compliance. Furthermore, Public Utilities Code section 8386.3(c) outlines the baseline statutory framework for assessing WMP compliance through a series of audits, reviews, and assessments performed by Energy Safety, independent evaluators, and the electrical corporations themselves. The statutory framework also lays out a defined timeframe for several of the compliance assessment components as follows:

- Three months after the end of an electrical corporation's compliance period, each electrical corporation must submit a report addressing the electrical corporation's compliance with the plan during the prior calendar year.[14] Pursuant to this requirement, SDG&E submitted its Electrical Corporation Annual Report on Compliance (EC ARC) for its 2020 WMP on March 31, 2021.
- Six months after the end of an electrical corporation's compliance period, an independent evaluator must submit an Independent Evaluator Annual Report on Compliance (IE ARC). The independent evaluators are engaged by each electrical corporation to review and assess the electrical corporation's compliance with its plan for the prior year. As a part of this report, the independent evaluator must determine whether the electrical corporation failed to fund any activities included in its plan.[15] SDG&E selected 4LEAF/AERIALZEUS as its independent evaluator for compliance with the 2020 WMP. 4LEAF issued its IE ARC for SDG&E 2020 WMP on July 1, 2021.
- In parallel with the above assessments, Energy Safety audits vegetation management activities. The results of the audit must specify any failure of the electrical corporation to fully comply with the vegetation management requirements in the wildfire mitigation plan. Energy Safety then grants the electrical corporation a reasonable amount of time to correct and eliminate

[13] https://efiling.energysafety.ca.gov/Search.aspx?docket=2021-OPS_GUIDELINES
[14] Pub. Util. Code, § 8386.3(c)(1).
[15] Pub. Util. Code, § 8386.3(c)(2)(B)(i).

any deficiency specified in the audit.[16] Subsequently, Energy Safety issues a report describing any failure of the electrical corporation to substantially comply with the substantial portion of the vegetation management requirements in the electrical corporation's WMP.[17]

- Eighteen months after the electrical corporation submits its compliance report pursuant to section 8386.3(c)(1), or twenty-one months after the end of the compliance period, Energy Safety completes its annual compliance review to determine whether the electrical corporation substantially complied with its WMP.[18] Energy Safety memorializes its conclusions in this ARC.

3.0 ARC COMPLIANCE FRAMEWORK

Public Utilities Code prescribes that the overarching intended 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.[19] The statutory 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. If the risk of catastrophic wildfire is not reduced, an electrical corporation has not satisfied the objective of its WMP. Therefore, Energy Safety's compliance evaluation of the 2020 WMPs went beyond an assessment of whether an electrical corporation met all stated targets (e.g. number of miles of covered conductor installed) to also examine whether the electrical corporation has reduced the risk of catastrophic wildfires. Energy Safety also evaluated whether there were systemic issues that hindered the electrical corporation's ability to meet targets and reduce wildfire risk.

Energy Safety's compliance evaluation examined the totality of data and findings before the department and applied rigorous analysis to determine whether an electrical corporation substantially complied with its WMP.

Energy Safety conducted its compliance assessment to answer the following questions:

1. Did the electrical corporation implement its WMP through completion of approved initiatives (i.e., did the electrical corporation meet its stated qualitative and quantitative targets)?

---

[16] Pub. Util. Code, § 8386.3(c)(5)(C).
[17] Id.
[18] Pub. Util. Code, § 8386.3(c)(4); CPUC Resolution WSD-012 2020 WMP Compliance Process. November 2020. https://energysafety.ca.gov/wp-content/uploads/docs/compliance-process/20201008-compliance-staff-proposal_final.pdf.
[19] Pub. Util. Code, § 8386(a).

2. Did the electrical corporation achieve the stated objectives set forth in its 2020 WMP (see Section 4.2)?
3. Was the electrical corporation's performance consistent with achieving wildfire risk reduction?

3.1 Completion of Approved WMP Initiatives

To assess compliance with approved WMP initiatives, Energy Safety evaluated whether the electrical corporation met all stated quantitative and qualitative targets set by the Electrical Corporation in its plan. Energy Safety particularly focused on those initiatives directly associated with the achievement of WMP objectives as well as those that constituted a significant portion of financial expenditures by the electrical corporation as the expenditures demonstrated where the electrical corporation focused most of its resources to reduce wildfire risk. For 2020 only, Energy Safety also assessed whether the electrical corporation satisfied the conditions placed upon it through Energy Safety's conditional 2020 WMP approval (see Section 4.1).

Where an electrical corporation failed to meet a stated target, Energy Safety evaluated the rationale provided by the electrical corporation, if any, for such failure. Energy Safety also looked for systemic issues that may have caused underperformance, e.g., conflicting/inconsistent documentation, poor communication practices, or substandard quality control practices (see Section 3.3).

Finally, Energy Safety evaluated the quality of WMP initiative implementation. Even where an electrical corporation met a target for work volume, to comply with a WMP and ensure reduction of risk, the work must be completed correctly and in an effective, high-quality manner.

3.2 2020 WMP Objectives

To assess whether an electrical corporation achieved its 2020 WMP objectives, Energy Safety relied upon the information sources set forth in Section 3.4 below. Where an electrical corporation failed to meet a stated objective, Energy Safety evaluated the rationale, if any, provided by the electrical corporation. Energy Safety also looked for systemic issues that may have caused underperformance (see Section 3.3).

3.3 Achieving Wildfire Risk Reduction

The 2020 WMP is the base year in the first three-year WMP cycle (2020-2022). As such, Energy Safety was limited in making direct determinations on the effectiveness of the 2020 WMP in

reducing wildfire risk in that same year as the benefits of some actions may take time to come to fruition. Energy Safety conducted a trend analysis on several outcome metrics (e.g., ignitions) from 2015-2020, normalized for weather and fuel conditions, to assess prior performance and to track any notable changes that occurred in 2020. Energy Safety will again evaluate these metrics at the end of the three-year WMP cycle to evaluate correlations between WMP implementation performance and outcomes.

Energy Safety further analyzed how the electrical corporation prioritized implementation of WMP initiatives to determine whether work was undertaken in the areas of highest risk. Not all areas in an electrical corporation's service territory present equal ignition risk or consequence. Therefore, it is not enough to meet a target; WMP initiatives must first be concentrated and deployed in the areas of highest risk to reduce as much risk as possible.

Finally, Energy Safety undertook a holistic evaluation of all relevant information sources and assessments, including field verifications, to bring to light systemic failings of the electrical corporation that may hinder its ability to reduce catastrophic wildfires. Such failings could contribute to increased risk on the system even if WMP targets are achieved. Therefore, Energy Safety looked for trends across analyses to weave together a deeper and more nuanced understanding of WMP compliance.

3.4 Information Sources Used for ARC Analysis

Energy Safety relied upon the following sources of information to conduct its analysis:

- Information provided by the electrical corporation i.e., the EC ARC, Quarterly Initiative Updates, compliance self-reporting.
- Information provided by the independent evaluator's review of the electrical corporation's compliance with its 2020 WMP (IE ARC).
- Findings from Energy Safety field inspections.
- Findings from Energy Safety's audits and assessments of the electrical corporation.
- Data submitted to Energy Safety by the electrical corporation[20] including responses to data requests.

3.4.1 EC ARC

Three months after the end of the compliance period, the electrical corporation must submit a report to Energy Safety addressing its compliance with its approved 2020 WMP.[21] The

[20] Energy Safety receives data from the electrical corporation through three main paths: Quarterly Advice Letter submissions, Quarterly Data Request submissions, and Quarterly Initiative Updates.
[21] Pub. Util. Code, § 8386.3(c)(1).

Compliance Operational Protocols outline the minimum requirements and structure for SDG&E's 2020 WMP compliance review report.[22] The report must include:

- An assessment of whether the electrical corporation achieved the risk reduction intent by implementing all their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities. If the electrical corporation failed to achieve the intended risk reduction, Energy Safety required the electrical corporation to provide a detailed explanation of why and a reference to where associated corrective actions were incorporated into their most recently submitted WMP.
- A full and complete listing of all change orders[23] and any other operational changes, such as initiative location changes, made to WMP initiatives, with an explanation of why the changes were necessary, and an assessment of whether the changes achieved the same risk reduction intent.
- Descriptions of all planned WMP initiative spend vs. actual WMP initiative spend and an explanation of any differentials between the planned and actual spends.
- A description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a Public Safety Power Shutoff (PSPS) event and/or reduced the frequency, scale, scope, and duration of PSPS events.

A summary of all defects identified by Energy Safety within the annual compliance period, the corrective actions taken, and the completion and/or estimated completion date.[24]

3.4.2 IE ARC

Each year before March 1, Energy Safety, in consultation with the Office of the State Fire Marshall, must publish a list of qualified independent evaluators.[25] The electrical corporations must each engage an independent evaluator from the list to review and assess its compliance with the respective approved WMP.[26] The independent evaluator must issue a report, referred to as the Independent Evaluator Annual Report on Compliance (IE ARC), by July 1 of each year covering the previous calendar year. As a part of the report, the independent evaluator must determine whether the electrical corporation failed to fund any activities included in its plan.[27] [28] Energy Safety considered the independent evaluator's

[22] Wildfire Safety Division – Compliance Operational Protocols, pages 10-12.
[23] See CPUC Resolution WSD-002, pages 32-35, for detail regarding the 2020 WMP change order process.
[24] The defect summary component of the ARC contents does not supplant detailed defect correction responses, which shall be filed with WSD throughout the year as needed (see Appendix Part 2. Response and Corrective Action Timeline in the Operational Protocols for details).
[25] Pub. Util. Code § 8386.3 (c)(2)(A).
[26] Pub. Util. Code, § 8386.3(c)(2)(B).
[27] Id.
[28] The independent evaluator reviews performed for the 2020 WMPs were the first of their kind and completed in a considerably truncated timeframe.

findings in this ARC, but the independent evaluator's findings are not binding on Energy Safety's final determination of WMP compliance.[29]

3.4.3 Inspections

Pursuant to Public Utilities Code section 326(a)(3), to ensure electrical corporations complied with their WMPs and operated their infrastructure in a manner that reduces wildfire risk, Energy Safety conducted detailed visual inspections of electrical infrastructure to verify work was performed by electrical corporations, as reported in approved WMPs, and to assess the condition of infrastructure.

Energy Safety began conducting inspections related to the 2020 WMPs in May 2020. Inspections covered core wildfire mitigation efforts related to vegetation management, system hardening, situational awareness, and emergency preparedness and response, in addition to general compliance with applicable Government Order (GO) 95 requirements. The review and analysis of data compiled on findings from these inspections formed the basis of Energy Safety's observations and conclusions in Section 5.3.

3.4.4 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"[30] of its vegetation management requirements in its WMP. Energy Safety refers to this audit as the "Substantial Vegetation Management" (SVM) audit. Pursuant to Public Utilities Code section 8386(c)(5), Energy Safety conducted an audit of SDG&E's compliance with the vegetation management requirements in its 2020 WMP.

In addition to the statutorily prescribed SVM audit, Energy Safety retained a contractor, Crowe, LLC, to conduct a performance audit of WMP expenditures.

3.4.5 Data

Energy Safety analyzed performance metrics and other data when assessing whether the electrical corporation complied with its 2020 WMP. Energy Safety required electrical corporations to submit spatial and non-spatial data through Quarterly Data Reports (QDRs), Quarterly Initiative Updates (QIUs), and Quarterly Advice Letters (QALs).

[29] Pub. Util. Code, § 8386.3(c)(2)(B)(ii).
[30] Pub. Util. Code, § 8386.3(c)(5)(C).

4.0 SDG&E's 2020 WMP

The 2020 WMP Guidelines were issued on December 16, 2019, via *Administrative Law Judge's Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment*.[31] The 2020 WMP Guidelines outlined the requirements and expectations for the 2020 WMP submissions including reporting templates, metrics, timelines, structure, and minimum levels of detail. The 2020 WMP Guidelines were designed to:

- Increase standardization of information collected on electrical corporations' wildfire risk exposure.
- Enable systematic and uniform review of information each electrical corporation submits.
- Move electrical corporations toward an effective long-term wildfire mitigation strategy, with systematic tracking of improvements over time.[32]

The 2020 WMP Guidelines structured the submission into five sections, as follows:

1. Persons responsible for executing the plan.
2. Metrics and underlying data.
3. Baseline ignition probability and wildfire risk exposure.
4. Inputs to the plan and directional vision including objectives.
5. Listing of wildfire mitigation initiatives for each year of the three-year plan period.

4.1 Conditional Approval

In its disposition of SDG&E's 2020 WMP, Energy Safety issued a conditional approval that identified and classified certain deficiencies requiring varying responsive action. Energy Safety evaluated SDG&E's fulfillment of its 2020 WMP conditions in this ARC. Energy Safety's assessment regarding resolution of conditions placed on SDG&E's 2020 WMP are further discussed in Section 5.7.

Energy Safety released Resolution WSD-002, *Guidance Resolution on 2020 Wildfire Mitigation Plans Pursuant to Public Utilities Code Section 8386* (Guidance Resolution). The Guidance Resolution applied to the electrical corporations collectively and contained deficiencies and associated conditions (remedies).[33] Deficiency Guidance-5 noted that electrical corporations combined various initiatives into broader programs and reported data at the programmatic level. This aggregation made it difficult to track progress against individual initiatives, among

[31] See CPUC Rulemaking R.18-10-007.
[32] CPUC Resolution WSD-002, page 2.
[33] The Guidance Resolution did not apply to the Independent Transmission Operators; Horizon West and Trans Bay Cable, as they received a full approval of their respective 2020 WMPs.

other issues. The associated condition to Deficiency Guidance-5 required electrical corporations to disaggregate initiatives in their quarterly filings.[34]

As a result of the required disaggregation, some electrical corporation data submissions, including quarterly filings and Quarterly Initiative Updates (QIUs), reference a different number of initiatives than that set forth in the electrical corporation's WMP. In this ARC, Energy Safety reported the number of initiatives as they were presented in the underlying reference document.

4.2 2020 WMP Objectives

The 2020 WMP Guidelines required each electrical corporation to describe the specific objectives of its 2020 WMP in section 4.1. The 2020 WMP Guidelines also specified that objectives must be described with respect to the following timeframes:

1. Before the upcoming wildfire season (as declared by CALFIRE).
2. Before the next annual update.
3. Within the next three years.
4. Within the next 10 years.

In determining whether SDG&E substantially complied with its 2020 WMP, Energy Safety considered and weighed the plan's objectives in its 2020 WMP. For the purposes of this ARC, Energy Safety only considered SDG&E's objectives with respect to the first two timeframes.

SDG&E's 2020 WMP broadly stated that its "overarching WMP objective is to prevent and mitigate the risk of wildfires caused by utility equipment."[35] SDG&E's WMP objectives as stated in its 2020 WMP are provided below for the first two timeframes specified above.

1. Before the upcoming wildfire season:

- "The activities include inspections and maintenance, follow up findings from inspections, operational adjustments on the electric system, proactive system hardening, situational awareness training, and outreach and education of customers."[36]
- "SDG&E is focusing on reducing PSPS impacts by identifying various near-term mitigations, such as installing additional switching capabilities, and expanding its

[34] CPUC Resolution WSD-002, page 24.
[35] SDG&E 2020 WMP, page 13.
[36] SDG&E 2020 WMP, page 13.

microgrids and customer generator programs to support customers during PSPS events."[37]

2. Before the next annual update:

- An update on the PSPS mitigation activities currently under development.[38]
- Specific mitigation measures on PSPS will be updated.[39]

4.3 SDG&E's 2020 WMP Initiatives

The 2020 WMP Guidelines required each electrical corporation to group its discussion of wildfire mitigation initiatives into the 10 categories listed in Table 1, below.

SDG&E's 2020 WMP included a total of 94 initiatives allocated across the 10 categories.[40] Table 1 below provides a summary of SDG&E's allocation of WMP initiatives across categories, its reported planned spending in each category for 2020, and the percentage of the total 2020 WMP budget the spending in each category comprised.

Table 1: SDG&E's WMP initiatives 2020 by Category[41]

Initiative Category	No. of Initiatives	2020 Planned Spend($K)	% of 2020 WMP Budget
Risk assessment and mapping	7	$1,400	0.31%
Situational awareness and forecasting	9	$11,345	2.55%
Grid design and system hardening	24	$265,972	59.83%
Asset management and inspections	14	$56,790	12.77%
Vegetation management and inspections	10	$62,322	14.02%
Grid operations and protocols	9	$20,167	4.54%
Data governance	6	$315	0.07%

[37] SDG&E 2020 WMP, page 13.
[38] SDG&E 2020 WMP, page 14.
[39] SDG&E 2020 WMP, page 14.
[40] SDG&E 2020 WMP, see Section 4.1 for an explanation of the source of some reporting discrepancies in initiative numbers and targets.
[41] SDG&E's EC ARC, costs for each initiative reported on pages 3-91.

Initiative Category	No. of Initiatives	2020 Planned Spend($K)	% of 2020 WMP Budget
Resource allocation methodology	4	$11,985	2.70%
Emergency planning and preparedness	8	$9,321	2.10%
Stakeholder cooperation and community engagement	3	$4,928	1.11%
Total	**94**	**$444,545**	**100%**

Some initiatives provided quantitative targets (e.g., miles completed for system hardening initiatives). Other initiatives included qualitative measures (e.g., integration of all vegetation data into a singular database as a data governance initiative).

Energy Safety also reviewed the planned spend for each WMP initiative to assess how SDG&E prioritized its risk mitigation efforts as a function of the percentage of total budget allocated across WMP categories and initiatives. Table 2 provides an overview of SDG&Es planned 2020-2022 WMP spend.[42]

Table 3 lists the top 10 initiatives by planned spend. The last row in Table 3 shows that the 10 listed initiatives (out of 94 total) make up over 80% of SDG&E's total 2020 WMP planned spend.

Table 2: SDG&E's Planned 2020-2022 WMP Expenditures

Planned 2020-2022 WMP Costs	
2020	$444 million
2021	$445 million
2022	$448 million
2020-2022 Plan Period	**$1.34 billion**

[42] CPUC Resolution WSD-005, page 4.

Table 3: SDG&E's 2020 WMP Top 10 Plan Spend Initiatives.[43]

Initiative #	Initiative	2020 Planned Spend ($K)	% of 2020 WMP Budget
5.3.3.3	Distribution Overhead System Hardening	$ 88,071	19.84%
5.3.3.17.2	Cleveland National Forest Fire Hardening	$ 65,000	14.64%
5.3.4.9.2	Drone Assessments of Distribution Infrastructure	$ 54,100	12.18%
5.3.3.18.1	Distribution Communications Reliability Improvements	$ 31,500	7.09%
5.3.3.16	Strategic Undergrounding	$ 31,000	6.98%
5.3.5.2	Detailed Inspections of Vegetation Around Distribution Infrastructure – Inventory Tree Inspections	$ 27,776	6.26%
5.3.5.9	Other Discretionary Inspections of Vegetation Around Distribution Infrastructure – Enhanced Inspections, Patrols, and Trims	$ 23,603	5.32%
5.3.6.6.1	Aviation Firefighting Program	$ 15,161	3.41%
5.3.3.8.2	Microgrids	$ 11,340	2.55%
5.3.3.6	Pole Replacement and Reinforcement	$ 10,568	2.38%
Total		**$ 358,119**	**80.65%**

5.0 COMPLIANCE ASSESSMENTS

In the following sections, Energy Safety provides the findings from the compliance source inputs it relied upon in making its annual determination of compliance in this ARC.

5.1 SDG&E Self-Assessed Compliance Reporting

SDG&E timely submitted its EC ARC on March 31, 2021. In its EC ARC, SDG&E reported that it did not meet the targets for eight of its 94 initiatives (or 9%).[44] Of the eight missed targets,

[43] SDG&E's EC ARC, costs for each initiative reported on pages 3-91.

[44] SDG&E's EC ARC, page 2.

SDG&E reported that "four will be completed in 2021, three had a modified scope, and one was impacted by external factors outside of SDG&E's control."[45, 46] However, upon review of SDG&E's EC ARC, Energy Safety found that information provided by SDG&E indicated that the electrical corporation actually failed to meet the targets for 11 of its 94 initiatives (or 12%). Listed below are the details reported by SDG&E for its 11 initiatives with missed targets:

1. 5.3.3.2 – Advance Protection (Circuits): This initiative contained two separate targets for installation of advanced protection devices on circuits and substations, respectively. SDG&E exceeded its target for substations. However, SDG&E installed advance protection devices on six circuits against a target of eight (75% complete).[47]
2. 5.3.3.3 – Distribution Overhead System Hardening: This initiative contained two separate targets for miles of covered conductor installed and bare wire hardened, respectively. SDG&E exceeded its target for miles of covered conductor installed. However, SDG&E completed 99.5 miles of bare wire hardening against a target of 102 (98% complete).[48]
3. 5.3.3.6 – Pole Replacement and Reinforcement: 598 poles replaced or reinforced against a target of 670 (89% complete).[49]
4. 5.3.3.11.3 – Whole House Generator Program: Installed 75 generators against a target of 300 (25% complete).[50]
5. 5.3.3.17.1 – Overhead Transmission Fire Hardening: This initiative contained two separate targets for miles of overhead transmission and distribution underbuilt hardening, respectively. SDG&E completed 19.7 miles of overhead transmission hardening against a target of 21.5 (92% complete); and completed 9.4 miles of distribution underbuilt hardening against a target of 10 (94% completion).[51]
6. 5.3.3.17.2 – Cleveland National Forest Fire Hardening (Overhead Distribution): This initiative contained three targets for miles of overhead transmission, overhead distribution, and underground distribution hardening, respectively. SDG&E met or exceeded its targets for miles of overhead transmission and distribution underground hardening. However, SDG&E completed 46.8 miles of distribution overhead hardening against a target of 50 (94% complete).[52]
7. 5.3.3.18.1 – Distribution Communications Reliability Improvements: Installed 15 base stations against a target of 25 (60% complete).[53]

[45] SDG&E's EC ARC, page 2.
[46] SDG&E did not explicitly specifically identify the eight initiatives that were the subject of this quoted language.
[47] SDG&E's EC ARC, page 22.
[48] SDG&E's EC ARC, page 23.
[49] SDG&E's EC ARC, page 36, Poles identified to be replaced in 2020 decreased from both compliance maintenance program inspections and wood pole intrusive inspections.
[50] SDG&E's EC ARC, page 30.
[51] SDG&E's EC ARC, page 32.
[52] SDG&E's EC ARC, page 33.
[53] SDG&E's EC ARC, page 34.

8. 5.3.4.2 – Transmission System Inspections: This initiative contained four separate targets for visual, infrared, detailed, and aerial 69kV inspections, respectively.
    a. Visual inspections: SDG&E conducted 114 inspections against a target of 117 (97% complete).
    b. Infrared inspections: SDG&E conducted 110 inspections against a target of 113 (97% complete).
    c. Detailed inspections: SDG&E met its target.
    d. Aerial 69 kV inspections: SDG&E completed 21 aerial 69kV inspections. SDG&E stated that the target of 27 inspections was overstated in its 2020 WMP, as that number inadvertently included six lines that were removed from service in 2020, and therefore it met the target of 21 inspections.[54]
9. 5.3.4.6 – Intrusive Pole Inspections: Inspected 14,450 poles against a target of 18,000 (80% complete).[55]
10. 5.3.4.10 – Drone Assessments of Transmission Infrastructure: This initiative contained two separate targets for drone assessments of transmission infrastructure in Tier 3 and Tier 2, respectively. SDG&E met its target for drone assessments of selected circuits in Tier 2. However, SDG&E only completed drone assessments on 85% of its transmission infrastructure in Tier 3 against a target to inspect all Tier 3 transmission infrastructure.[56]
11. 5.3.5.2 – Detailed Inspections of Vegetation Around Distribution Infrastructure: 451,207 inspections completed against a target of 455,000 (99% complete).[57]

The 11 initiatives listed above correlated to 20 unique targets, as several initiatives contained multiple targets for different activities under the same initiative number. Of the 11 initiatives listed, SDG&E completed at least 90% of its 2020 WMP targets for five initiatives. For one of the initiatives, 5.3.3.6 – Pole Replacement and Reinforcement, SDG&E reported that it only replaces or reinforces poles identified through its existing inspection programs as requiring such work, and that it found fewer poles than anticipated that required replacement or reinforcement.[58] For the remaining five initiatives, SDG&E provided the following justifications for its missed targets:

1. Initiative 5.3.3.2: Two circuits were under construction in 2020, but were not completed due to red flag events, weather, and resource availability. SDG&E stated that these circuits would be completed in 2021.[59]
2. Initiative 5.3.3.11.3: SDG&E experienced program delays due to permitting issues. In response to these delays, SDG&E collaborated with the County of San Diego to

[54] SDG&E's EC ARC, page 38, SDG&E overstated the aerial 69 kv inspections target for the 2020 WMP. Six tie lines were removed from service in 2020 and therefore could not be inspected.
[55] SDG&E's EC ARC, page 40.
[56] SDG&E's EC ARC, page 44.
[57] SDG&E's EC ARC, page 50.
[58] SDG&E's EC ARC, page 36.
[59] SDG&E's EC ARC, page 22.

streamline the permitting process for residential customers, decreasing the timeline from four to eight weeks to two to three weeks. SDG&E also ramped up efforts in two other generator programs to compensate for the lack of progress on this initiative target.[60]

3. Initiative 5.3.3.18.1: Implementation of this initiative required SDG&E to develop new distribution standards that included integrated LTE/distribution builds, which was a new and unique effort that required input from numerous departments and adherence to various safety and regulatory requirements. SDG&E is working to standardize the process so the program will be able to generate a predictable build-out schedule to meet future forecasted targets.[61]
4. Initiative 5.3.4.6: SDG&E experienced an increase in non-routine inspection requests that required a portion of routine inspections to be moved into 2021 to accommodate the unplanned increased workload.[62]
5. Initiative 5.3.4.10: SDG&E did not provide any justification for missing this initiative target.

In addition to details regarding its missed initiative targets, SDG&E also reported the following in its EC ARC:

- It fire hardened 236 miles of its system and replaced over 2,500 structures within HFTD areas in 2020.[63]
- It implemented measures to make operational adjustments during periods of high fire danger.[64]
- It completed routine and HFTD-focused inspections of all assets and timely remediated findings per general order requirements.[65]
- SDG&E enhanced its situational awareness capabilities by installing 30 new weather stations and updating weather stations to provide readings every 30 seconds.[66]
    - SDG&E estimates that the update to 30 second weather station readings reduced PSPS impacts on over 2,500 customers.[67]
- SDG&E maximized the number of switches it could install before the 2020 fire season, and strategically located switch installations in consideration of access requirements, weather station coverage, and minimization of customers impacted by PSPS.

[60] SDG&E's EC ARC, page 30.
[61] SDG&E's EC ARC, page 34.
[62] SDG&E's EC ARC, page 40.
[63] SDG&E's EC ARC, page 2.
[64] Id.
[65] Id.
[66] Id.
[67] SDG&E's EC ARC, page 12.

  - During an early December 2020 PSPS event, SDG&E estimates that its installation of switches reduced the number of customers impacted by nearly 5,800.[68]
- Its PSPS mitigation programs reduced PSPS impacts to approximately 9,000 customers during a December 2020 PSPS event.[69]

5.2 Independent Evaluator Review

SDG&E selected 4LEAF as the independent evaluator to assess its compliance with the 2020 WMP. 4LEAF issued its SDG&E IE ARC on July 1, 2021. Energy Safety carefully weighed the quality and utility of the SDG&E IE ARC when evaluating SDG&E's compliance with its approved 2020 WMP.

4LEAF reviewed 94 initiatives and submitted findings related to 7 initiatives (7.4%). A summary of 4LEAF's findings is listed below in *Table 4*.

Table 4: Summary of SDG&E IE ARC Findings by Finding Category

Finding Category	No. of Initiatives
Compliant[70]	88
Noncompliant[71]	6
Total	**94**[72]

In the SDG&E IE ARC, 4LEAF did not state how many total 2020 WMP initiatives were reviewed. However, in a follow up communication, Energy Safety received confirmation from 4LEAF that it reviewed all 94 initiatives either through financial verification, subject matter interviews, or through field inspections.[73]

Of the six findings of noncompliance by 4LEAF, four findings (or 67%) were identical to those self-reported by SDG&E in its EC ARC. These initiatives all had quantitative targets and included the following:

1. Initiative 5.3.3.11.3 – Whole House Generator Program: Installed 75 generators against a target of 300 (25% complete).[74]

[68] SDG&E's EC ARC, page 25.
[69] SDG&E's EC ARC, page 2.
[70] These are quantitative and qualitative initiatives in which 4LEAF found that initiative progress met or exceeded the WMP target.
[71] These are initiatives that 4LEAF reported noncompliance findings for.
[72] Email Correspondence from 4LEAF on October 18, 2022.
[73] Email Correspondence from 4LEAF on October 18, 2022.
[74] SDG&E IE ARC, Table 6, page 23.

2. Initiative 5.3.4.2 – Transmission System Inspections: This initiative contained four separate targets for visual, infrared, detailed, and aerial 69kV inspections, respectively.
    a. Visual inspections: SDG&E conducted 114 inspections against a target of 117 (97% complete).
    b. Infrared inspections: SDG&E conducted 110 inspections against a target of 113 (97% complete).
    c. Detailed inspections: SDG&E met its target.
    d. Aerial 69 kV inspections: SDG&E completed 21 aerial 69kV inspections against a target of 27 (78% complete).[75, 76]
3. Initiative 5.3.4.6 – Intrusive Pole Inspections: Inspected 14,450 poles against a target of 18,000 (80% complete).[77]
4. Initiative 5.3.4.10 – Drone Assessments of Transmission Infrastructure: Inspected 1,417 structures against a target of 2,679 (53% complete).[78, 79]

The two noncompliant initiatives identified by 4LEAF in the SDG&E IE ARC, and not self-reported by SDG&E in its EC ARC, contained qualitative targets. These initiatives and 4LEAF's findings are presented below:

1. Initiative 5.3.2.7 – Network Management Situational Awareness Upgrades: The 2020 WMP target for this initiative was to improve the protocols for operational decision-making during extreme events through the integration of enhanced weather data. 4LEAF found that by year-end 2020, the improved situational awareness had not been achieved due to incomplete integration of weather data. 4LEAF conducted an interview with SDG&E subject matter experts on June 23, 2020, during which SDG&E's subject matter expert indicated that the weather data was not fully integrated in 2020.[80]
2. Initiative 5.3.4.9.3 – Circuit Ownership: 4LEAF found that the target for this initiative was met in the qualitative part, as a refresher training was held. However, SDG&E's 2020 WMP stated that QA/QC of this program would be completed through "oversight of [the program] dashboard and follow up action items…"[81] 4LEAF found that subsequent proposals for applicable actions resulting from those efforts were deemed to be out of scope and not pursued by SDG&E.[82]

[75] Id.
[76] In its EC ARC, SDG&E clarified that this target was misstated in its 2020 WMP, as six lines subject to this inspection program were removed from service in 2020, page 38.
[77] SDG&E IE ARC, Table 6, page 23.
[78] SDG&E IE ARC, Table 10, page 32.
[79] Energy Safety notes that in its 2020 WMP, SDG&E did not provide quantitative targets for structures to be inspected through this program but stated that it planned to inspect "all of its transmission structures in Tier 3 areas in 2020, along with four select circuits in the Tier 2 HFTD…," page 108.
[80] SDG&E IE ARC, pages 31-32.
[81] SDG&E 2020 WMP, pages 107-108.
[82] SDG&E IE ARC, page 31.

In addition to its findings related to completion of 2020 WMP initiatives, 4LEAF also included several findings resulting from its field inspection work. Primarily, these findings pertained to duplicate work order records provided by SDG&E, inconsistencies between SDG&E's asset inventory (as provided to 4LEAF) and assets observed by 4LEAF inspectors in the field, and various assets observed by 4LEAF inspectors as needing replacement.[83] 4LEAF also found that SDG&E's vegetation management program disproportionately targeted pine and eucalyptus trees.[84]

On August 16, 2021, SDG&E responded to 4LEAF's IE ARC.[85] Energy Safety evaluated the set of findings where there was a disagreement between 4LEAF and SDG&E. Table 5 below summarizes the findings, SDG&E's response, and Energy Safety's determinations. Section 5.2.1 provides Energy Safety's assessment on areas of disagreement.

Table 5: IE Findings, Utility Response and Energy Safety Evaluation

2020 Initiative Name/Number	IE Finding	SDG&E Response	Energy Safety's Determination
Expulsion Fuse Replacement (5.3.3.7)	Duplicate work orders for expulsion fuses - Multiple items on the same work order were listed for the same work type.[86]	SDG&E extracted all data from existing sources and it was not audited prior to submission. Had SDG&E had more time to audit and refine the data presentation, it would have eliminated these duplications in the dataset.[87]	Do not concur with IE finding.
Vegetation Management and Inspections (5.3.5)	Duplicate work orders for vegetation management inspections - Multiple items on the same work order were listed for the same work type.[88]	SDG&E extracted all data from existing sources, and it was not audited prior to submission. Had SDG&E had more time to audit and refine the data presentation, it would have eliminated these	Do not concur with IE finding.

[83] SDG&E IE ARC, page 21.
[84] SDG&E IE ARC, page 24.
[85] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021.
[86] SDG&E's IE ARC, page 21.
[87] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 5.
[88] IE ARC, page 21.

2020 Initiative Name/Number	IE Finding	SDG&E Response	Energy Safety's Determination
		duplications in the dataset.[89]	
Pole Replacement and Reinforcement (5.3.3.6)	Old wooden poles that need replacement - Seven inspection reports referred to the existence of old wooden poles that need replacement.[90]	During a July 15, 2021, meeting with SDG&E, the IE and Energy Safety, SDG&E clarified that these poles did not have any visible defects or pose a safety hazard. [91]	Do not concur with IE finding.
Asset Management and Inspections (5.3.4)	Assets not found during field inspection - Eight reports of the assets could not be found due to the wrong/imprecise GPS coordinates provided.[92]	SDG&E has accurate location records for all assets. Some of the assets are located off the main road or may be located on private property, which could have led to difficulty locating the assets; but SDG&E maintains that the GPS coordinates provided for these assets are accurate.[93]	Do not concur with IE finding.
Vegetation Management Inspections (5.3.5)	SDG&E's vegetation management activities are disproportionately focused - IE's analysis of field-verifiable activities and work order patterns also reveals that vegetation management activities end up disproportionately focused on two species, pine and eucalyptus.[94]	SDG&E focuses its Enhanced Vegetation Management activities at certain types of trees that are known to cause increased risk to electrical infrastructure. But the fact that a certain tree genus may be trimmed more frequently than another is more a function of the tree's growth pattern and relative risk to SDG&E's system than it is a focus on	Do not concur with IE finding.

[89] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 5.
[90] IE ARC, page 21.
[91] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, pages 4 and 5.
[92] IE ARC, page 21.
[93] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 3.
[94] IE ARC, page 24.

2020 Initiative Name/Number	IE Finding	SDG&E Response	Energy Safety's Determination
		trimming targeted at that genus. [95]	
Vegetation Management Inspections (5.3.5)	Significant vegetation encroachment was observed during field inspections. In 12 field reports, significant vegetation encroachment was observed.[96]	SDG&E found that the 12 IE field inspection reports address three separate locations where the vegetation encroachment was noted. SDG&E found that the vegetation did not encroach upon the required clearances form the energized conductor and is in compliance with all regulatory requirements. But out of abundance of caution, SDG&E performed pole brushing on the poles identified in the IE ARC and performed additional vegetation management trimming near an identified pad-mounted SCADA capacitor.[97]	Do not concur with IE finding.

5.2.1 Energy Safety's Assessment of Disputed IE Findings

Expulsion Fuse Replacements (5.3.3.7), Vegetation management and Inspections (5.3.5)
4LEAF found duplicate work orders for field inspections in these two initiatives.[98] SDG&E responded that the data that was extracted from various sources within SDG&E was not audited for duplication due to the short timeframe 4LEAF had to complete field inspections and the IE ARC.[99] Energy Safety does not agree with 4LEAF's finding and finds that having extra copies of work orders does not entail noncompliance with the 2020 WMP for these two initiatives.

[95] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 4.
[96] IE ARC, page 28.
[97] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 4.
[98] IE ARC, page 21.
[99] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 5.

Pole Replacement and Reinforcement (5.3.3.6)
4LEAF noted that seven of its inspection reports included findings concluding that an "old wooden pole that needs replacement."[100] During a July 15, 2021, meeting, SDG&E clarified that inspection of the identified poles did not result in observations of any visible defects or safety hazards. SDG&E provided a written response as well.[101] Energy Safety does not agree with 4LEAF's finding and determines that 4LEAF did not provide sufficient evidence or documentation to support its determination. 4LEAF did not cite any specific regulatory requirement, SDG&E standard, or public utility code as the basis to justify its finding that the inspected poles needed to be replaced.

Asset Management and Inspections (5.3.4)
4LEAF stated that it could not locate assets for eight field inspection reports due to wrong or imprecise GPS coordinates provided.[102] SDG&E's response stated that the GPS coordinates provided for the eight assets were accurate. SDG&E further clarified that some of the assets in question are located off the main road or may be located on private property, which could have led to 4LEAF's difficulty in locating the assets.[103] After review of 4LEAF's six inspection reports with this finding, Energy Safety does not agree with 4LEAF's assessment. Energy Safety reviewed six reports where 4LEAF stated it was "unable to locate"[104] SDG&E assets. However, in three of these reports, there was no explanation given or evidence produced showing that SDG&E provided 4LEAF with wrong or imprecise GPS coordinates. In the other three reports, 4LEAF stated that the GPS coordinates SDG&E provided placed the pole on private property. As SDG&E noted in its response, some of its assets are located on private property. Energy Safety finds that 4LEAF's findings were not corroborated with corresponding evidence and did not constitute noncompliance with SDG&E's 2020 WMP; therefore, Energy Safety does not concur with the 4LEAF's findings.

Vegetation Management Inspections (5.3.5)
4LEAF reported that SDG&E's vegetation management activities were disproportionately focused on two species: pine and eucalyptus.[105] SDG&E stated that it focuses its Enhanced Vegetation Management activities on certain types of trees that are known to cause increased risk to electrical infrastructure. The fact that a certain tree genus may be trimmed more frequently than another is more a function of the tree's growth pattern and relative risk to SDG&E's system than it is a focus on trimming targeted at that genus.[106] Energy Safety agrees with SDG&E's response that certain tree species may require more frequent trimming due to their growth patterns. Moreover, without additional context on the proportion of different

[100] IE ARC, page 21.
[101] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, pages 4-5.
[102] IE ARC, page 21.
[103] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 3.
[104] IE Inspection Reports, Items 6, 20, 11-15, 49, 50, and 51.
[105] IE ARC, page 24.
[106] SDG&E's Response to SDG&E IE ARC, filed on August 16, 2021, page 4.

tree species in proximity to SDG&E's infrastructure, it is not possible to reach a definitive conclusion on whether any specific tree species is targeted for trimming or removal "disproportionately." 4LEAF presented no such data or context in support of its claims.

4LEAF stated that it also observed "significant"[107] vegetation encroachment during field inspections in 12 of its reports. SDG&E responded that the vegetation did not encroach upon the regulatorily-required clearances from the energized conductor, and SDG&E believed it was in compliance with all regulatory requirements. Nevertheless, SDG&E performed pole brushing on the poles identified by 4LEAF in the IE ARC out of an abundance of caution. In addition, SDG&E performed trimming near a SCADA pad-mounted capacitor referenced in 4LEAF's field inspection reports. Energy Safety reviewed the 4LEAF field inspection reports in question, including associated photos, and found no issues related to vegetation encroachment on any of the identified poles or the SCADA pad-mounted capacitor. 4LEAF did not cite a specific rule, SDG&E standard, or public utility code as its basis for citing the vegetation encroachment as a violation. Therefore, Energy Safety does not agree with 4LEAF's finding.

5.3 Inspections

Energy Safety conducted a total of 412 inspection activities of SDG&E's infrastructure in 2020. A summary of inspection activities and defects is presented in Table 6 below.

Table 6: 2020 Inspection Results of SDG&E Service Territory

Metrics Considered	Totals
Total Activities	412
Total Defects	12
Defect Rate	2.91%
Total Defect Resolutions	12
Defect Resolution Rate (Total Defect Resolved/Total Defects)	100%

5.3.1 Field Inspection Defect Findings

Defects found during Energy Safety's inspections generally pertained to vegetation proximity to overhead primary conductors, as well as electrical infrastructure and equipment conditions. Energy Safety also found conditions such as contact between down guy wires and

[107] IE ARC, page 28.

communication cables, contact between down guy wires and crossarms, and exposed ground wire.

In 2020, SDG&E had a defect rate of 2.91% and timely resolved all the defects identified by Energy Safety.

5.4 Audits

Energy Safety conducted two audits on SDG&E's 2020 WMP activities. Descriptions of the audits and associated findings are presented in the following sections.

5.4.1 Substantial Vegetation Management (SVM) Audit

On August 11, 2022, Energy Safety issued its SVM audit for SDG&E. In the audit, Energy Safety evaluated SDG&E's quantitative commitments[108] and verifiable statements.[109] Energy Safety then reviewed available information and requested additional documentation to support the assessment of whether SDG&E fully met its quantitative commitments and executed its verifiable statements. Energy Safety found SDG&E compliant with 20 out of the 20 vegetation initiatives audited in its 2020 WMP, as detailed in Table 7 below.[110]

Table 7: Energy Safety's Analysis of SDG&E's 2020 WMP Vegetation Management Initiatives

2020 WMP Initiative Number	2020 WMP Initiative Name	Energy Safety's Determination[111]
5.3.5.1	Vegetation management-Community Engagement	Compliant
5.3.5.2	Detailed Inspections of Vegetation Around Distribution Infrastructure-Tree Trimming	Compliant
5.3.5.3	Detailed Inspections of Vegetation Around Transmission Infrastructure	Compliant
5.3.5.4	Emergency Response Vegetation Management	Compliant
5.3.5.5	Fuel management	Compliant
5.3.5.6	Improvement of Inspections	Compliant
5.3.5.7	LiDAR Inspection of Vegetation Around Distribution Infrastructure and Vegetation Management Technology	Compliant

[108] E.g., miles of lines to inspect, minimum work quality thresholds, etc.
[109] E.g., holding public meetings with communities regarding future vegetation management activities, training personnel on utilities protocols, etc.
[110] Appendix B: SDG&E SVM audit, page 1.
[111] Compliant means the utility was able to provide Energy Safety document(s) to support statements made in its 2020 WMP. Noncompliant means the utility was not able to provide Energy Safety document(s) to support commitments and statements made in its 2020 WMP. Energy Safety's analysis did not assess the quality of how said WMP statement was executed.

2020 WMP Initiative Number	2020 WMP Initiative Name	Energy Safety's Determination[111]
5.3.5.8	LiDAR Inspection of Vegetation Around Transmission infrastructure	Compliant
5.3.5.9	Other Discretionary Inspections of Vegetation Around Distribution Infrastructure-Enhanced Inspections, patrols, and trims	Compliant
5.3.5.10	Other Discretionary Inspections of Vegetation Around Transmission infrastructure	Compliant
5.3.5.11	Patrol Inspections of Vegetation Around Distribution infrastructure	Compliant
5.3.5.12	Patrol Inspections of Vegetation Around Transmission infrastructure	Compliant
5.3.5.13	Quality Assurance/Quality Control of Inspections	Compliant
5.3.5.14	Recruiting and Training of Vegetation Management Personnel	Compliant
5.3.5.15	Remediation of At-Risk Species	Compliant
5.3.5.16	Removal and Remediation of Trees with Strike Potential to Electric Infrastructure-Hazard Tree Removal and Right Tree-Right Place	Compliant
5.3.5.17	Substation Inspections	Compliant
5.3.5.18	Substation Vegetation Management	Compliant
5.3.5.19	Vegetation Inventory System-Tree Database	Compliant
5.3.5.20	Vegetation Management to Achieve Clearance Around Electric infrastructure- Pole Brushing	Compliant

5.4.2 Performance Audit of WMP Expenditures

On June 29, 2020, Energy Safety engaged Crowe, LLC to conduct an independent audit of WMP expenditures by the six investor-owned electrical corporations that submitted 2019 and 2020 WMPs.[112] The purpose of Crowe's audit was to examine expenditures in the execution of investor-owned electrical corporation WMP programs and initiatives relative to their prior General Rate Cases (GRCs). Crowe assessed the relationship between expenses and/or investments identified in the 2019 and 2020 WMPs and operating and capital expenditures approved in previous GRCs.

One objective of this audit was to determine whether SDGE's actual expenditures to date, and documented future planned expenditures, comported with the activities approved in the 2019 and 2020 WMPs and for which SDG&E received funding in its GRC or similar applications submitted to the CPUC between 2017 and 2020.[113] The audit did not contain negative findings related to this objective.[114]

[112] The six investor-owned electrical corporations are: Pacific Gas and Electric, Southern California Edison, San Diego Gas & Electric, PacifiCorp, Liberty Utilities, and Bear Valley Electric Service.
[113] SDG&E's 2019 and 2020 Wildfire Mitigation Plans (WMPs) Engagement letter, date: October 9, 2020.
[114] Performance Audit of SDG&E Wildfire Mitigation Plan Expenditures Final Report, date: December 23, 2021.

5.5 Data Analysis

Relying upon data timely submitted by SDG&E, Energy Safety analyzed: 1) a risk-prioritization analysis to determine whether SDG&E undertook its 2020 covered conductor and undergrounding (CCU) work and vegetation management work in the areas of highest risk, and 2) an analysis of SDG&E's WMP initiative performance. Energy Safety undertook these analyses to ensure that SDG&E completed work in areas of high wildfire risk and completed its 2020 initiatives as stated in its WMP.

5.5.1 Risk Prioritization Analysis

Energy Safety conducted a risk prioritization analysis of SDG&E's non-routine vegetation management and covered conductor and undergrounding (CCU) projects to assess where those projects were completed relative to where SDG&E understood the risks on its distribution system to be in 2020.[115]

SDG&E's non-routine vegetation management work incorporated into the scope of this analysis included the following vegetation management activities:

- Tree trimming.
- Pole brushing.
- Brush clearance.
- Fuel management.
- Fuel break.

SDG&E's CCU projects incorporated into the scope of this analysis included the following 2020 WMP initiatives:

- Initiative 5.3.3.3 – Covered Conductor Installation.
- Initiative 5.3.3.16 – Undergrounding of Electric Lines and/or Equipment.

Energy Safety relied upon data submitted by SDG&E that assigned wildfire risk scores to individual circuit segments. Energy Safety refers to these individual circuit segments with assigned risk scores as "risk segments."[116] Energy Safety rank ordered each risk segment from highest to lowest wildfire risk and grouped the risk segments into five bins of approximately

[115] Non-routine vegetation management and CCU project data used is this analysis was received through SDG&E's QDRs from 2020 Q2 through 2020 Q4, file names: "QDR_Q2_2020_SDGE.gdb,", "Confidential Appendix A - Guidance 10 SDGE_20201209.gdb", and "20210205_SDGE_QDR_JW.gdb" respectively.
[116] Risk segments may significantly vary in length.

equal risk.[117] Each equal risk bin is representative of 20 percent of the wildfire risk on SDG&E's distribution lines and ranked from highest to lowest risk. Energy Safety applied a buffer of 100-200 meters[118] to the risk segment location to account for potential locational imprecision of the SDG&E submitted data. Energy Safety then used SDG&E submitted data regarding the location of where non-routine vegetation management and grid hardening projects were completed to overlay that data on the buffered risk segments.

After binning the risk segments by quintiles of highest to lowest wildfire risk, buffering the risk segment boundaries to account for locational imprecision, and overlaying non-routine vegetation management and grid hardening projects, Energy Safety calculated the proportion of the work that was completed in each risk bin. The results of this analysis are presented in the subsections below.

For additional context, provided in the tables below are details on the proportions of SDG&E's overhead distribution system comprised by each risk segment, as well as the amount of line miles, the respective risk scores, and risk per mile of the total risk segments in each risk bin.

Table 8: Length of SDG&E's Overhead Distribution System Relative to HFTD Areas and Risk Segments

Distribution OH (mi)[119]	HFTD (mi)[120]	Risk Segments (mi)[121]
6,548	3,541	8,529

Table 9: Total Length (in miles) of All Risk Segments in Each Risk Segment Quintile

Risk Bin	Total Length (mi)	Risk Score[122]	Risk per Mile
Top 20% of Risk	61	501,955	8,178
61-80% of Risk	132	501,830	3,807

[117] The risk segment data used in this analysis was provided by SDG&E in response to Energy Safety data request number DRGGSD202112, Question 1. Specifically, this analysis focuses only on the risk data associated with SDG&E's conductors. The risk associated with other overhead assets were not considered in this analysis. It should be noted that SDG&E's WRRM was used by SDG&E to prioritize grid hardening work, not vegetation management.

[118] Energy Safety applied a 100-meter buffer for CCU projects and a 200-meter buffer for non-routine vegetation management work. A larger buffer was used for non-routine vegetation management work because vegetation management work can be reasonably expected to occur at greater distances from the infrastructure than covered conductor or undergrounding work.

[119] SDG&E Q1 2021 QDR, Table 8, sum of columns Y-AB for metrics 1k, 2k, and 3k.

[120] SDG&E Q1 2021 QDR, Table 8, sum of columns Z-AB for metrics 1k, 2k, and 3k.

[121] Geodatabase received on January 24, 2022, from SDG&E in response to Data Request DRGGSD202112, Question 1.

[122] Risk scores are derived from SDG&E's risk segment data and calculated by multiplying the fields "Conditional Impact" and "Current Ignition Rate" together.

Risk Bin	Total Length (mi)	Risk Score[122]	Risk per Mile
41-60% of Risk	229	501,668	2,194
21-40% of Risk	494	501,833	1,015
0.01-20% of Risk	4,805	501,782	104
Risk Score of 0	2,808	0	0

The above tables show that of SDG&E's over 6,000 miles of overhead distribution lines, approximately 54% (over 3,500 miles) are in HFTD areas. In addition, Table 9 shows that the average risk per circuit mile steadily decreases when SDG&E's risk segments are sorted from highest risk score to lowest risk score.

The results of this analysis are presented in the subsections below.

5.5.1.1 Covered Conductor and Undergrounding Project Results

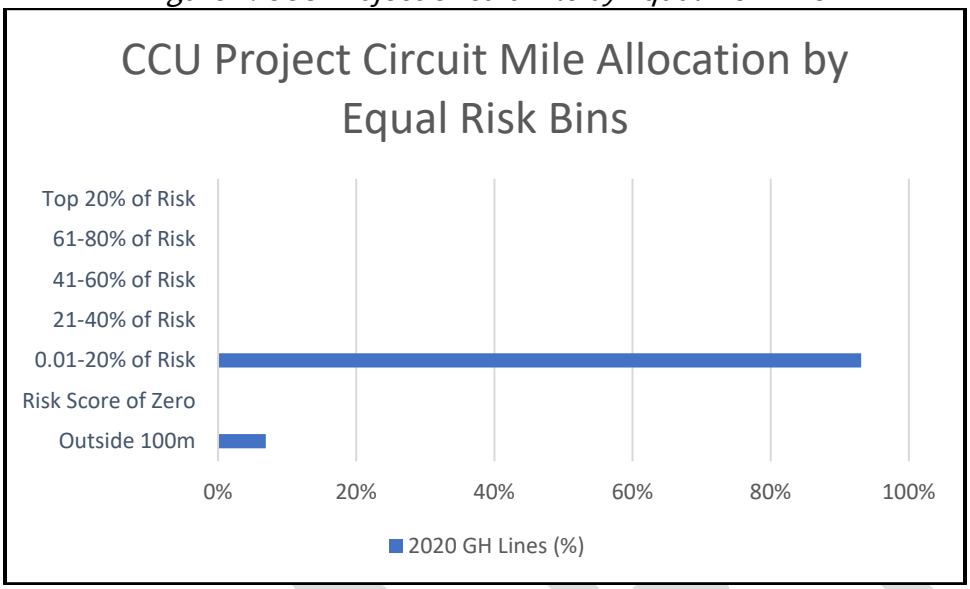
SDG&E reported completion of 19.5 miles of CCU projects in 2020. Table 10 provides an overview of the proportion of CCU projects completed by SDG&E that were within and outside the scope of this analysis (i.e., further than 100 meters from the nearest risk segment).

Table 10: Overview of CCU Project Data

Row Labels	CCU projects (mi)	CCU projects (%)
Overall Total	19.5	100%
Within 100m (Analysis Scope)	18.15	93%
Outside 100m	1.35	7%

Figure 1 below illustrates the results of Energy Safety's analysis of SDG&E's completed CCU projects. CCU projects completed on risk segments with a risk score of zero and CCU projects completed more than 100 meters from a risk segment were sorted into separate bins, respectively.

Figure 1: CCU Project Circuit Mile by Equal Risk Bins



93% of the CCU work was done in areas that, when sorted from most to least risk, make up the bottom 20% of risk.

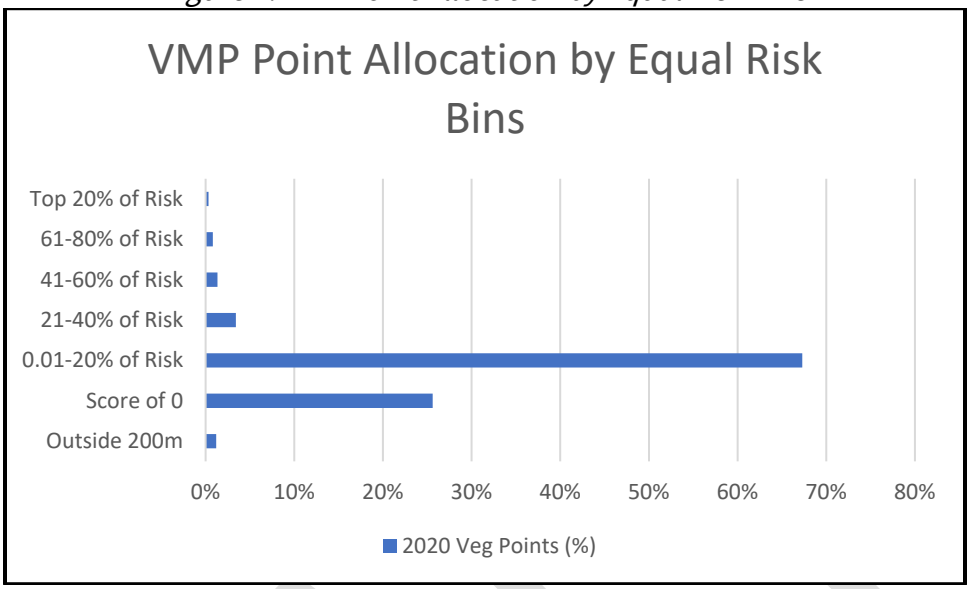
5.5.1.2 Vegetation Management Results

Energy Safety's analysis of vegetation management work only included work designated as a non-routine by SDG&E.[123] Energy Safety scoped the analysis to filter for non-routine vegetation management work to focus the assessment on discretionary work completed to enhance wildfire safety, as opposed to routine work to achieve regulatory compliance.

Figure 2 below presents the results of Energy Safety's analysis of SDG&E's completed non-routine VMP. Non-routine VMP work completed on risk segments with a score of zero and non-routine VMP work more than 200 meters from a risk segment were sorted into separate bins, respectively.

[123] In instances where SDG&E did not designate a work type, Energy Safety applied its subject matter expertise to determine whether the vegetation management work was routine or non-routine.

Figure 2: VMP Point Allocation by Equal Risk Bins



67% of the Vegetation Management Points were located in areas that, when sorted from most to least risk, make up the bottom 20% of risk.

5.5.2 Initiative Performance Analysis

Energy Safety analyzed whether SDG&E achieved its WMP initiative targets. To conduct this analysis, Energy Safety relied upon SDG&E's Q4 2020 Quarterly Initiative Update (QIU) submission from April 1, 2021, SDG&E's EC ARC, and SDG&E's Q4 2020 QAL.

Energy Safety requires electrical corporations to submit a QIU to track progress on implementation of their WMP initiatives. The purpose of the QIU is for both the electrical corporation and Energy Safety to have a holistic understanding of the electrical corporation's annual targets and projected quarterly progress towards completion of each initiative through the course of the WMP compliance period. In addition to projected progress, electrical corporations report actual progress for each initiative quarterly; this information enables Energy Safety to track the electrical corporation's compliance with its initiative targets throughout the year.

There was general consistency in reporting of targets and progress across the various SDG&E reports considered for this analysis. Where there were any discrepancies, Energy Safety relied upon the targets in the approved WMP (or change order) and progress reported in the Q4 2020 QIU. For many of its initiatives, SDG&E reported the targets in its 2020 WMP as a range with a high and low target. Unless otherwise noted, Energy Safety considered the low target in the range as SDG&E's compliance threshold for that initiative. In addition, there were several initiatives for which SDG&E inconsistently reported targets between the text in its 2020 WMP and the supporting WMP tables submitted in Appendix A of its 2020 WMP. Where

there were such inconsistencies, and unless otherwise noted, Energy Safety relied upon the targets in the text of the approved 2020 WMP.

5.5.2.1 Results

In accordance with the Compliance Operational Protocols, SDG&E timely submitted its 2020 Q4 QIU. SDG&E's 2020 Q4 QIU contained 95 initiatives, as shown in Table 11 below. Of SDG&E's 95 total WMP initiatives, 44 contained quantitative targets and 51 contained. The number of initiatives with quantitative targets differed by one from data reported in SDG&E's 2020 WMP and other filings, as discussed earlier in this ARC. This discrepancy was due to SDG&E's inclusion of initiative 5.3.3.18.2 – Lightning arrestor removal and replacement, for which SDG&E had no target and was in the process of finalizing construction standards for with plans for work to begin in 2021.[124]

Table 11: SDG&E 2020 Initiatives by quantitative and qualitative targets

SDG&E 2020 Initiatives (QIU data)	Numbers
Initiatives with Quantitative Targets	44
Initiatives with Qualitative Targets	51
Total Initiatives Reported	**95**

Overall, Energy Safety found that SDG&E completed 84 of 95 (or 88%) initiatives reported in accordance with its 2020 WMP.

Results for Initiatives with Quantitative Targets

As shown in Table 12 below, in its Q4 2020 QIU, SDG&E reported that it had either met or exceeded 35 of its 44 initiatives with quantitative targets (or 80%). Energy Safety notes that one of these incomplete initiatives, 5.3.2.4.1 – Fire Science and Climate Adaptation Department - Fire Science & Innovation Lab, was reported as complete by SDG&E in its Q4 2020 QIU, EC ARC, and QAL. However, Energy Safety verified through meetings with SDG&E that this initiative was in fact not completed in 2020. In addition, for initiative 5.3.5.5 – Fuels Management, while data reported in SDG&E's Q4 2020 QIU indicated that the target for this initiative was not met, SDG&E clarified in its notes in the QIU that the progress for this initiative was underreported and did not account for poles it re-cleared as maintenance in 2020, bringing the total poles cleared above the 2020 WMP target.[125]

[124] SDG&E 2020 WMP, page 92.
[125] SDG&E Q4 2020 QIU, Column AB, Row 82.

Table 12: Initiatives with only Quantitative Targets

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
5.3.2.1	Camera Network and Advanced Weather Station Integration - Camera Networks	Camera Network Installed	N/A[126]	4	4	4
5.3.2.1	Camera Network and Advanced Weather Station Integration - Weather Stations	Weather Stations Installed	20	30	30	30
5.3.2.3	Wireless Fault Indicators	Wireless Fault Indicator Installed	500	502	502	502
5.3.2.4.1	Fire Science and Climate Adaptation Department - Fire Science & Innovation Lab	Lab Constructed[127]	1	1	1	1
5.3.3.1	SCADA Capacitors	SCADA Capacitor Installed	30	30	30	30
5.3.3.2	Advanced Protection	Circuits enabled	6[128]	6	6	6
5.3.3.2	Advanced Protection	Substations Enabled	4[129]	8	8	8
5.3.3.3	Distribution Overhead System	Miles Hardened with Covered Conductor	0.8[130]	1.9	1.9	1.9

[126] SDG&E 2020 WMP, pages 59-60, provided no target for camera installations in 2020 under this initiative and no target was reported in SDG&E's 2020 WMP tables.
[127] Energy Safety verified with SDG&E that, although reported as completed, it did not complete construction of its Fire Lab in 2020.
[128] SDG&E 2020 WMP, Table 23A, provided a target range of 6-10 circuits enabled for this initiative.
[129] SDG&E 2020 WMP, Table 23A, provided a target range of 4-8 substations enabled for this initiative.
[130] SDG&E 2020 WMP, Table 23, provided a target range of 0.8-1.2 miles installed for this initiative.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
	Hardening - Covered Conductor					
5.3.3.3	Distribution Overhead System Hardening - OH (bare wire)	Miles OH Hardened	100[131]	99.5	99.5	99.5
5.3.3.6	Pole Replacement and Reinforcement	Poles Replaced	670	598	598	598
5.3.3.7	Expulsion Fuse Replacement	Fuses Replaced	3000	3179	3179	3179
5.3.3.8.1	PSPS sectionalizing enhancements	Switches Installed	10[132]	23	23	23
5.3.3.8.2	Microgrids	Microgrids Installed	3	4	4	4
5.3.3.10	Hotline Clamps	Hotline Clamps Installed	1650	2061	2061	2061
5.3.3.11.1	Customer Resiliency Programs - GGP Medical Baseline	Medical Baseline Generators	1250	1334	1334	1334
5.3.3.11.1	Customer Resiliency Programs - Community Resource Centers	CRC Generators	8[133]	8	8	8

[131] SDG&E lists the target for this initiative as 102 miles in its Q4 2020 QIU, QAL, and EC ARC.
[132] SDG&E lists the target for this initiative as 7 switches installed in its Q4 2020 QIU, QAL, and EC ARC.
[133] SDG&E 2020 WMP, Table 23A, provided a target range of 8-10 Customer Resource Centers for this initiative.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
5.3.3.11.1	Customer Resiliency Programs - Community & Critical Infra. Gen. Lease	Community and Critical Infrastructure Generators	3[134]	4	4	4
5.3.3.11.2	Expanded generator grant program	Generators	130	1081	1081	1081
5.3.3.11.3	Whole house generator program	Generators	300	75	75	75
5.3.3.16	Strategic Undergrounding	Miles Undergrounded	25[135]	15.6	15.8	15.6
5.3.3.17.1	Overhead Transmission Fire Hardening - Transmission OH	Miles	19[136]	19.7	19.7	19.7
5.3.3.17.1	Overhead Transmission Fire Hardening - Transmission UG	Miles	0	0	0	0
5.3.3.17.1	Overhead Transmission Fire Hardening - Distribution Underbuilt	Miles	10[137]	9.4	9.4	9.4
5.3.3.17.2	Cleveland National Forest	Miles	29[138]	29.1	29.1	29.1

[134] SDG&E 2020 WMP, Table 23A, provided a target range of 3-5 generators leased for this initiative.
[135] Energy Safety notes that SDG&E reported the target of this initiative inconsistently in its 2020 WMP. In the body of its 2020 WMP, on page 86, SDG&E stated the target for this initiative as 25 miles. However, Table 23 of SDG&E's 2020 WMP lists a target range of 8-12 miles for "Undergrounding of Electric Lines and/or Equipment." For the purposes of this review, Energy Safety used the target stated in the body of SDG&E's 2020 WMP.
[136] SDG&E lists the target for this initiative as 21.5 miles in its Q4 2020 QIU.
[137] SDG&E lists the target for this initiative as 9 miles in its QAL.
[138] SDG&E lists the target for this initiative as 26 miles in its QAL.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
	Fire Hardening - Transmission OH					
5.3.3.17.2	Cleveland National Forest Fire Hardening - Distribution OH	Miles	50[139]	21.8	21.8	46.8
5.3.3.17.2	Cleveland National Forest Fire Hardening - Distribution OH w/associated Transmission mileage	Miles	N/A[140]	25	25	-
5.3.3.17.2	Cleveland National Forest Fire Hardening - Distribution UG	Miles	14[141]	14.4	14.4	14.4
5.3.3.18.1	Distribution Communications Reliability Improvements (DCRI)	Base Stations Installed	20[142]	15	15	15
5.3.3.18.2	Lightning arrestor removal and replacement	N/A	0	0	0	-

[139] Energy Safety notes that SDG&E reported the target of this initiative inconsistently in its 2020 WMP. In the body of its 2020 WMP, on page 90, SDG&E stated the target for this initiative as 50 miles. However, Table 23a of SDG&E's 2020 WMP lists a target range of 20-30 miles for "CNF Fire Hardening (Distribution OH).".

[140] SDG&E's 2020 WMP did not distinguish targets for overhead distribution and overhead distribution with associated transmission for this initiative. However, in its Q4 2020 QIU and QAL, SDG&E reported progress on these initiatives separately. For the purposes of this review, Energy Safety combined progress reported in this row and the preceding row to find that a total of 46.8 miles were completed; consistent with findings reported in the EC ARC and IE ARC.

[141] Energy Safety notes that SDG&E reported the target of this initiative inconsistently in its 2020 WMP. In the body of its 2020 WMP, on page 90, SDG&E stated the target for this initiative as 14 miles. However, Table 23a of SDG&E's 2020 WMP lists a target range of 11.2-16.8 miles for "CNF Fire Hardening (Distribution UG).".

[142] SDG&E 2020 WMP, Table 23A, provided a target range of 20-30 base stations installed for this initiative.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
5.3.4.1	Detailed corrective maintenance program inspections	Inspections	17,000[143]	17,977	17,977	17,977
5.3.4.2	Transmission System Inspections - Visual	Inspections	94[144]	114	114	114
5.3.4.2	Transmission System Inspections - Infrared	Inspections	90[145]	113	110	110
5.3.4.2	Transmission System Inspections - Detailed	Inspections	33[146]	41	41	41
5.3.4.2	Transmission System Inspections - Aerial	Inspections	21[147]	21	21	21
5.3.4.4	Infrared inspections of distribution infrastructure	Inspections	7,000[148]	13,077	13,077	13,077
5.3.4.6	Intrusive pole inspections - distribution	Inspections	17,000[149]	14,450	-	14,450
5.3.4.9.1	HFTD Tier 3 Inspections	Inspections	11,000[150]	11,864	11,864	11,864

[143] SDG&E 2020 WMP, Table 24A, provided a target range of 17,000-18,000 miles for this initiative.
[144] SDG&E 2020 WMP, Table 24A, provided a target range of 94-140 inspections for this initiative.
[145] SDG&E 2020 WMP, Table 24A, provided a target range of 90-136 inspections for this initiative.
[146] SDG&E 2020 WMP, Table 24A, provided a target range of 33-49 inspections for this initiative.
[147] SDG&E 2020 WMP, Table 24A, provided a target range of 21-33 inspections for this initiative.
[148] SDG&E 2020 WMP, Table 24A, provided a target range of 7,000-10,000 structures inspected for this initiative.
[149] SDG&E 2020 WMP, Table 24A, provided a target range of 17,000-19,000 structures inspected for this initiative.
[150] SDG&E 2020 WMP, Table 24A, provided a target range of 11,000-12,000 structures inspected for this initiative.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
5.3.4.9.2	Drone assessments of distribution infrastructure	Inspections	28,000[151]	37,310	37,310	37,310
5.3.4.11	Patrol inspections of distribution poles - CMP	Inspections	85,000[152]	86,075	-	86,075
5.3.4.15	Substation System Inspection	Inspections	300[153]	405	405	405
5.3.5.2	Detailed inspections of vegetation around distribution infrastructure - tree trimming	Inspections	450,000[154]	451,207	451,207	451,207
5.3.5.5	Fuels Management	Poles cleared	400[155]	324	324	324
5.3.5.9	Other discretionary inspection of vegetation around distribution infrastructure – Enhanced inspections, patrols, and trims	Trim/Remove	17,000	17,075	17,075	17,075

[151] SDG&E 2020 WMP, Table 24A, provided a target range of 28,000-38,000 structures inspected for this initiative.
[152] SDG&E 2020 WMP, Table 24A, provided a target range of 85,000-87,000 structures inspected for this initiative.
[153] SDG&E 2020 WMP, Table 24A, provided a target range of 300-360 substations inspected for this initiative.
[154] SDG&E 2020 WMP, Table 25A, provided a target range of 450,000-460,000 tress inspected for this initiative.
[155] SDG&E 2020 WMP, Table 25A, provided a target range of 400-600 poles cleared for this initiative.

Initiative No.	Initiative name	Target Units	WMP Target	Reported Actual Progress		
				QIU	QAL	EC ARC
5.3.5.20	Vegetation management to achieve clearances around electric infrastructure – Pole brushing	Poles brushed	32,000 [156]	35,563	36,563	35,563

Results for Initiatives with Qualitative Targets

In its Q4 2020 QIU, SDG&E reported that it completed all 51 of its initiatives with qualitative targets.[157] However, as discussed in Section 5.2, SDG&E's independent evaluator found that SDG&E failed to complete two of its initiatives with qualitative targets (5.3.2.7 – Network Management Situational Awareness Upgrades and 5.3.4.9.3 – Circuit Ownership). Thus, Energy Safety finds that SDG&E completed 49 of its 51 initiatives with qualitative targets (or 96%).

5.6 Wildfire and Risk Reduction Outcomes

As shown in Figure 3 below, SDG&E has seen an oscillation in extreme fire weather events since 2015 with a steady increase from 2015 through 2017, followed by a steady decrease from 2017 through 2019, and an uptick again in 2020. Energy Safety uses a metric, the red flag warning circuit mile days (RFWCMD), for overhead assets, to depict wildfire risk normalized for the size of fire weather events in an electrical corporation's service territory. Use of this metric allows for comparisons across reporting years and enables assessment of performance in 2020 relative to previous trends from 2015-2019. If the oscillating trend from previous years continues, the uptick in RFWCMD experienced in 2020 forecasts a steady increase in extreme fire weather in the near-term (i.e., next few years) for SDG&E. Factoring in the historical and potential future impacts of fluctuations in extreme weather patterns due to climate change, this uptick in RFWCMDs during 2020 underscores the importance of effective wildfire mitigation planning and execution of mitigation efforts.

Energy Safety requires electrical corporations to report data, such as ignitions in the HFTD, that will enable Energy Safety to, over time, assess whether an electrical corporation's

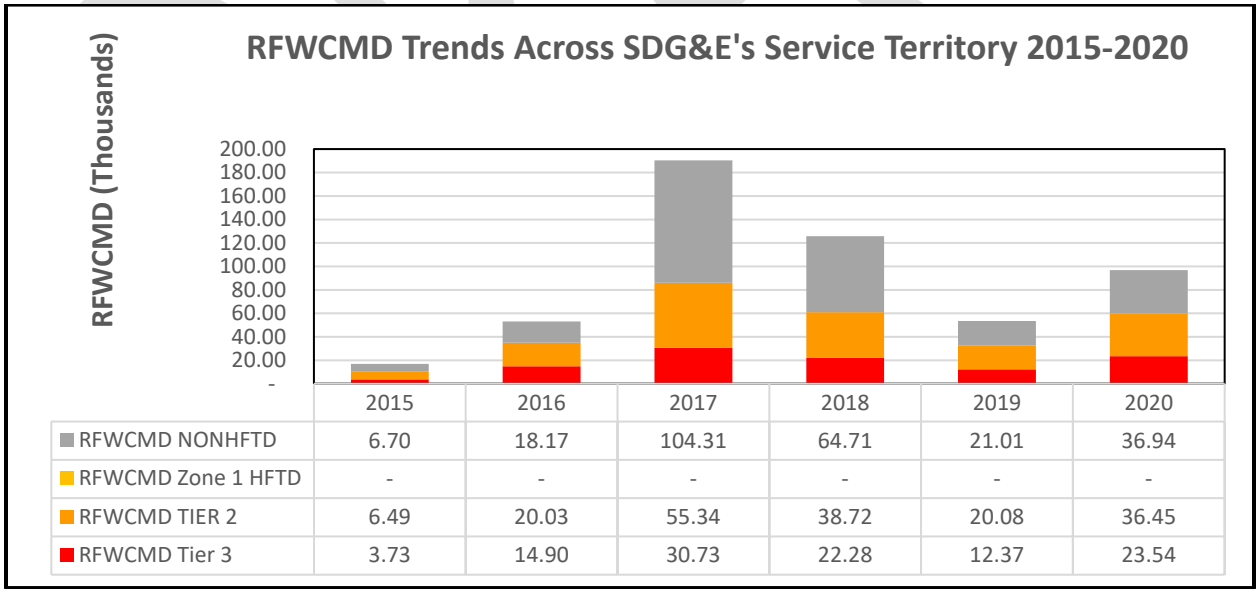
[156] SDG&E 2020 WMP, Table 25A, provided a target range of 32,000-39,000 poles brushed for this initiative.
[157] All initiatives with qualitative targets have a value of "Complete" as their status in SDG&E's Q4 2020 QIU.

wildfire mitigation planning activities successfully achieve the primary objective of a WMP – reducing catastrophic wildfire risk and reliance on PSPS. As noted earlier in this document, it is not enough to solely evaluate whether an electrical corporation met its targets for implementing specific initiatives if ultimately the electrical corporation did not reduce the risk of catastrophic wildfires.

In 2020, Energy Safety evaluated a variety of metrics (calculations based on data provided) to set a baseline that can be measured against in future years, including several metrics adopted in the 2020 WMP Guidelines.[158] In addition to these metrics, Energy Safety also utilized the knowledge and expertise gained since the adoption of the 2020 WMP Guidelines to present additional metrics correlated to SDG&E's wildfire risk. Where data was available and applicable, Energy Safety evaluated different permutations of ignition risk metrics to also account for geographical risk factors, as indicated by HFTD tiers, and causal information.

Energy Safety relied upon data reported in an electrical corporation's 2020 WMP as well as Quarterly Data Report (QDR) submissions from May 3, 2021. Energy Safety also performed analysis that compared the electrical corporation's performance during the 2020 WMP compliance period to trends from previous years.[159] Metrics analyzed are discussed in the following sections.

Figure 3: Variances in Extreme Fire Weather Across SDG&E Territory from 2015-2020 by HFTD location



	2015	2016	2017	2018	2019	2020
RFWCMD NONHFTD	6.70	18.17	104.31	64.71	21.01	36.94
RFWCMD Zone 1 HFTD	-	-	-	-	-	-
RFWCMD TIER 2	6.49	20.03	55.34	38.72	20.08	36.45
RFWCMD Tier 3	3.73	14.90	30.73	22.28	12.37	23.54

[158] See Attachment 4 of CPUC Resolution WSD-001, titled "WMP Metrics."
[159] Energy Safety looked at previous year performances dating back to 2015, where available and reported in SDG&E's data submissions, or any year thereafter for which data was available and reported.

5.6.1 Ignition Risk

Energy Safety evaluated ignition risk as a function of various metrics reported in SDG&E's QDR submission. SDG&E reported these risk metrics in Table 7.1 and Table 7.2 of its QDR submission (QDR Table 7.1 and QDR Table 7.2, respectively). Ignition risk metrics considered include:

1. **Ignitions** – incidents in which electrical corporation infrastructure was involved.
2. **Wire down events** – incidents in which overhead electrical lines fall to the ground or land on objects.
3. **Vegetation-caused outages** – outages experienced in which the cause was determined to be vegetation contact with electrical lines.
4. **Unplanned outages** – all unplanned outages experienced.

5.6.1.1 Ignition Data

QDR Table 7.2 below plots SDG&E's ignitions from 2015 through 2020. Figure 4 shows the ignitions across SDG&E's service territory normalized by the total RFWCMD for each year broken out by location (i.e., Tier 3 HFTD areas, Tier 2 HFTD areas, Zone 1 HFTD areas, and non-HFTD areas). Figure 5 shows the ignitions in Tier 3 HFTD areas of SDG&E's service territory normalized by the RFWCMD in Tier 3 only for each year. Figure 6 shows the ignitions in Tier 2 HFTD areas of SDG&E's service territory normalized by the RFWCMD in Tier 2 only for each year.

Figure 4: SDG&E Ignitions from 2015-2020 Normalized by Ignitions in HFTD Tiers/ Total RFWCMD

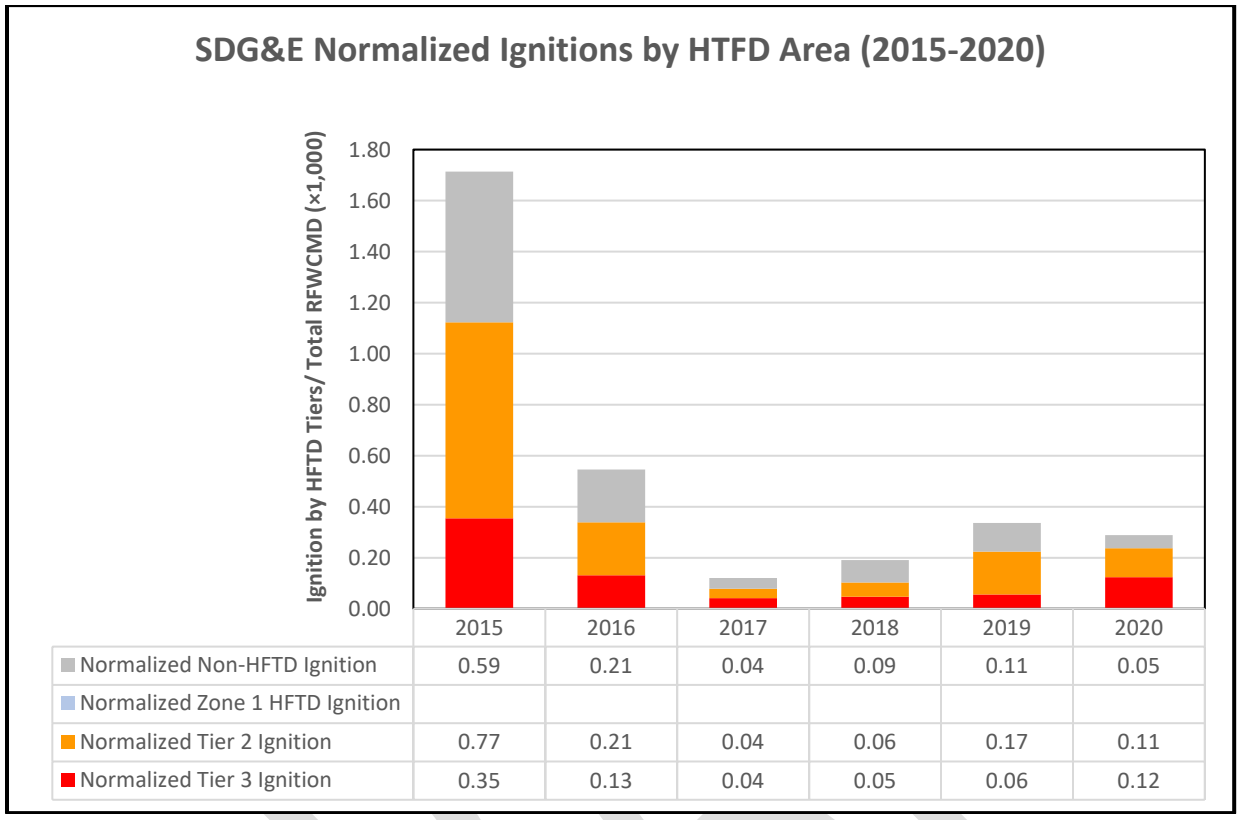


Figure 5: SDG&E Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 3 Only

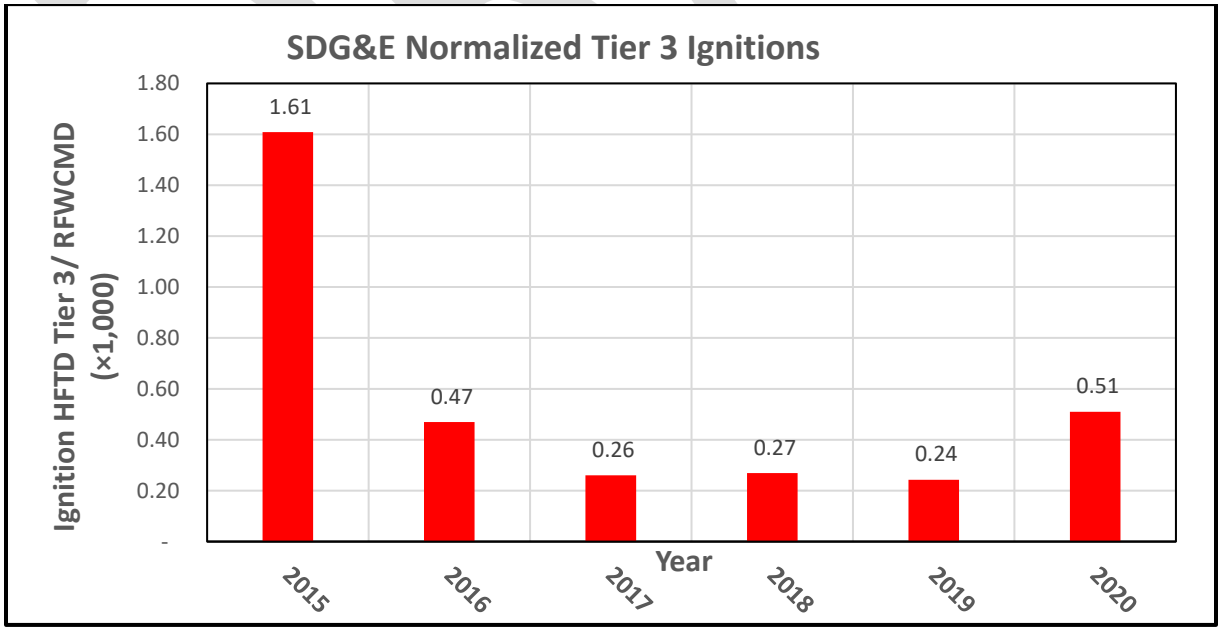
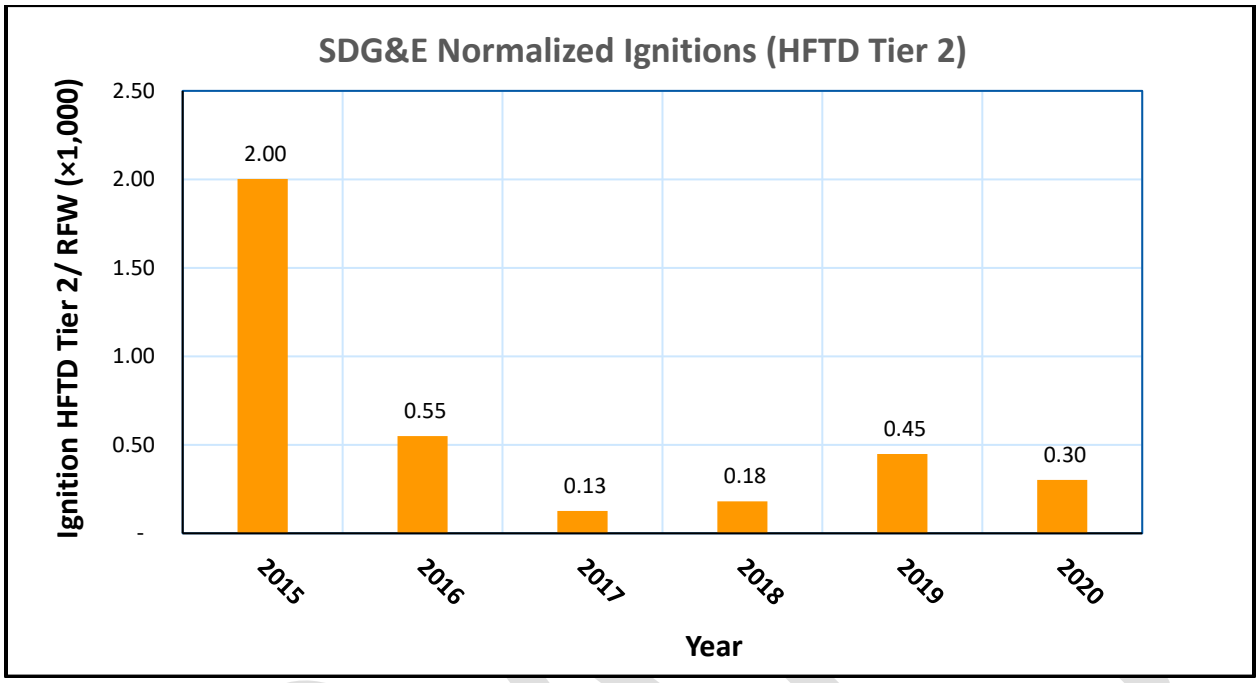


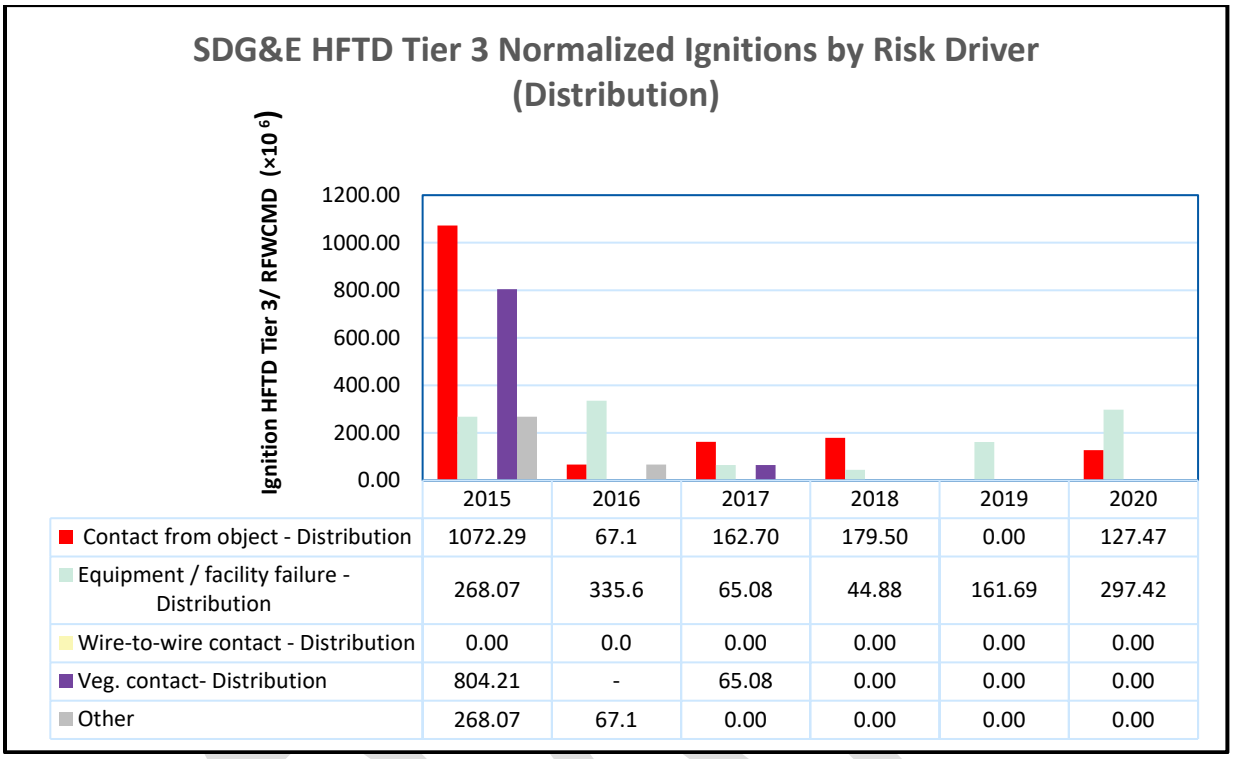
Figure 6: SDG&E Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only



As can be seen from the above figures, after starting at a peak in 2015, SDG&E's normalized ignitions steeply declined over the next two years, followed by a steady upward trend from 2017 through 2020, although not nearly as high as in 2015. Per Figure 5, SDG&E's normalized HFTD Tier 3 ignitions in 2020 were approximately 11% less than the five-year historical average from 2015-2019, and SDG&E's 2020 normalized ignitions in Tier 2 HFTD areas were approximately 55% less than the five-year historical average from 2015-2019. In contrast, SDG&E's normalized ignitions in Tier 3 HFTD areas increased by over 110% from 2019 to 2020.

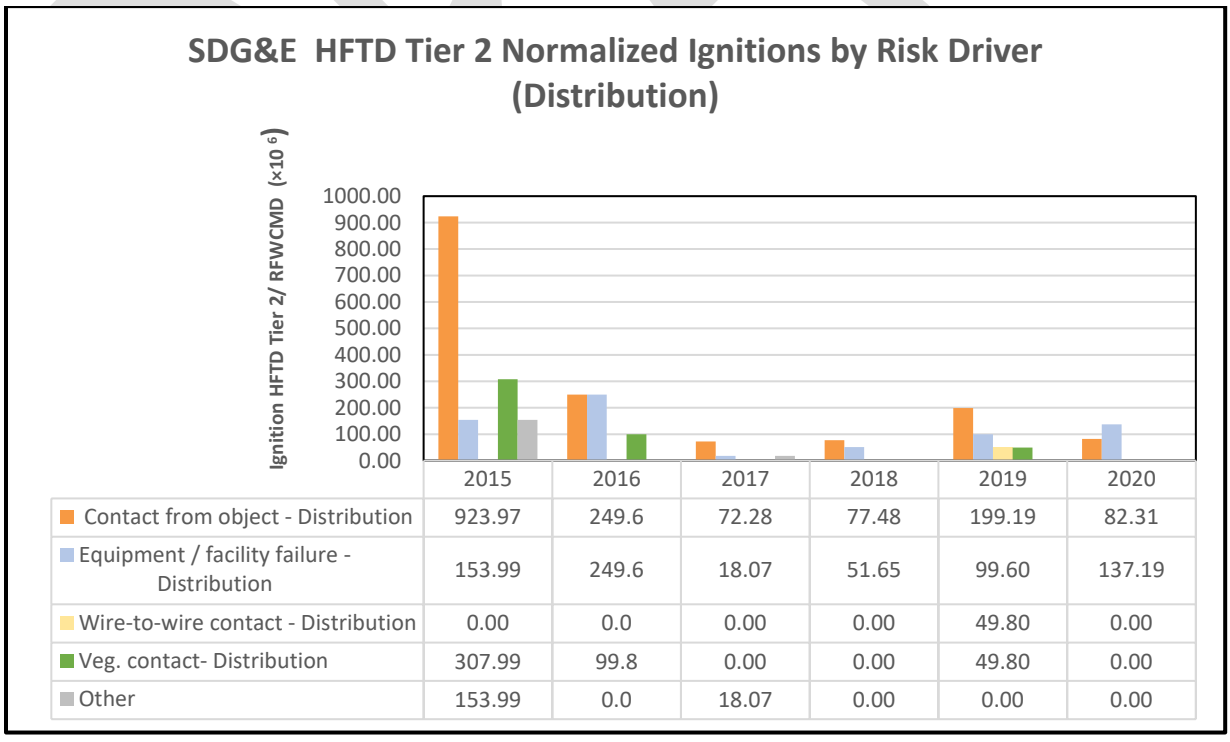
The following four figures show drivers of SDG&E ignitions during the 2015-2020 period broken out by asset classification and HFTD location (i.e., Tier 3 and Tier 2). The first two figures show ignitions on the distribution system and the second two figures show ignitions on the transmission system.

Figure 7:SDG&E Distribution Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 3 Only Broken out by Risk Driver



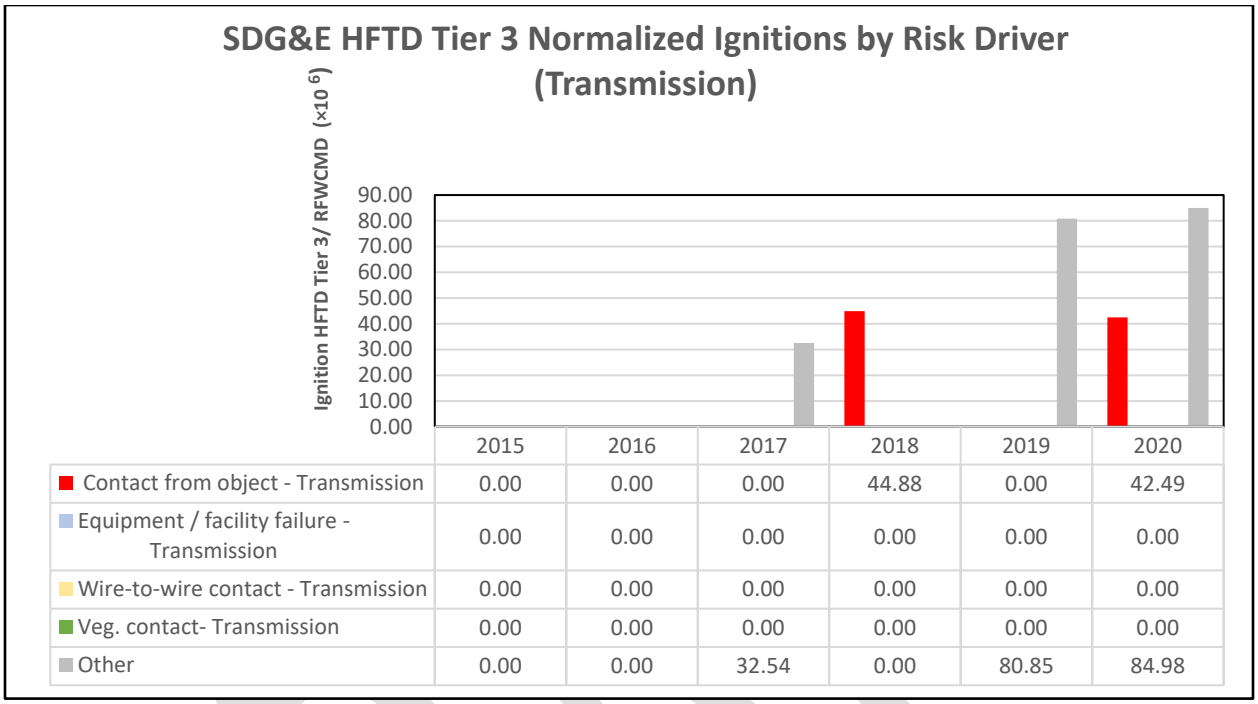
	2015	2016	2017	2018	2019	2020
Contact from object - Distribution	1072.29	67.1	162.70	179.50	0.00	127.47
Equipment / facility failure - Distribution	268.07	335.6	65.08	44.88	161.69	297.42
Wire-to-wire contact - Distribution	0.00	0.0	0.00	0.00	0.00	0.00
Veg. contact- Distribution	804.21	-	65.08	0.00	0.00	0.00
Other	268.07	67.1	0.00	0.00	0.00	0.00

Figure 8: SDG&E Distribution Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only Broken out by Risk Driver



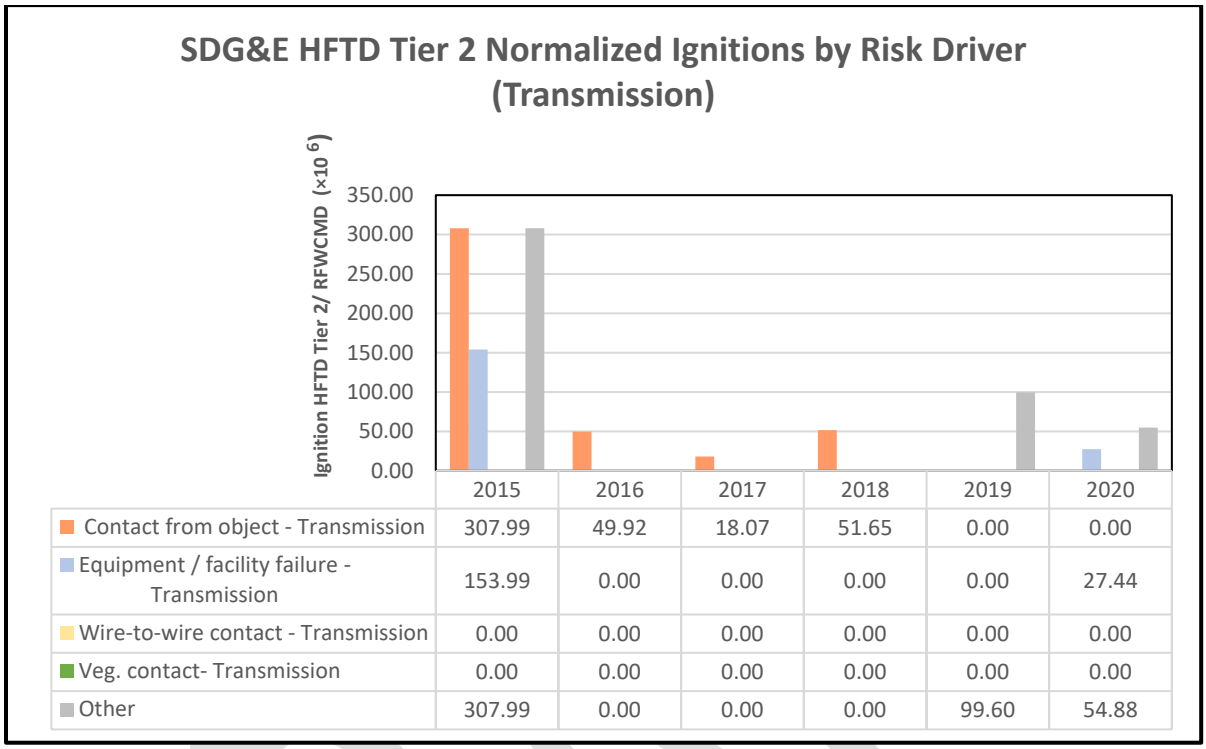
	2015	2016	2017	2018	2019	2020
Contact from object - Distribution	923.97	249.6	72.28	77.48	199.19	82.31
Equipment / facility failure - Distribution	153.99	249.6	18.07	51.65	99.60	137.19
Wire-to-wire contact - Distribution	0.00	0.0	0.00	0.00	49.80	0.00
Veg. contact- Distribution	307.99	99.8	0.00	0.00	49.80	0.00
Other	153.99	0.0	18.07	0.00	0.00	0.00

Figure 9: SDG&E Transmission Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD Tier 3 Only Broken out by Risk Driver



	2015	2016	2017	2018	2019	2020
Contact from object - Transmission	0.00	0.00	0.00	44.88	0.00	42.49
Equipment / facility failure - Transmission	0.00	0.00	0.00	0.00	0.00	0.00
Wire-to-wire contact - Transmission	0.00	0.00	0.00	0.00	0.00	0.00
Veg. contact- Transmission	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	32.54	0.00	80.85	84.98

Figure 10: SDG&E Transmission Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only Broken out by Risk Driver



	2015	2016	2017	2018	2019	2020
Contact from object - Transmission	307.99	49.92	18.07	51.65	0.00	0.00
Equipment / facility failure - Transmission	153.99	0.00	0.00	0.00	0.00	27.44
Wire-to-wire contact - Transmission	0.00	0.00	0.00	0.00	0.00	0.00
Veg. contact- Transmission	0.00	0.00	0.00	0.00	0.00	0.00
Other	307.99	0.00	0.00	0.00	99.60	54.88

As shown in the figures above, with few exceptions, contact from objects was generally the top driver of SDG&E's ignitions in Tier 2 and Tier 3 HFTD areas across both its transmission and distribution infrastructure from 2015 through 2020. Looking more closely at the risk drivers of SDG&E's normalized distribution ignitions in Tier 2 and Tier 3 HFTD areas, Energy Safety discovered the following:

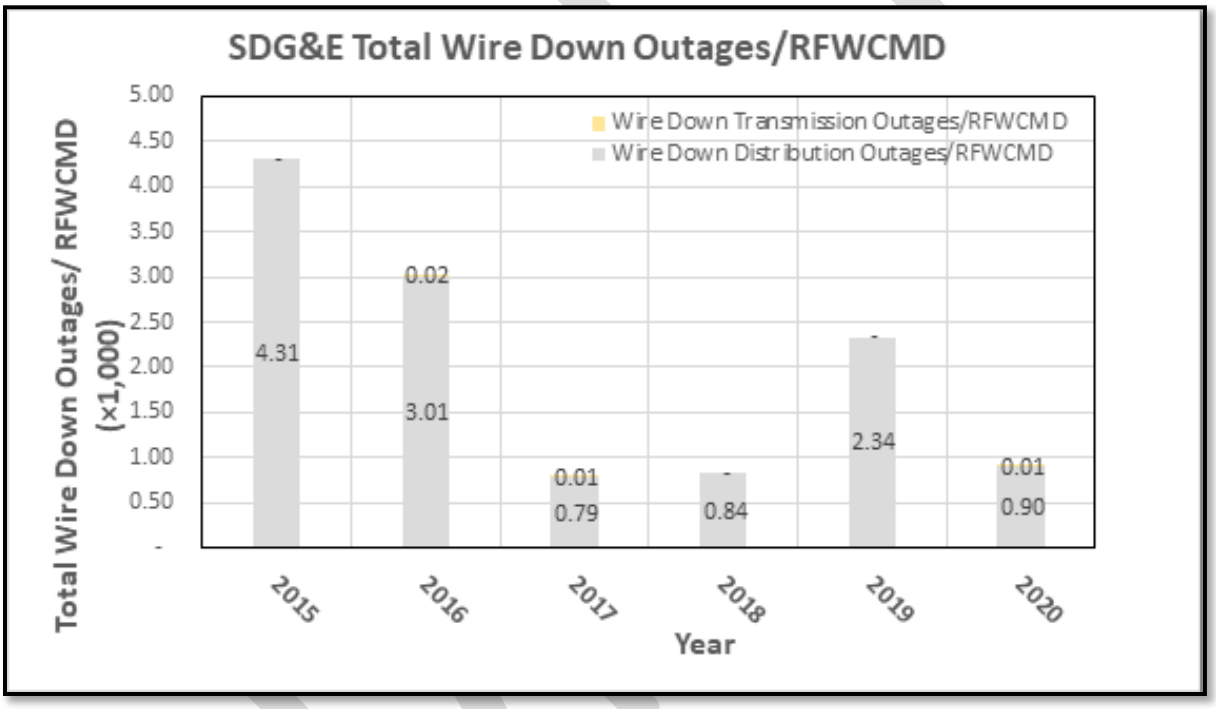
- **Contact from objects** – In 2020, contact from object ignitions in Tier 3 HFTD areas decreased by approximately 57% when compared to the five-year average from 2015 through 2019. In Tier 2 HFTD areas, contact from object ignitions decreased by approximately 73% from the five-year average in 2020.
- **Equipment/facility failure** – In 2020, equipment/facility failure ignitions in Tier 3 HFTD areas significantly increased by over 70% compared to the five-year average from 2015 through 2019. Similarly, in Tier 2 HFTD areas, equipment/facility failure ignitions increased by nearly 20% from the five-year average in 2020.
- **Vegetation contact** – In 2020, normalized vegetation contact ignitions in Tier 3 HFTD areas decreased by 100% compared to the five-year average from 2015 through 2019. Similarly, in Tier 2 HFTD areas, normalized vegetation contact ignitions decreased by 100% from the five-year average in 2020, as no such ignitions were reported.

Outside of 2015, SDG&E's normalized transmission ignitions in Tier 2 and Tier 3 HFTD areas were substantively fewer than its distribution ignitions in those same areas. In 2020, SDG&E reported only having contact from object ignitions on its transmission infrastructure in Tier 3 HFTD areas, which increased by approximately 373% compared to the five-year average from 2015-2019.

5.6.1.2 Wire Down Event Data

QDR Table 7.1, metrics 1 through 16 include data on SDG&E's distribution and transmission wire-down events from 2015 through 2020, which are normalized for RFWCMD and plotted below in Figure 11.

Figure 11: SDG&E Total Wire Down Events from 2015-2020 Normalized by RFWCMD

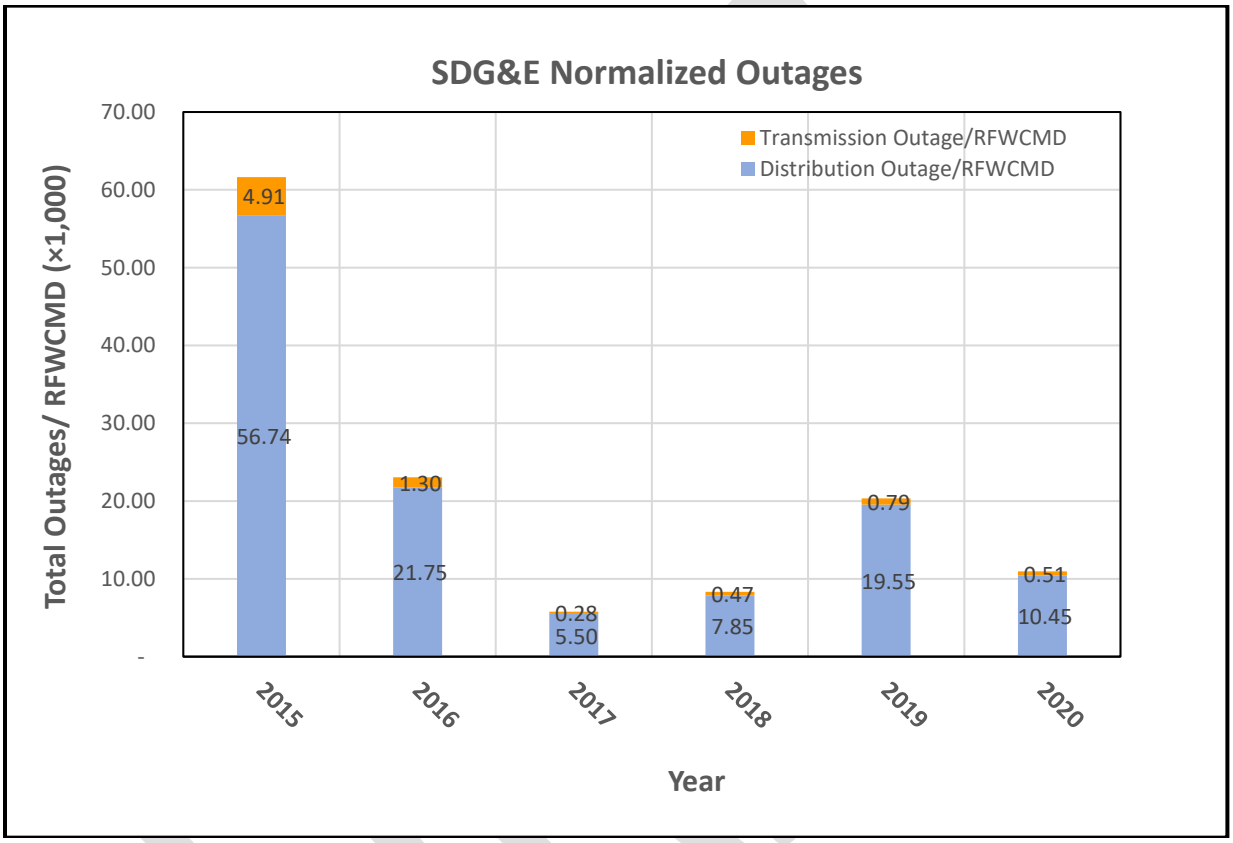


SDG&E's overall normalized wire-down events trended down over the 2015 through 2018 period. However, while distribution wire-down events decreased by 60% in 2020 compared to the previous five-year average, conversely, SDG&E's normalized transmission wire-down events increased by approximately 50% when compared to the five-year average from 2015 through 2019.

5.6.1.3 Outage Data

QDR Table 7.1, metrics 17 through 32 include data on distribution and transmission outages of all cause types from 2015 through 2020. Figure 12 below plots SDG&E's transmission and distribution outages normalized for RFWCMD.

Figure 12: Outages from 2015-2020 Normalized by RFWCMD

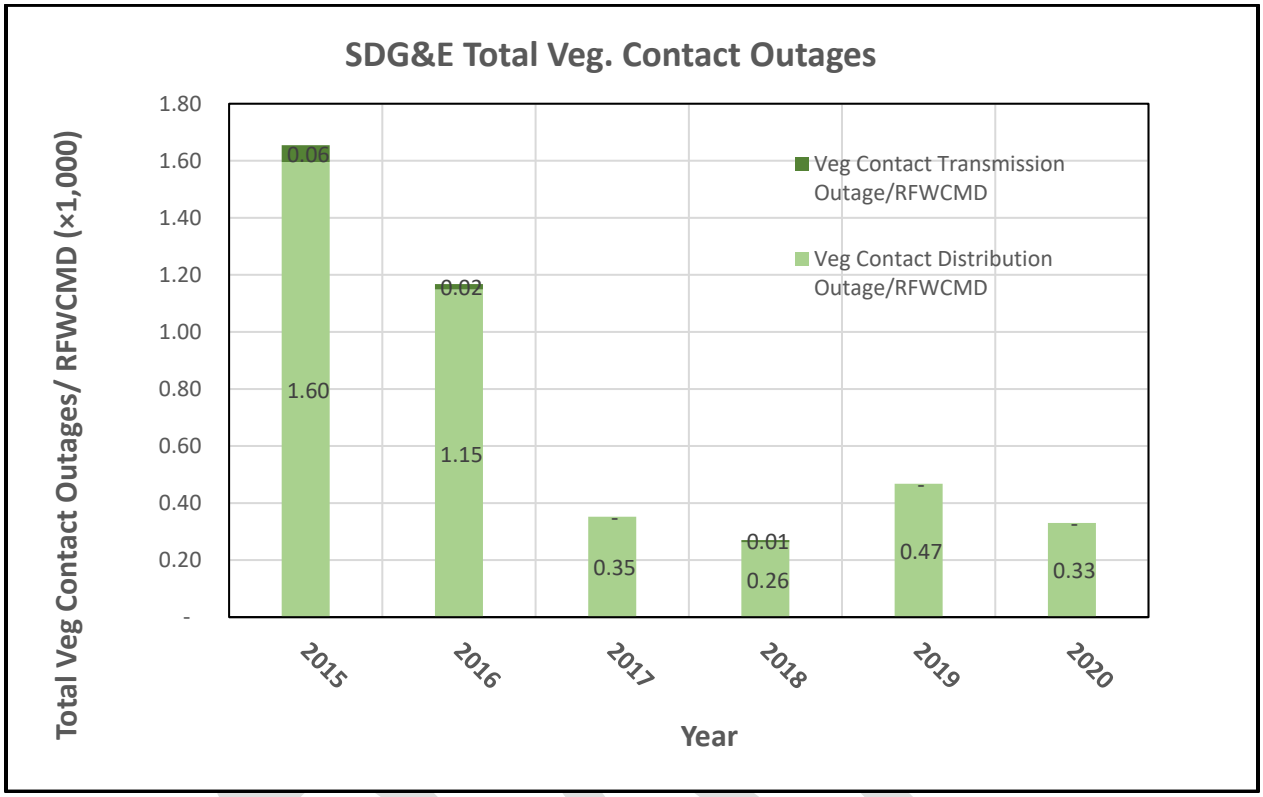


Normalized total outages decreased over the period between 2015 and 2020. A sharp decrease in normalized total outages from 2015 through 2017 was followed by a steady increase from 2017 through 2019 and then a significant drop in 2020. In 2020, as compared to the five-year average from 2015 through 2019, SDG&E's normalized total transmission and distribution outages decreased by approximately 67% and 53%, respectively.

5.6.1.3.1 Vegetation-Caused Outage Data

QDR Table 7.1, metrics 17a and 25a include data on transmission and distribution outages that are caused by vegetation contact from 2015 through 2020. Figure 13 below plots SDG&E's transmission and distribution vegetation contact-caused outages normalized for RFWCMD.

Figure 13: SDG&E Vegetation Contact Outages from 2015-2020 Normalized by RFWMCD



Although there was a slight uptick in 2019, normalized outages due to vegetation contact trended down between 2015 and 2020. Also, in 2020, as compared to the five-year average from 2015 through 2019, SDG&E's normalized total transmission and distribution outages due to vegetation contact decreased by approximately 100% and 57%, respectively.

5.6.2 PSPS Risk

While useful as a wildfire mitigation measure, PSPS carries its own risks to customers. As such, electrical corporations must reduce the duration, scope, and frequency of PSPS events. Apart from SDG&E, for most electrical corporations, broad use of PSPS as a wildfire mitigation measure did not occur until 2018.

SDG&E reported data on its use of PSPS and other PSPS metrics in Table 11 of its QDR (QDR Table 11). Again, Energy Safety applied the RFWCMD metric as a normalizing parameter. All the figures below show a sharp uptick in usage and impact of PSPS in 2019, reflective of SDG&E's broad deployment of PSPS in the fall of 2019.

Figure 14: Normalized frequency of PSPS events

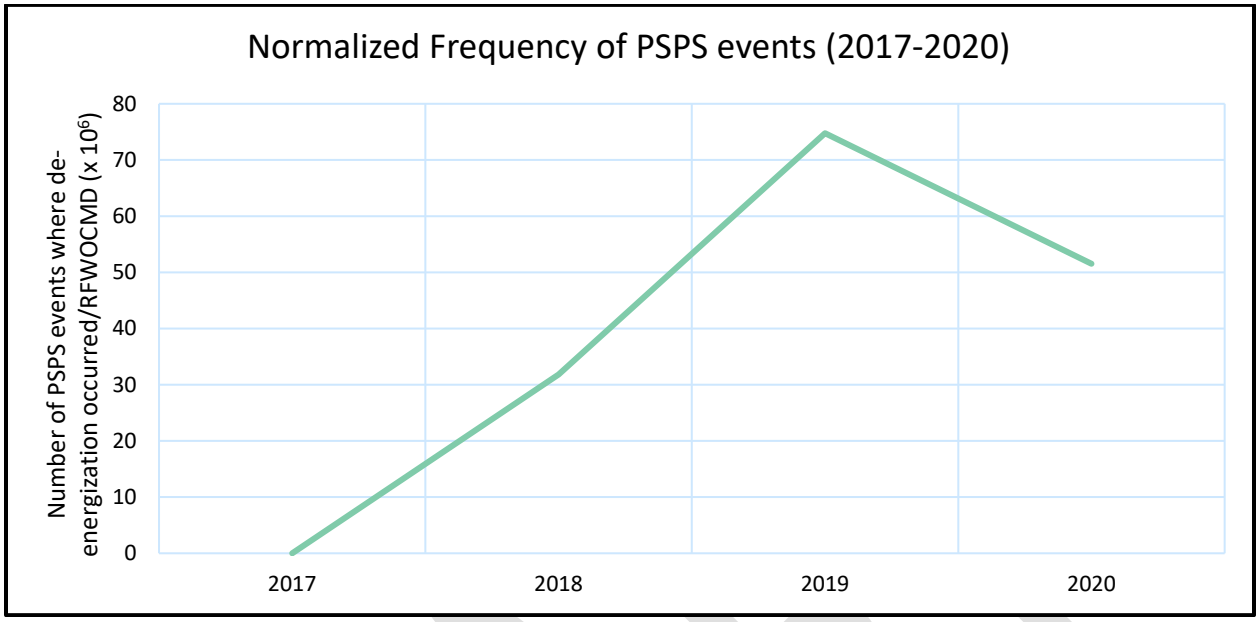


Figure 15: Normalized scope of PSPS events

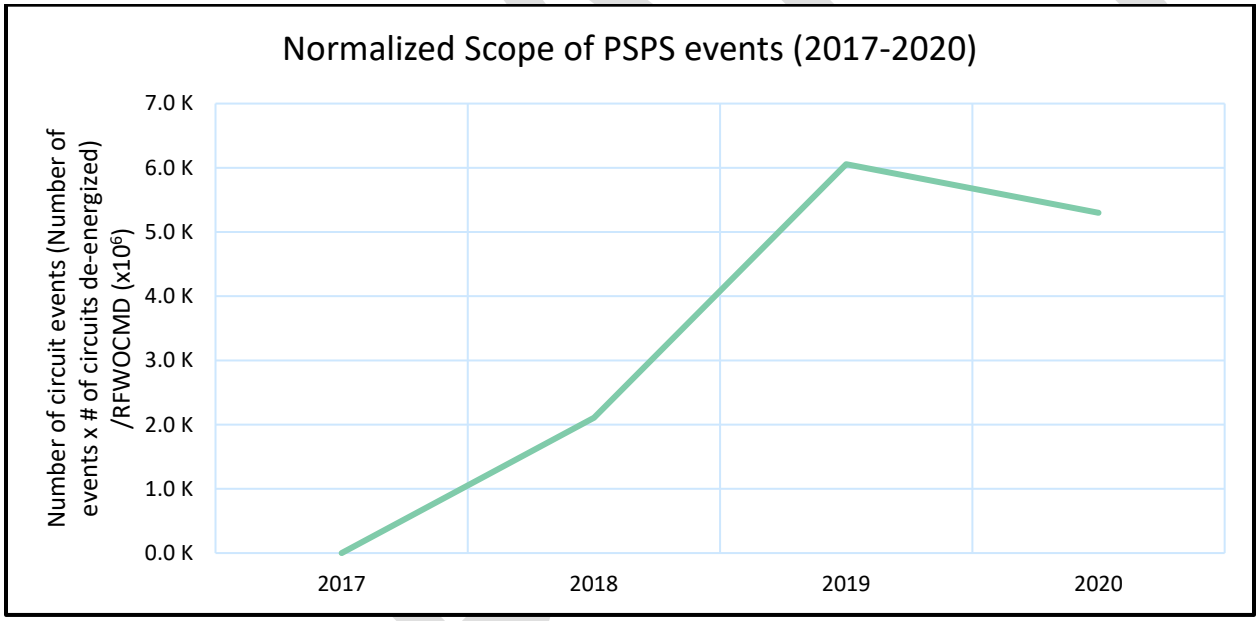


Figure 16: Normalized duration of PSPS events

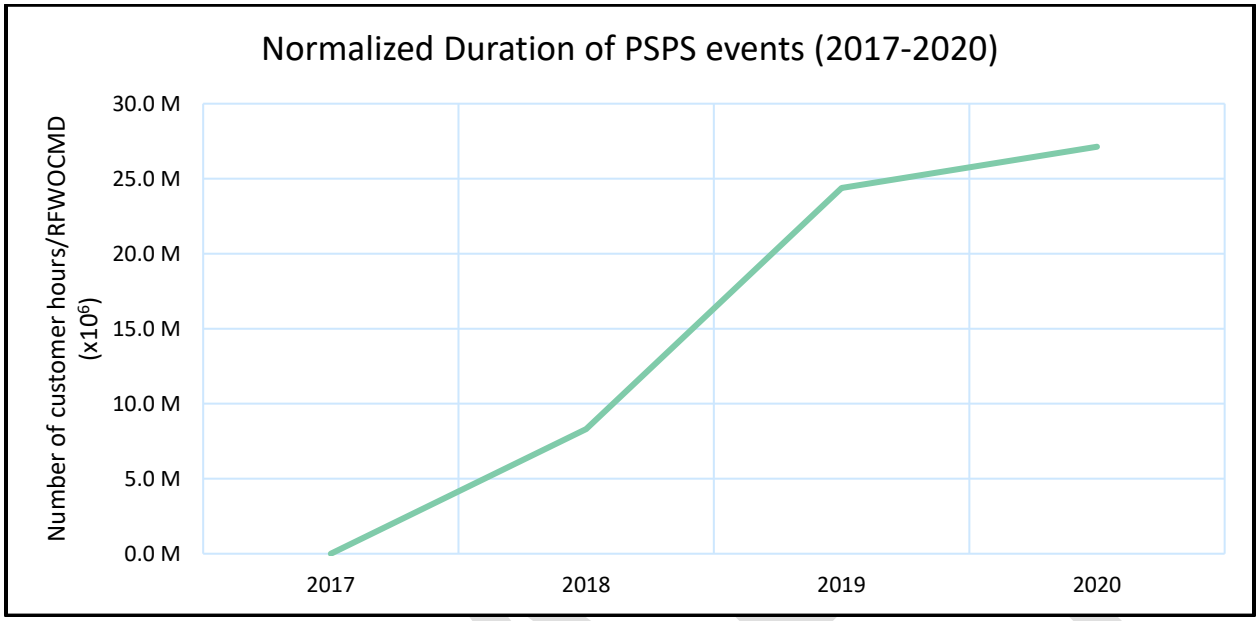


Figure 17: Normalized critical infrastructure outage customer-hours due to PSPS.

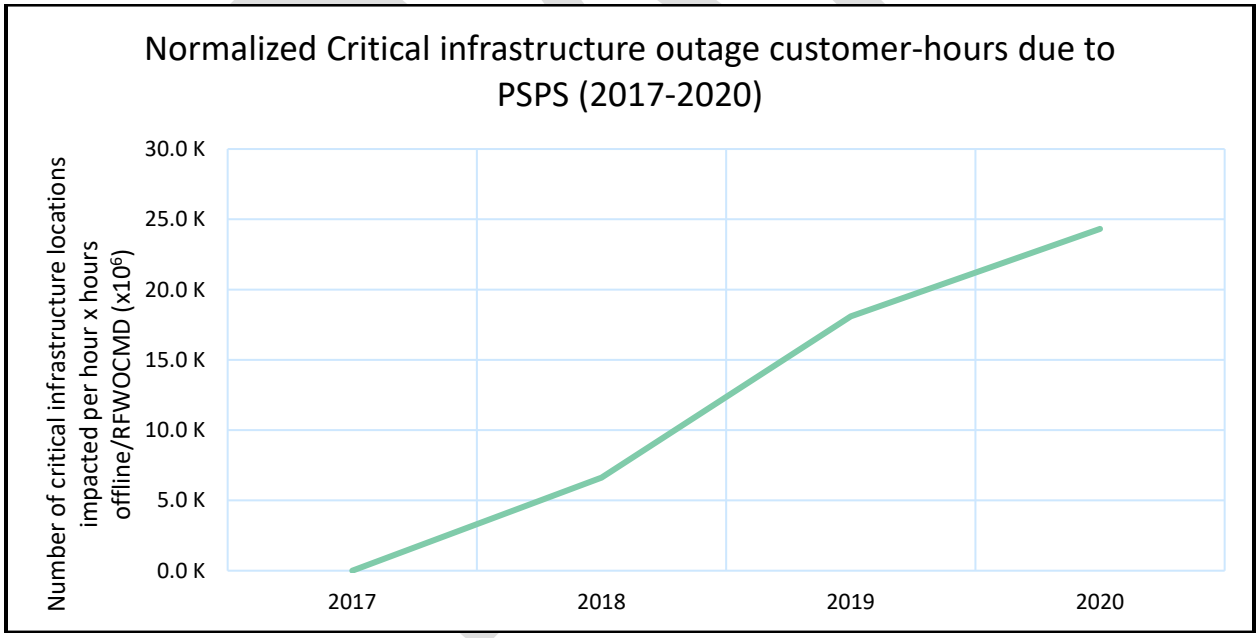


Figure 18: Normalized number of customers impacted by PSPS

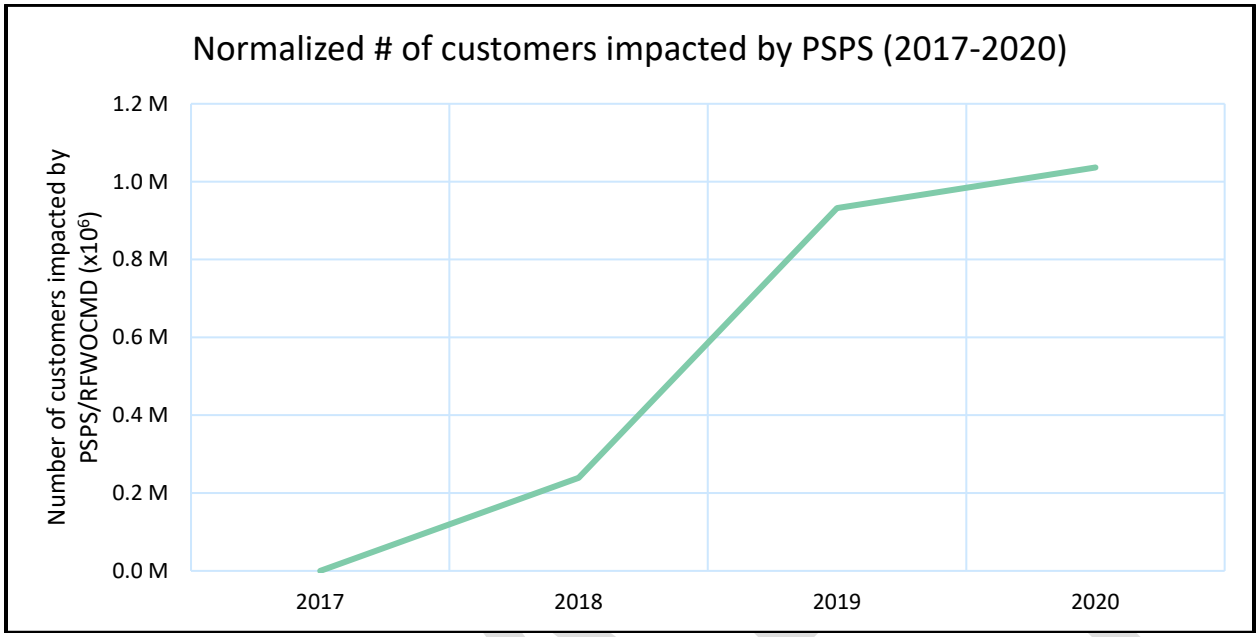


Figure 14 and Figure 15 show that the normalized scope and frequency of SDG&E's PSPS events continued to decrease in 2020. However, as shown in Figure 16 through Figure 18, those PSPS events were longer, impacted more customers, and had increased impacts on critical infrastructure.[160]

As previously noted, the normalized duration of PSPS events, impact to critical infrastructure, and number of customers has steadily increased, while the normalized scope and frequency of PSPS events has decreased from 2019 to 2020. The data implies that while SDG&E implemented fewer PSPS events for the same severity of fire weather, the impact of each PSPS event was larger.

5.6.3 Identified and Unresolved Risk

To ensure safe operations and the reduction of wildfire risk, Energy Safety expects that Electrical Corporations maintain electrical lines and equipment through: (1) thorough inspection of those lines and equipment to identify conditions that increase wildfire risk, and (2) expedient remediation of conditions identified during inspections to reduce known wildfire risks. Unresolved conditions leave known wildfire risk on the system.

[160] Critical infrastructure including, but not limited to, hospitals, police stations, and grocery stores are heavily relied upon in times of emergency.

In Table 1 of its QDR (QDR Table 1), SDG&E reported data on findings from inspections it performed in accordance with its 2020 WMP.[161] The inspection data provided in QDR Table 1 includes detail on:

- Asset classification (i.e., transmission or distribution).
- Inspection type (i.e., detailed inspection, patrol inspection, other inspection).
- Location (i.e., in or out of HFTD areas).
- Priority of findings (i.e., Level 1, Level 2, or Level 3).[162]
- Number of circuit miles inspected for each inspection type.

The priority levels of inspection finding data reported in QDR Table 1 are derived from the CPUC's GO 95, Rule 18, which outlines requirements for electrical corporation maintenance programs and resolution of safety hazards. Rule 18 identifies three priority levels, described below:

1. **Level 1** – an immediate risk of high potential impact to safety or reliability requiring immediate corrective action.
2. **Level 2** – any other risk of at least moderate potential impact to safety or reliability requiring corrective action no later than 36 months.
3. **Level 3** – any risk of low potential impact to safety or reliability requiring corrective action within 60 months with some exceptions.[163]

In addition to data on inspection findings, Energy Safety assessed data on SDG&E's progress on fixing the unresolved conditions. Energy Safety requested data from SDG&E on the number and type of conditions it fixed during the 2020 WMP compliance period.[164] The data on conditions fixed by SDG&E is of the same detail and includes the same assumptions as the inspection finding data in QDR Table 1.

Table 13 below provides an overview of the circuit miles SDG&E inspected in 2020, broken out by inspection type.

Table 13: Miles of Inspection Completed by SDG&E in 2020

Inspection Type	Distribution Miles Inspected		Transmission Miles Inspected		Transmission & Distribution Miles Inspected	
Patrol	6,445	84%	1,749	43%	8,194	70%

[161] QDR Table 1, Metric 1 titled, "Grid Condition Findings".
[162] CPUC's GO 95, Rule 18 identifies and defines priority levels, and associated corrective action timeframes, applicable to identified noncompliance issues. Level 1 findings are of highest concern and Level 3 are of lowest concern.
[163] See CPUC GO 95, Rule 18(B)(1)(a).
[164] DR-092 sent on May 10, 2022.

Inspection Type	Distribution Miles Inspected		Transmission Miles Inspected		Transmission & Distribution Miles Inspected	
Detailed	760	10%	625	15%	1,385	12%
Other	490	6%	1,676	41%	2,166	18%
Total	**7,695**	**100%**	**4,050**	**100%**[165]	**11,745**	**100%**

SDG&E completed nearly 12,000 miles of inspections in 2020; approximately two-thirds of which was performed on its distribution lines and equipment. In total, patrol inspections made up 70% of all inspections performed, while detailed inspections made up 12%, and other inspections 18%.

Table 14 and Table 15 below detail the number of inspection findings and fixes, broken out by priority level, SDG&E made on its distribution and transmission infrastructure, respectively.

Table 14: Conditions Found and Fixed on SDG&E's Distribution Infrastructure in 2020

	Level 1	Level 2	Level 3	Total
Conditions Found	64	1,932	0	**1,996**
Conditions Fixed	133	9,529	0	**9,662**
Difference	**69 More Fixed**	**7,597 More Fixed**	**-**	**7,666 More Fixed**

Table 15: Conditions Found and Fixed on SDG&E's Transmission Infrastructure in 2020

	Level 1	Level 2	Level 3	Total
Conditions Found	2	893	61	**956**
Conditions Fixed	0	354	64	**418**
Difference	**2 More Found**	**539 More Found**	**3 More Fixed**	**538 More Found**

In Table 14, SDG&E fixed more than twice as many priority Level 1 conditions as it found. In addition, in Table 15, there were two Level 1 conditions on identified on SDG&E's transmission that were not fixed in 2020. While Level 1 conditions are required to be resolved immediately, it is evident from the data that, on SDG&E's distribution infrastructure, a significant number of high-risk issues (Level 1 conditions) from previous years were not

[165] Numbers in the column do not sum to 100% due to rounding discrepancies.

resolved in a timely manner as they were carried over from the previous year(s) and fixed in 2020.

The same trend is shown in the Level 2 distribution conditions found compared to conditions fixed by SDG&E in 2020. In 2020, SDG&E fixed nearly five times as many Level 2 conditions as it fixed. However, because the corrective action timeframes associated with Level 2 conditions often extend beyond one year, it is expected that there would be a backlog work from conditions identified in prior years. SDG&E's progress in fixing significantly more Level 2 conditions than it found in 2020 bodes well for its ability to manage this backlog in future years.

5.6.4 Wildfire Outcomes

Table 2 of the QDR (QDR Table 2) provides data on impacts from electrical corporation-related wildfires including:

1. Acres burned.
2. Structures damaged/destroyed.
3. Injuries/fatalities.
4. Value of assets destroyed.

The figures below present SDG&E's outcome metrics from 2015-2020.

Figure 19: SDG&E acres burned by utility-ignited wildfire

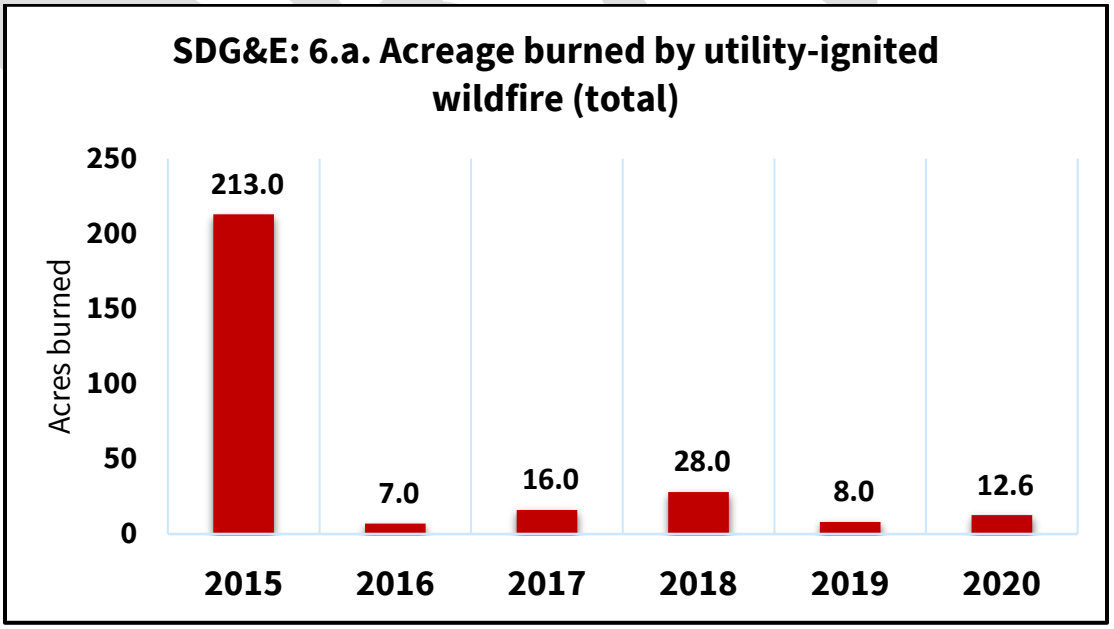
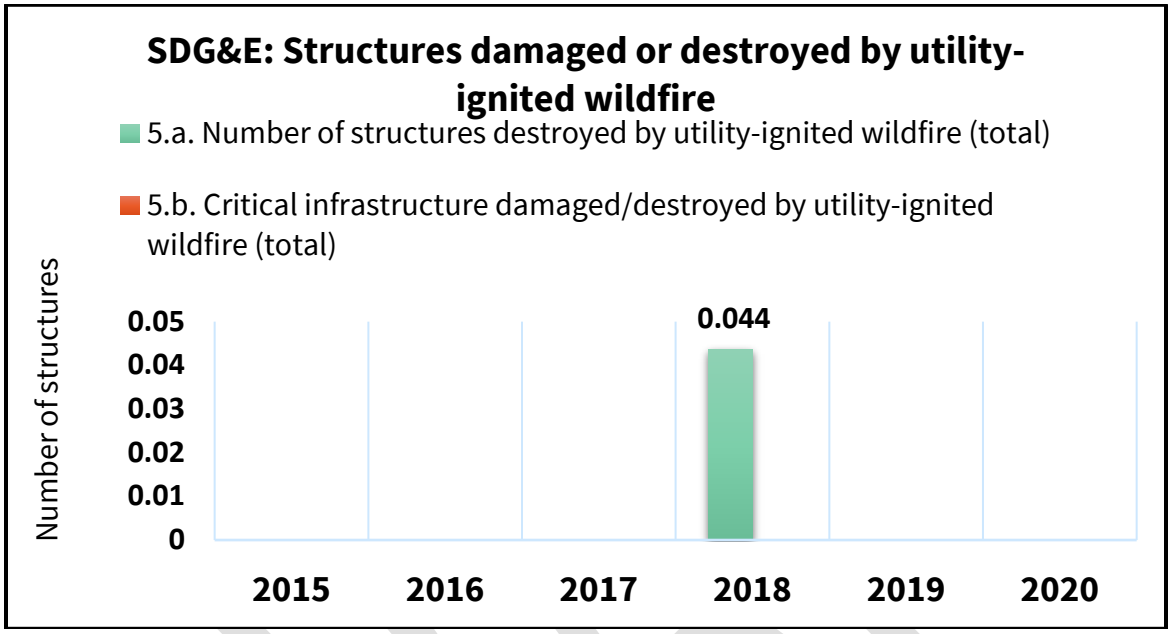


Figure 19 shows a dramatic drop in acreage burned by SDG&E-ignited wildfires following a peak of 213 acres burned in 2015. In 2020, SDG&E's reported acres burned represented a 77% decrease when compared to the historical five-year average from 2015 through 2019.

Figure 20: Structures damaged or destroyed by utility-ignited wildfire



During the reporting period from 2015 through 2020, SDG&E only reported a single structure damaged or destroyed in 2018.[166] SDG&E reported no structure damage due to wildfires ignited from its infrastructure since 2018.

[166] SDG&E erroneously reported the number of structures destroyed as "0.044" in its QDR, but this value was reported as "1" in SDG&E's other data submissions.

Figure 21: Value of assets destroyed by utility-ignited wildfires

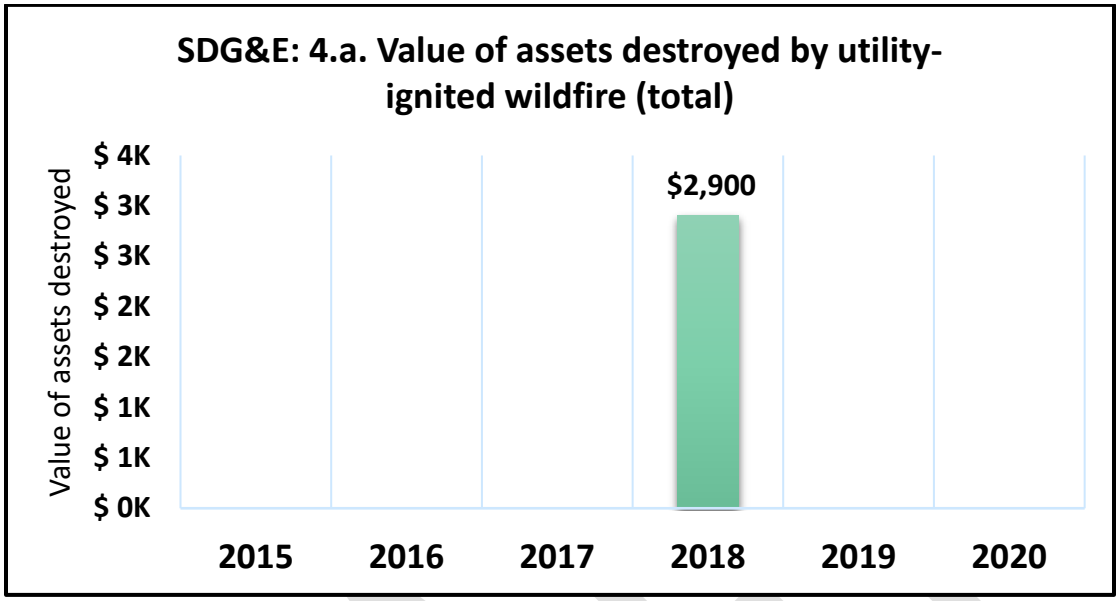
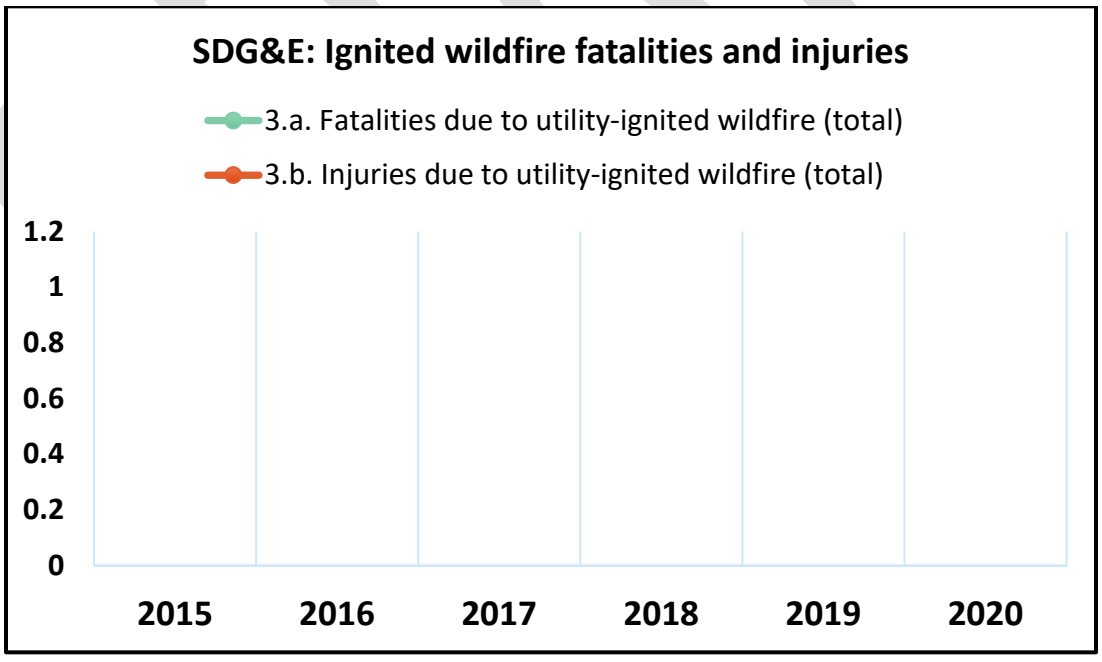


Figure 21 shows the total value of destroyed assets in 2018 was $2,900 representing the material costs for replacement of a single 45-foot wood pole and transformer.

Figure 22: SDG&E reported Utility-Ignited wildfire fatalities and injuries



SDG&E reported that no fatalities or injuries occurred due to wildfires ignited from its infrastructure between 2015 and 2020.

Given that there was no critical infrastructure damaged, fatalities, or injuries during the six-year period between 2015 and 2020, Energy Safety finds that SDG&E wildfire outcome metrics reflect a positive trend. Outside of the $2,900 in assets destroyed in 2018, experienced on its own infrastructure, SDG&E avoided the most catastrophic events as measured by injuries, fatalities, and structure damage.

5.7 Disposition of 2020 WMP Conditions

In 2020, Energy Safety issued a conditional approval of SDG&E'S 2020 WMP, noting several issues that required remediation. The conditional approval identified the severity of each issue (as listed in Tables 16 and 17 below) and listed required remediations for each level.

1. **Class A** – aspects of the WMP are lacking or flawed.
2. **Class B** – insufficient detail or justification provided in WMP.
3. **Class C** – gaps in baseline or historical data, as required in 2020 WMP Guidelines.

Class A deficiencies were of the highest concern and required electrical corporations to submit a remedial compliance plan (RCP) within 45 days of approval. Class B deficiencies were of moderate concern and required electrical corporations to submit to quarterly reporting, with the first of such reports being due 90 days after approval. Finally, Class C deficiencies were of least concern and required electrical corporations to submit additional detail and information or otherwise come into compliance in its 2021 annual WMP update. Accordingly, Energy Safety only considers SDG&E's resolution of its Class A and Class B conditions in this ARC. Responses to and resolution of Class C deficiencies will be evaluated with respect to Energy Safety's assessment of SDG&E's 2021 WMP update.

SDG&E timely submitted their RCP and First Quarterly Report (QR) as required by Resolutions WSD-002 and WSD-005. On December 30, 2020, Energy Safety issued its evaluation of the RCP and issued a Notice of Noncompliance. On January 8, 2021, Energy Safety issued its evaluation of the QR and issued a Notice of Noncompliance. Table 16 and Table 17 below provide the conditions and Energy Safety's determination of sufficiency.

SDG&E failed to resolve its two Class A deficiencies and 17 out of 23 (or 74%) Class B deficiencies within the 2020 WMP compliance period.

Table 16: Class A Deficiencies from SDG&E's 2020 WMP

Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
Guidance-3	Lack of risk modeling to inform decision-making.	Insufficient
SDGE-13	Lack of risk reduction or other supporting data for	Insufficient

Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
	increased time-of trim clearances	

Table 17: Class B Deficiencies from SDG&E's 2020 WMP

#	Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
1	Guidance-1	Lack of risk spend efficiency (RSE) information.	Insufficient
2	Guidance-2	Lack of alternatives analysis for chosen initiatives.	Insufficient
3	Guidance-4	Lack of discussion on PSPS impacts.	Insufficient
4	Guidance-5	Aggregation of initiative into programs.	Insufficient
5	Guidance-6	Failure to disaggregate WMP initiatives from standard operations.	Sufficient
6	Guidance-7	Lack of detail on effectiveness of "enhanced" inspection programs.	Insufficient
7	Guidance-9	Insufficient discussion of pilot programs.	Insufficient
8	Guidance-10	Data issues – general	Deferred[167]
9	Guidance-11	Lack of detail on plans to address personnel shortages.	Sufficient
10	Guidance-12	Lack of detail on long-term planning.	Sufficient
11	SDGE-1	SDG&E reports a high number of ignitions related to balloon contact.	Sufficient
12	SDGE-2	SDG&E reports a high number of ignitions related to vehicle contact.	Sufficient
13	SDGE-3	SDG&E fails to explain how it plans to incorporate lessons learned into updates of its risk models.	Insufficient
14	SDGE-4	SDG&E does not provide sufficient detail on strategic undergrounding pilots.	Insufficient
15	SDGE-5	SDG&E does not provide sufficient detail on need for regulatory assistance.	Sufficient

[167] The WSD is separately assessing the quality of geographic spatial information (GIS) data submissions required by Guidance-10, which will be addressed in GIS data quality control (QC) reports for each respondent electrical corporation.

#	Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
16	SDGE-6	SDG&E does not provide sufficient detail on plans for reinforcing transmission lines.	Insufficient
17	SDGE-7	Potential redundancies in vegetation management activities.	Insufficient
18	SDGE-8	Consideration of environmental impacts, local community input	Insufficient
19	SDGE-9	SDG&E does not explain how investments in undergrounding reduce planned vegetation management spend.	Insufficient
20	SDGE-11	Lack of detail on vegetation management around substations.	Sufficient
21	SDGE-12	Details of quality assurance, quality control	Insufficient
22	SDGE-14	Granularity of "at-risk species."	Insufficient
23	SDGE-15	Details of centralized data repository.	Insufficient
24	SDGE-16	Details of cooperative fuel reduction work.	Sufficient

6.0 DISCUSSION

Energy Safety considered the totality of the evidence before determining whether an electrical corporation substantially complied with its WMP. Energy Safety finds that SDG&E substantially complied with its 2020 WMP.

Below, Energy Safety presents its assessment of SDG&E's performance to each of the evaluation criteria set forth in the Compliance Framework followed by an assessment of the systemic issues.

6.1 Completion of 2020 Initiatives

Energy Safety finds that SDG&E met or exceeded the targets of 84 of its 95 (or 88%) 2020 WMP initiative targets. SDG&E met all but two of its 51 initiatives with qualitative targets and 35 of its 44 initiatives with quantitative targets.

However, following review of the 9 incomplete initiatives with quantitative targets, Energy Safety finds the following:

- SDG&E completed at least 90% of its WMP target for five initiatives (5.3.3.3, 5.3.3.17.1, 5.3.3.17.2, and 5.3.4.2 with two distinct targets).
    - On average, SDG&E completed over 96% of its targets for these initiatives.
    - For an additional initiative, 5.3.3.6 – Pole Replacement and Reinforcement, SG&E completed 89% of its WMP target.
    - Energy Safety finds that these initiatives were substantively completed.

Accordingly, when accounting for the initiatives with a misstated target, underreported progress, and those in which SDG&E completed a substantive portion, Energy Safety finds that SDG&E either met, exceeded, or substantively met 41 of its 44 initiatives with quantitative targets; thus, increasing its rate of initiative completion from 88% to 95%.

Energy Safety finds that the impacts of the remaining five failures did not materially hinder SDG&E's ability to mitigate its wildfire risk. In general, the misses were attributable to delays and resource constraints related to COVID-19 and other emergency events. The missed initiatives are:

- Initiative 5.3.3.11.3 – Whole House Generator Program: Installed 75 out of 300 planned generators, a 25% completion rate. SDG&E reported that they had underestimated the permitting time for this program. SDG&E has since resolved the issue for future years. In 2020, due to the permitting delays, SDG&E reallocated the resources for this initiative into two other customer generator programs (5.3.3.11.1 and 5.3.3.11.2) that both exceeded their targets.
- Initiative 5.3.4.6 – Intrusive Pole Inspections: SDG&E completed 14,450 out of 18,000 non-routine inspections, an 80% completion rate. SDG&E reported that staff had to be reassigned to deal with emergency situations such as PSPS events.
- Initiative 5.3.4.10 – Drone Assessments of Transmission Infrastructure: SDG&E completed inspections on 85% of its transmission structures in Tier 3 and selected circuits in Tier 2. SDG&E did not provide an explanation for missing this target.
- Initiative 5.3.2.7 – Network Management Situational Awareness Upgrades: The 2020 WMP target for this initiative was to improve the protocols for operational decision-making during extreme events through the integration of enhanced weather data. SDG&E's independent evaluator found that by year-end 2020, the improved situational awareness had not been achieved due to incomplete integration of weather data.
- Initiative 5.3.4.9.3 – Circuit Ownership: SDG&E's independent evaluator found that one aspect of the qualitative target for this initiative was met in 2020, as SDG&E held a refresher training. However, SDG&E's 2020 WMP stated that QA/QC of this program would be completed through "oversight of [the program] dashboard and follow up action items…"[168] and the independent evaluator found that subsequent proposals for applicable actions resulting from those efforts were not pursued by SDG&E.

[168] SDG&E 2020 WMP, pages 107-108.

Overall, Energy Safety finds that SDG&E completed the majority of its major 2020 WMP initiatives, including nine out of the top 10 initiatives with the most allocated spend. Given that SDG&E completed the vast majority (95%) of its initiatives and given that the impacts of its failures did not materially hinder SDG&E's ability to mitigate its wildfire risk, Energy Safety finds that SDG&E met its overall initiative targets.

6.2 Achieving 2020 WMP Objectives

SDG&E's 2020 WMP objectives were generally broad and lacked specific measurable outcomes. Nevertheless, given that 2020 is the base year for the first three-year cycle and is therefore setting the baseline against which to measure SDG&E, Energy Safety finds that SDG&E has fulfilled many of its 2020 WMP objectives.

Energy Safety's analysis of SDG&E's performance to its objectives was broken into three sections. First, Energy Safety discusses objectives set to be achieved before the upcoming (2020) wildfire season. It then presents its analysis on performance prior to the next annual update (2021). Finally, Energy Safety presents its findings on SDG&E's performance to its overarching stated objective: "to prevent and mitigate the risk of wildfires caused by utility equipment." [169]

Before the upcoming wildfire season:

SDG&E did not provide traditional objectives for this timeframe in its 2020 WMP. Rather, it provided its strategy in terms of its approach to mitigating wildfire. SDG&E stated that it employs a three-prong approach that integrates activities in (1) Operations and Engineering, (2) Situational Awareness and Weather Technology, and (3) Customer Outreach and Communication. Specifically, SDG&E highlighted the following activities as important to its three-prong approach:

- "Inspections and maintenance, follow up findings from inspections, operational adjustments on the electric system, proactive system hardening, situational awareness training, and outreach and education of customers."[170]
- SDG&E also stated that "in preparation for the upcoming 2020 wildfire season SDG&E is focusing on reducing PSPS impacts by identifying various near-term mitigations, such as installing additional switching capabilities, and expanding its microgrids and customer generator programs to support customers during PSPS events."[171]

[169] SDG&E 2020 WMP, page 13.
[170] SDG&E 2020 WMP, page 13.
[171] SDG&E 2020 WMP, page 13.

Energy Safety evaluated SDG&E's performance to its objectives by evaluating its performance on the initiatives associated with the categories of objectives listed in its 2020 WMP that correspond to the broad activities it stated were important to achieve. Energy Safety discusses SDG&E's performance below.

Inspections and maintenance:
SDG&E's 2020 WMP included 12 asset inspection initiatives with measurable targets. Of these 12 initiatives, SDG&E met or exceeded its target related to asset inspections for all but one initiative (5.3.4.6 – Intrusive Pole Inspections – Distribution), in which SDG&E completed 85% of its targeted inspections (See Section 5.5.2.1). In addition, SDG&E's 2020 WMP included four vegetation management and inspection related initiatives. SDG&E met or exceeded its targets for all but one of these initiatives as well (5.3.5.5 – Fuels Management), for which SDG&E completed 81%. Thus, Energy Safety finds that SDG&E achieved this objective.

Follow up findings from inspections:
Energy Safety's inspections performed relative to SDG&E's compliance with its 2020 WMP resulted in a defect rate of 2.91%. SDG&E timely resolved all the defects identified by Energy Safety. As presented in Section 5.6.3, SDG&E fixed approximately four times as many Level 1 conditions as it found and 8.5 times as many Level 2 conditions. While Energy Safety commends SDG&E for resolving a large portion of identified issues on its infrastructure, the volume of work completed in comparison to conditions found suggests that, in 2020, SDG&E was clearing backlog of unresolved Level 1 and 2 conditions carried over from previous years. Nevertheless, Energy Safety finds that SDG&E achieved this objective in 2020.

Operational adjustments on the electric system:
As discussed in Section 5.1, in its EC ARC, SDG&E reported that it implemented measures to make operational adjustments during periods of high fire danger.[172] These measures leveraged SDG&E's advanced situational awareness and risk modeling capabilities, including use of its Fire Potential Index (FPI), Santa Ana Wildfire Threat Index (SAWTI), and PSPS situational awareness dashboard, among other tools. Accordingly, Energy Safety finds that SDG&E achieved this objective of its plan.

Proactive system hardening:
SDG&E met or exceeded most of its targets in its grid hardening category. It exceeded its target for miles of covered conductor installed (5.3.3.3) and its target for expulsion fuse replacement (5.3.3.7). For the initiatives in which SDG&E did not meet its targets, it mostly completed substantive portions of that work (See Section 6.1). Energy Safety finds that SDG&E largely achieved this objective in 2020.

Situational awareness training:

[172] SDG&E EC ARC, page 2.

In 2020, SDG&E conducted training on the SAWTI tool with the fire potential forecasting team with the United States Forecasting System.[173]

Outreach and education of customers:
SDG&E utilized a multi-pronged approach including partnering with community-based organizations for outreach and education of customers around wildfire safety and PSPS (5.3.10.1). It also created content for its public education campaign, outreach activities and broadcast and social media outreach (5.3.5.1).

SDG&E also stated that it was "focused on reducing PSPS impacts by identifying various near-term mitigations."[174] The following initiatives were specifically called out by SDG&E as near-term mitigation initiatives to reduce PSPS impacts.

Installing additional switching capabilities:
SDG&E exceeded its target for installation of switches by 329% (5.3.3.8.1).

Expanding its microgrids:
SDG&E exceeded its microgrid installation program by 33% (5.3.3.8.2).

Customer generator programs:
SDG&E exceeded its Expanded Generator Grant Program by 980% of target (5.3.3.11.2) and its Customer Resiliency Program to baseline customers (5.3.3.11.1). It pivoted funds from its missed initiative for Whole Home Generator to the other two generator programs mentioned above that were more successful with customers (5.3.3.11.3).

SDG&E stated in its EC ARC that the implementation of the above initiatives, as well as its various system hardening and situational awareness initiatives, reduced PSPS impacts to approximately 9,000 customers during its December 2-4, 2020, PSPS event. However, as presented in Section 5.6.2, the normalized frequency and scope of SDG&E's PSPS events has decreased and is generally a sign of improvement, but in this case SDG&E was unable to capitalize on that improvement because, once weather severity is account for, its customers were impacted even more by PSPS events in 2020 than any other year up to that point. Energy Safety expects that as SDG&E implements its WMP initiatives and gains experience in implementing PSPS, the normalized frequency, scope and customer impact should decrease year after year.

Energy Safety finds that, on balance, SDG&E met most of the initiative targets related to its objectives and therefore achieved its stated objectives before the upcoming wildfire season.

Before the next annual update:

[173] SDG&E EC ARC, page 16.
[174] SDG&E 2020 WMP, page 13.

Energy Safety cannot evaluate whether SDG&E met its objectives before the next annual update as SDG&E did not provide a specific objective for the time period "*before* the next annual update," rather it provided an objective "for *the* next annual update" that it would pursue. Energy Safety will review SD&E's performance to this stated objective in its 2021 ARC.

- SDG&E stated: "A key update to the WMP in 2021 will be the PSPS mitigation activities currently under development."

Overarching stated objective:

SDG&E's overarching objective was "to prevent and mitigate the risk of wildfires caused by utility equipment."[175]

Energy Safety finds that SDG&E was largely successful in achieving its initiatives, which taken in total are intended to have the effect of lowering the risk of a utility-caused ignition. Nevertheless, SDG&E's equipment/facility failure ignitions in Tier 3 HFTD distribution areas significantly increased by over 70% compared to the five-year average from 2015 through 2019. Conversely, there have been no ignitions due to equipment/facility failure on the transmission system over that same time period from 2015-2019.

While SDG&E did experience ignitions in 2020, its reported acres burned represented a 77% decrease when compared to the historical five-year average from 2015 through 2019. In addition, there were no critical infrastructure damages, fatalities, or injuries during the six-year period between 2015 and 2020. More detail on Energy Safety's finding with regard to the reduction of risk is in Section 6.3.

Energy Safety notes that future WMP objectives could be strengthened by the inclusion of specific targets related to its objectives. Nevertheless, Energy Safety finds that SDG&E fulfilled the overall objective of its 2020 WMP.

6.3 Reducing Wildfire Risk

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. Therefore, as stated in the Compliance Framework, Energy Safety's evaluation of SDG&E's performance to its 2020 WMP went beyond a check-box exercise of whether SDG&E met its initiative targets to instead evaluate whether SDG&E's performance in 2020 reduced the risk of SDG&E equipment igniting a catastrophic wildfire. As noted in the Compliance Framework, given that 2020 was the first year in a three-year cycle and the benefits of work

[175] SDG&E 2020 WMP, page 13.

deployed in 2020 may accrue over time, Energy Safety's evaluation largely focused on establishing baseline measures against which to measure SDG&E's performance over time. However, even with limited data, Energy Safety made some findings about SDG&E's ability to reduce wildfire risk on its system in 2020.

Measuring ignitions provides the most direct measure of electrical corporation wildfire risk. Other metrics, such as wire down events and unplanned outages correlate with wildfire risk because some portion of these events will result in ignitions. As presented in Section 5.6.1, a review of ignitions, wire down events, and unplanned outages from 2015 to 2020 show SDG&E's normalized ignitions in 2020 were approximately 11% less than the five-year average from 2015-2019 in Tier 3 HFTD areas, and SDG&E's 2020 normalized ignitions in Tier 2 HFTD areas were approximately 55% less than the five-year historical average from 2015-2019. In contrast, SDG&E's normalized ignitions in Tier 3 HFTD areas increased by over 110% from 2019 to 2020. Except for an increase in normalized wire down events on its transmission infrastructure, when compared to five-year averages from 2015 through 2019, SDG&E's normalized wire down events, unplanned outages, and vegetation-caused outages decreased notably across both its transmission and distribution infrastructure. The significant spike in normalized ignitions in Tier 3 HFTD areas is concerning; however, it is also important to analyze the consequence of ignitions. Here, the acres burned from wildfires ignited by SDG&E's infrastructure, the number of structures damaged or destroyed (0), and the number of injuries or fatalities (0) was less in 2020 than in previous years.

When analyzing the risk drivers of SDG&E's ignitions, Energy Safety finds that SDG&E saw significant reductions in contact from object and vegetation contact ignitions as compared to its historical five-year average from 2015 through 2019. Notably, SDG&E reported no vegetation contact ignitions in 2020. Conversely, in 2020 SDG&E saw spikes in normalized equipment/facility failure ignitions in both Tier 2 (20%) and Tier 3 (70%) HFTD areas, when compared to its five-year averages. While there is a general upward trend in distribution ignitions in Tier 3 HFTD areas and ignitions caused by equipment/facility failure, adverse consequence of those ignitions has not materialized. During the six-year period between 2015 and 2020, there were no critical infrastructure damages, fatalities, or injuries from SDG&E-caused ignitions. Despite the overall positive trend in outcomes, SDG&E's increase in equipment/facility failure ignitions and ignitions in Tier 3 HFTD areas are concerning.

Regarding PSPS risk, the normalized scope and frequency of PSPS events decreased from 2019 to 2020. However, PSPS data show that those PSPS events were longer, impacted more customers, and had increased impacts on critical infrastructure.

Another critical element to reducing wildfire risk is SDG&E's ability to identify potential ignition risks on its system through inspections and remediate those risks through effective asset management. As presented in Section 5.6.3, SDG&E completed nearly 12,000 miles of inspections in 2020; approximately two-thirds of which were performed on its distribution

infrastructure. Energy Safety's analysis finds that, in 2020, SDG&E fixed more conditions than it found that required repair or remediation on both its transmission and distribution infrastructure. In 2020, on its distribution infrastructure, which is where most ignitions occurred, SDG&E fixed approximately twice as many Level 1 conditions as it found. Level 1 conditions are of immediate concern and have high potential impact to safety and reliability and require immediate corrective action. While Level 1 conditions are required to be resolved immediately, it appears from the data that, on SDG&E's distribution infrastructure, a significant number of high-risk issues (Level 1 conditions) from previous years were potentially not resolved in a timely manner as they were carried over from the previous year(s) and fixed in 2020. Energy Safety's inspections yielded a defect rate of 2.91%, and SDG&E responded to and fixed all Energy Safety-identified defects in a timely manner. Despite the potential concern related to remediation Level 1 conditions, Energy Safety finds that SDG&E took action to resolve and remedy conditions identified on its system in a timely manner.

Finally, as shown in Section 5.5.1.1, when analyzing SDG&E's hardening work relative to the circuit risk scores provided by SDG&E, Energy Safety finds SDG&E conducted over 90% of its hardening work reviewed in the bottom quintile of risk. As shown in Section 5.5.1.2.1, SDG&E conducted approximately 68% of the vegetation management work analyzed in the bottom quintile of risk and an additional approximately 25% in areas where the circuit had a risk score of zero, for a total of 93% completed on or near circuits with little to no risk. Upon initial analysis, these results appear to be concerning. However, considering the extensive system hardening that SDG&E has been able to complete since it began wildfire mitigation efforts following its 2007 wildfires, Energy Safety finds that additional analysis is required to determine whether SDG&E is effectively prioritizing the deployment of its mitigation efforts in areas of highest risk. Energy Safety plans to monitor this issue and continue assessing SDG&E's progress in this regard through the 2020-2022 plan cycle compliance reviews.

Taken together, the metrics above paint a nuanced picture and underscore why Energy Safety must rely on a broader dataset than one year to determine the effectiveness of wildfire mitigations. From one perspective, of the ignitions that did occur, the severity and consequences of outcomes was greatly reduced in 2020, as there were no injuries or fatalities nor structures damaged or destroyed. However, given that the number of normalized ignitions in Tier 3 HFTD areas (i.e., areas of extreme wildfire risk) spiked in 2020, the fact that there was no structural damage or loss of life could be a function of favorable circumstances (i.e., weather, fuels conditions, and location at the time of ignition). Energy Safety notes that it only takes one ignition to occur under adverse conditions to manifest a catastrophic wildfire of significant consequence. Factoring in the historical and potential future impacts of fluctuations in extreme weather patterns due to climate change, the increase in ignitions underscores the importance of effective wildfire mitigation planning and execution of mitigation efforts. Energy Safety will continue to monitor ignitions and wildfire consequence over the course of the 2020-2022 plan cycle compliance reviews.

6.4 Systemic Issues

Energy Safety did not find any systemic issues that hindered SDG&E's ability to adequately implement its WMP. Energy Safety's analysis of SDG&E's performance in 2020, particularly in terms of its reporting of targets, progress, and status in various reporting documents, reveals some inconsistencies in its data reporting. For example, for initiative 5.3.3.16 – Strategic Undergrounding, the target in the 2020 WMP is 25 miles, the Q4 2020 QIU target is 10 miles, the Q4 2020 QAL target is 11 miles, and the EC ARC target is 10 miles. In addition, for initiative 5.3.2.4.1 – Fire Science and Climate Adaptation Department, SDG&E reported that the construction of its Fire Science & Innovation Lab was completed. Further clarification with SDG&E led to Energy Safety identifying this target as incomplete due to the fact that there were unforeseen delays in the planned Emergency Operation Center rebuild as part of the Lab completion.

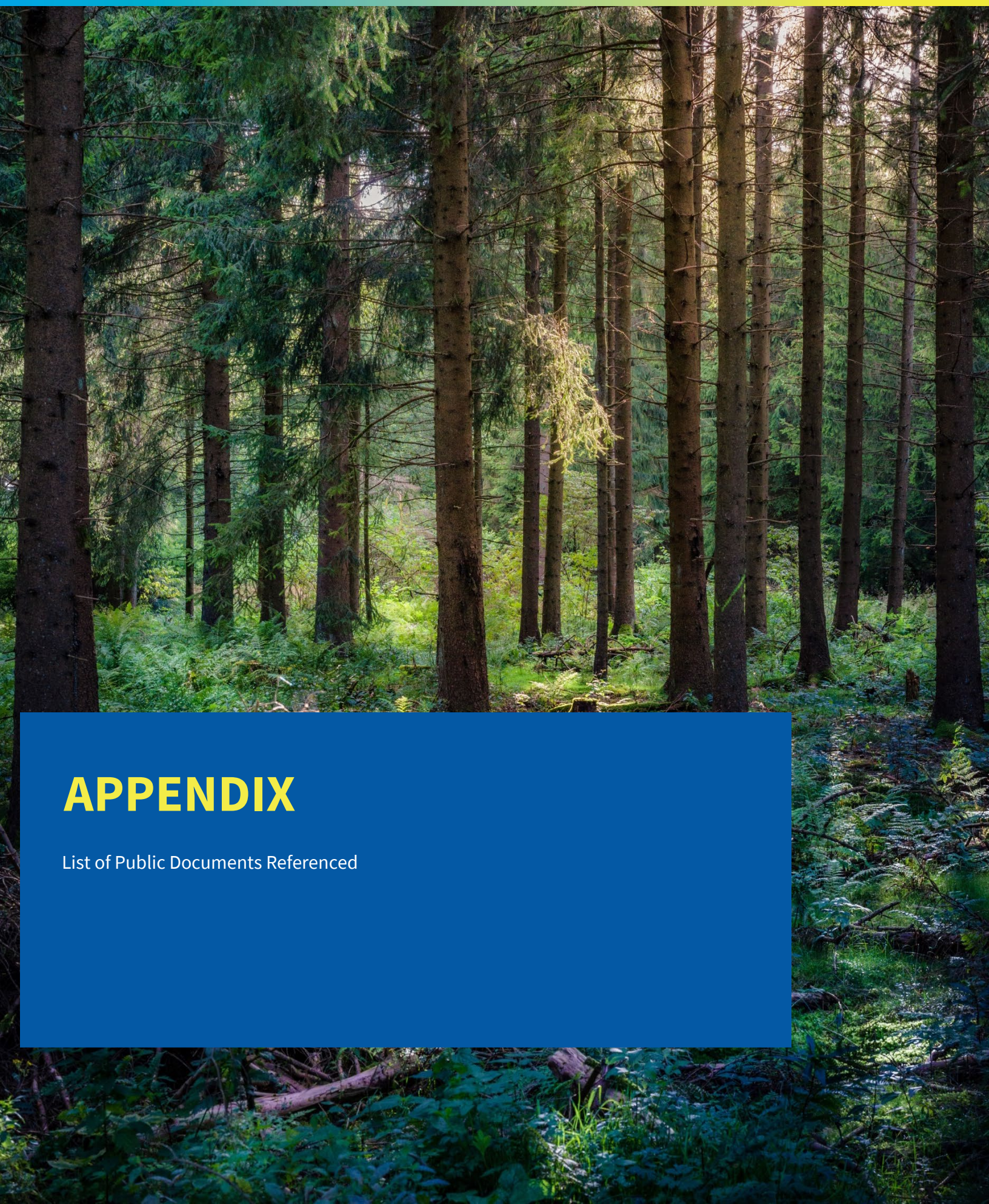
Consistency and clarity of information is vital to ensure that wildfire mitigation efforts can be effectively implemented and that Energy Safety and other stakeholders have a clear understanding of SDG&E's plans, commitments, and progress. Energy Safety cannot emphasize enough the importance of accurate recordkeeping and data management to achieving wildfire risk reduction. An electrical corporation must accurately track its progress of wildfire mitigation activities along its electrical infrastructure against its targets in the WMP.

Though Energy Safety expresses concern over SDG&E's data reporting issues, it did not find that those reporting issues hindered SDG&E's ability to achieve the desired wildfire risk and consequence. Nevertheless, Energy Safety expects SDG&E to thoroughly assess its processes and systems for tracking, maintaining, and reporting its WMP data to ensure it improves the accuracy and consistency across its various WMP related submissions.

7.0 CONCLUSION

After considering all the sources of information before it, Energy Safety finds that SDG&E substantially complied with its 2020 WMP during the compliance period. Energy Safety acknowledges that SDG&E undertook significant efforts to reduce its wildfire risk, and in many instances, SDG&E achieved its objectives and targets. On balance, Energy Safety views SDG&E's efforts in 2020 as a first step that illuminate SDG&E's opportunities for future focus to reduce wildfire risk. Furthermore, the scope of this assessment was limited to the 2020 compliance period (i.e., January 1 – December 31), and Energy Safety acknowledges that SDG&E also took steps in 2021 and 2022 to address shortcomings identified in this ARC. SDG&E's performance over time will demonstrate whether it is successfully reducing wildfire risk. Energy Safety will continue to monitor SDG&E's implementation of its ongoing wildfire

mitigation activities and push SDG&E to improve its ability to ultimately achieve the elimination of utility-caused catastrophic wildfires in California.



APPENDIX

List of Public Documents Referenced

APPENDIX –List of public documents referenced:

1. SDG&E 2020 WMP "*SDG&E Wildfire Mitigation Plan Report, Updated March 2, 2020*": https://www.sdge.com/2020-wildfire-mitigation-plan
2. SDG&E 2020 WMP "*Appendix A – WMP Tables 1-31*": https://www.sdge.com/2020-wildfire-mitigation-plan
3. SDG&E 2020 WMP "*Appendix D – Guidance*": https://www.sdge.com/2020-wildfire-mitigation-plan
4. SDG&E WMP GIS Public: https://www.sdge.com/2020-wildfire-mitigation-plan
5. SDG&E Quarterly Report on 2020 Wildfire Mitigation Plan for Q3 2020: https://www.sdge.com/2020-wildfire-mitigation-plan
6. San Diego Gas & Electric Company's Quarterly Report on 2020 Wildfire Mitigation Plan: https://www.sdge.com/2020-wildfire-mitigation-plan
7. Advice Letter 3177-E/2465-G: https://www.sdge.com/2020-wildfire-mitigation-plan
8. CPUC Resolution WSD-001: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
9. CPUC Resolution WSD-002: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
10. CPUC Resolution WSD-005: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
11. CPUC Resolution WSD-011: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
12. CPUC Resolution WSD-012: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
13. CPUC Resolution WSD-015: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
14. Wildfire Safety Division Action Statement on San Diego Gas & Electric: https://energysafety.ca.gov/wp-content/uploads/docs/wmp-2020/sdge-action-statement-final-20200610.pdf

15. Substantial Vegetation Management Audits: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2020-SVM
16. SDG&E 2020 WMP Annual Report on Compliance: Search Docket# 2020-EC_ARC (ca.gov)
17. Final Independent Evaluator Annual Report on Compliance: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2021-IE
18. Assembly Bill (AB – 1054) Public utilities: wildfire and employee protection: Bill Text - AB-1054 Public utilities: wildfires and employee protection. (ca.gov)
19. Assembly Bill (AB -111) Wildfire agencies: public utilities: safety and insurance: Bill Text - AB-111 Wildfire agencies: public utilities: safety and insurance. (ca.gov)
20. California Energy Infrastructure Safety Act – Government Code §§15470 – 15476: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=3.&title=2.&part=7.3.&chapter=&article=
21. CPUC's General Order 95: https://ia.cpuc.ca.gov/gos/originalgo95/OriginalGO95_Start_page.htm
22. Performance Audit: https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/compliance/audits/
23. Public Utilities Code: Organization: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=1.&title=&part=1.&chapter=2.&article=
24. Public Utilities Code: Wildfire Mitigation: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PUC&division=4.1.&title=&part=&chapter=6.&article=
25. 2020 Q4 Quarterly Initiative Update: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2020-QIU