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 Southern California Edison's 2020 Annual Report on Compliance

November 8, 2022

Enclosed is the Draft Annual Report on Compliance (ARC) for Southern California Edison's (SCE) 2020 Wildfire Mitigation Plan (WMP).

On November 8, 2022, this Draft ARC is hereby published for public review and comment. Opening comments must be submitted no later than November 28, 2022.[1] Reply comments must be submitted no later than December 8, 2022.

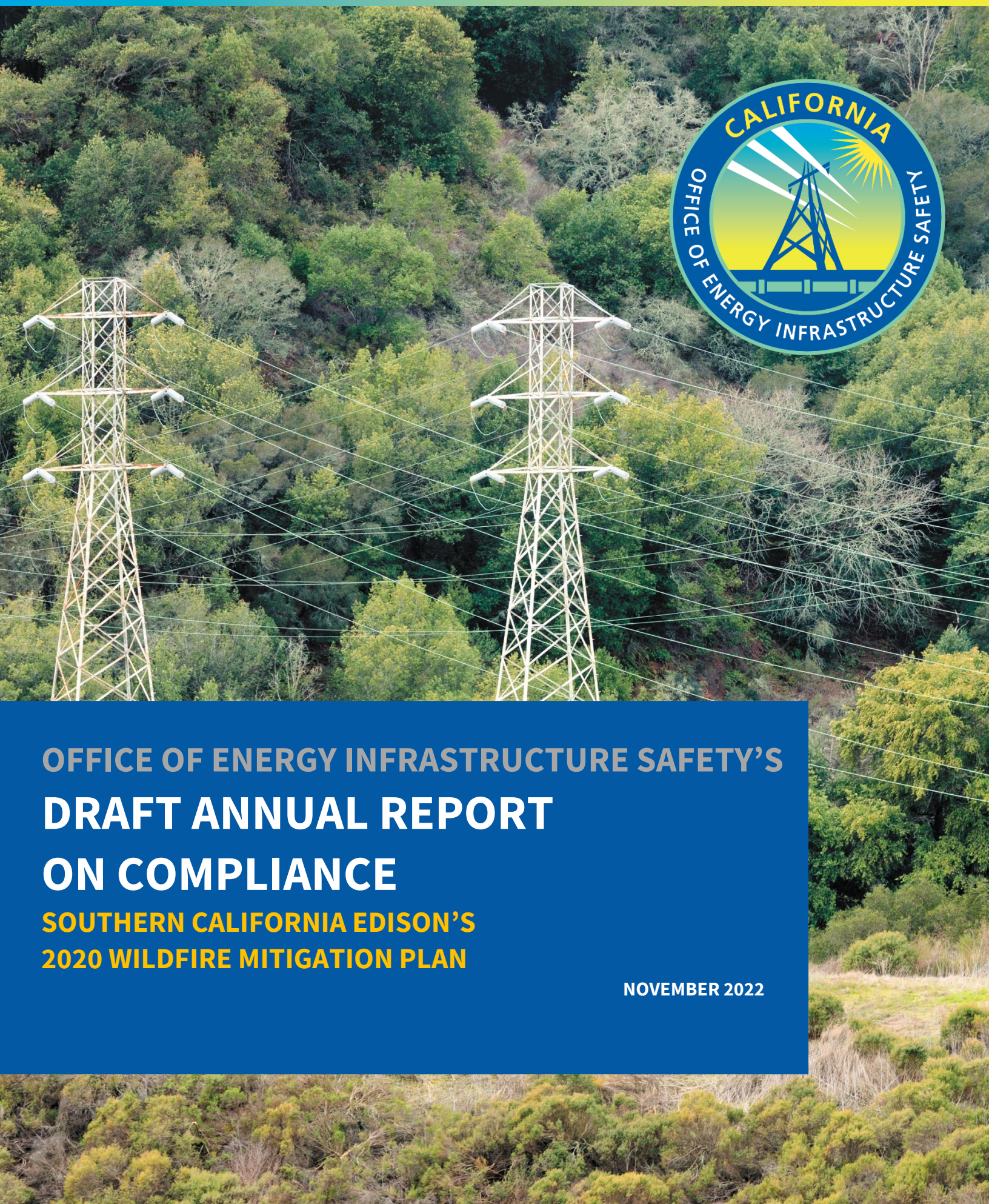
Comments must be submitted to Energy Safety's e-filing system in the 2020 ARC docket (#2020-ARC).[2]

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 7, 2022).



OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

DRAFT ANNUAL REPORT ON COMPLIANCE

SOUTHERN CALIFORNIA EDISON'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 Southern California Edison's (SCE) performance to its 2020 WMP went beyond a "check-box" exercise of looking at whether SCE met its initiative targets and instead wholistically evaluated whether SCE's performance in 2020 reduced the risk of SCE equipment igniting a catastrophic wildfire.

Energy Safety's compliance review process is conducted through a variety of means including vegetation management audits, field inspections, and analysis of data submitted by SCE 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 risk, as well as metrics that reveal the risk on the system from unresolved conditions discovered during SCE's inspections of its infrastructure. Energy Safety also performed an analysis that compared SCE's performance during the 2020 WMP compliance period to trends and performance from previous years.[1] Finally, Energy Safety reviewed SCE'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 SCE substantially complied with its 2020 WMP during the compliance period.

Energy Safety acknowledges that SCE undertook significant efforts to reduce its wildfire risk and achieved virtually all its initiatives and program targets. In addition, SCE took actions consistent with improving its ability to assess and mitigate wildfire risk such as exceeding its target to install at least 700 circuit miles of covered conductor, its primary wildfire mitigation initiative totaling more than one-third of its 2020 WMP budget.[2] SCE also exceeded its target for installation of automated sectionalizing devices, which it reports to be one of the most

[1] Energy Safety looked at previous year performances dating back to 2015, where available and reported in SCE's data submissions, or any year thereafter for which data was available and reported.
[2] See Section 4.3 "SCE's 2020 WMP Initiatives," Table 3.

effective means of reducing the number of customers affected by PSPS events, resulting in over 260 million customer minutes of interruptions avoided.[3]

Energy Safety finds that SCE's missed targets did not significantly hinder SCE's ability to mitigate its wildfire risk. In general, the margins of the misses were minor and attributable to delays and resource constraints related to COVID-19 and other emergency events.[4] However, Energy Safety also finds that SCE focused its covered conductor installation on the lowest areas of high risk instead of the highest areas of high risk. In addition, Energy Safety finds that SCE implemented PSPS on more circuits and more frequently in 2020 than in previous years.

On balance, SCE was largely successful in executing an actionable and adaptive plan for wildfire risk mitigation. While Energy Safety acknowledges that SCE achieved its overarching objectives, there are still areas for improvement and continued learning.

[3] SCE's EC ARC, Figure 1, page 13.
[4] SCE's EC ARC, Page 3.

2.0 INTRODUCTION

This Annual Report on Compliance (ARC) presents the Office of Energy Infrastructure Safety's (Energy Safety's) statutorily mandated assessment of SCE's compliance with its 2020 Wildfire Mitigation Plan (WMP).[5] 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 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.

Southern California Edison (SCE) 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.[6] Energy Safety's primary objective is to ensure that electrical corporations reduce wildfire risk and comply with energy infrastructure safety measures.[7]

2.2 Legal Authority

[5] Pub. Util. Code, § 8386.3(c).
[6] 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.
[7] Gov. Code, § 15475.1.

Energy Safety is responsible for overseeing compliance with electrical corporations' WMPs.[8] 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.[9] In addition to performing an overall assessment of compliance[10] with the WMP, Energy Safety audits each electrical corporation's vegetation management work for compliance with WMP requirements[11] and performs other reviews and audits. Energy Safety may rely upon metrics[12] to evaluate WMP Compliance, including performance metrics adopted by the California Public Utilities Commission (CPUC).[13] Annually, in consultation with Energy Safety, the CPUC adopts a wildfire mitigation plan compliance process.[14] The CPUC adopted the 2020 Compliance Process via Resolution WSD-012 on November 23, 2020.[15]

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.[16]

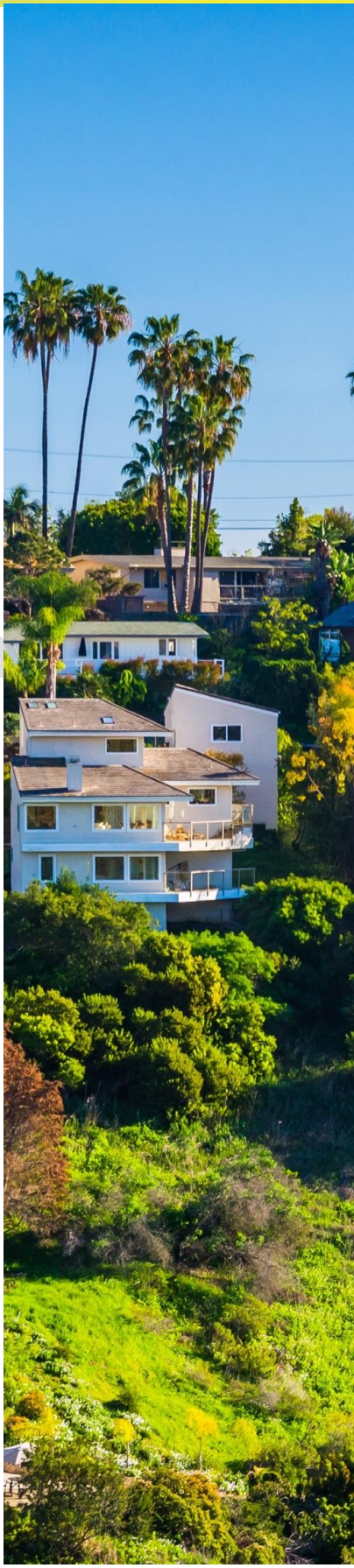
Public Utilities Code section 326(a)(3) instructs that Energy Safety utilize visual inspection of electrical corporation infrastructure and wildfire mitigation programs as a means of assessing WMP compliance. Furthermore, Public Utilities Code section 8386.3(c) outlines the baseline statutory framework 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.[17] Pursuant to this

[8] Pub. Util. Code, § 8386.3(c).
[9] Gov. Code, § 15475.
[10] Pub. Util. Code § 8386.3(c)(4).
[11] Pub. Util. Code § 8386.3(c)(5)(A).
[12] Pub. Util. Code §§ 326(a)(2), 8389(b)(1)
[13] Pub. Util. Code § 8389(d)(4).
[14] Pub. Util. Code § 8389(d)(3).
[15] https://energysafety.ca.gov/wp-content/uploads/docs/compliance-process/20201008-compliance-staff-proposal_final.pdf
[16] https://efiling.energysafety.ca.gov/Search.aspx?docket=2021-OPS_GUIDELINES
[17] Pub. Util. Code, § 8386.3(c)(1).

requirement, SCE 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.[18] SCE selected NV5 as its independent evaluator for compliance with the 2020 WMP. NV5 issued its IE ARC for SCE 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 any deficiency specified in the audit.[19] 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.[20]
- 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.[21] 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

[18] Pub. Util. Code, § 8386.3(c)(2)(B)(i).
[19] Pub. Util. Code, § 8386.3(c)(5)(C).
[20] Id.
[21] Pub. Util. Code, § 8386.3(c)(4), CPUC Resolution WSD-012 2020 WMP Compliance Process, November 2020.

electrical corporations are constructing, maintaining, and operating their infrastructure in a manner that will minimize the risk of catastrophic wildfire.[22] 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)?
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).

[22] Pub. Util. Code, § 8386(a).

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 buy down 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[23] 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.[24] The Compliance Operational Protocols outline the minimum requirements and structure for SCE's 2020 WMP compliance review report.[25] The report must include:

- An assessment of whether the electrical corporation achieved the risk reduction intent by implementing all of 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[26] 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.

[23] Energy Safety receives data from the electrical corporation through three main paths: Quarterly Advice Letter submissions, Quarterly Data Request submissions, and Quarterly Initiative Updates.
[24] Pub. Util. Code, § 8386.3(c)(1).
[25] Wildfire Safety Division – Compliance Operational Protocols, pp. 10-12.
[26] See CPUC Resolution WSD-002, pages 32-35, for detail regarding the 2020 WMP change order process.

- Descriptions of all planned WMP initiative spend versus 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.[27]

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.[28] The electrical corporations must each engage an independent evaluator from the list to review and assess its compliance with the respective approved WMP.[29] The independent evaluator must issue a report 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.[30] [31] Energy Safety considered the independent evaluator's findings in this ARC, but the independent evaluator's findings are not binding on Energy Safety's final determination of WMP compliance.[32]

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.

[27] 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).
[28] Pub. Util. Code § 8386.3 (c)(2)(A).
[29] Pub. Util. Code, § 8386.3(c)(2)(B).
[30] Id.
[31] The independent evaluator reviews performed for the 2020 WMPs were the first of their kind and completed in a considerably truncated timeframe.
[32] Pub. Util. Code, § 8386.3(c)(2)(B)(ii).

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"[33] 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 SCE'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).

4.0 SCE'S 2020 WMP

The 2020 WMP Guidelines (Guidelines) were issued on December 16, 2019, via *Administrative Law Judge's Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment*.[34] 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.

[33] Pub. Util. Code, § 8386.3(c)(5)(C).
[34] See CPUC Rulemaking R.18-10-007.

- 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.[35]

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 SCE's 2020 WMP, Energy Safety issued a conditional approval that identified and classified certain deficiencies requiring varying responsive action. Energy Safety evaluated SCE's fulfilment of its 2020 WMP conditions in this ARC. Energy Safety's assessment regarding resolution of conditions placed on SCE'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).[36] 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 other issues. The associated condition to Deficiency Guidance-5 required electrical corporations to disaggregate initiatives in their quarterly filings.[37]

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.

[35] CPUC Resolution WSD-002, page 2.
[36] 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.
[37] CPUC Resolution WSD-002, page 24.

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.[38] 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.[39]

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

SCE states the overarching 2020 WMP objective as: "to set forth an actionable, measurable, and adaptive plan for 2020 to 2022 to reduce the risk of potential wildfire-causing ignitions associated with SCE's electrical equipment within SCE's [High Fire Risk Area] HFRA." [40] Specifically, "SCE's hardening initiatives are being prioritized based on risk analyses which will enable SCE to complete more work in the higher-risk areas prior to the traditional start of the fire season."[41] SCE considered the installation of covered conductor to be "one of the major wildfire risk mitigation activities"[42] in its 2020 WMP.

SCE explicitly committed to the following:

1. Before the upcoming wildfire season:[43]

- Prioritize hardening initiatives based on existing locational risk analysis to complete more work in the higher-risk areas.
- Prioritize operational enhancements that aim to reduce the impact of PSPS.
- Complete 360-degree (aerial & ground) inspections on the highest risk structures within HFRA.

[38] 2020 WMP Guidelines, page 43.
[39] Id.
[40] SCE 2020 WMP, page 31.
[41] SCE 2020 WMP, Section 4.1, paragraph 2, "THE OBJECTIVES OF THE PLAN."
[42] SCE 2020 WMP, page 53, paragraph 2.
[43] SCE 2020 WMP, page 33, Table SCE 4-1.

2. Before the next annual update:[44]

- Complete all 2020 Program Targets outlined in Table SCE 5-1 of SCE's 2020 WMP.

4.3 SCE'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.

SCE's 2020 WMP included a total of 69 initiatives allocated across six of the 10 categories.[45] Table 1 below provides a summary of SCE'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. SCE did not include discrete initiatives in the categories of risk assessment and mapping, data governance, resource allocation methodology, or stakeholder cooperation. SCE explained that the mitigation efforts in these categories were inherent "enabling activities" within other initiatives that were not tracked as separate, discrete wildfire mitigation initiatives.[46]

Table 1: SCE's 2020 WMP Initiatives 2020 planned spend by Category based on SCE's EC ARC, Cost Variance Tables

Initiative Category	No. of Initiatives	2020 Planned Spend ($K)	% of 2020 WMP Planned Budget
Risk assessment and mapping	-	-	-
Situational awareness and forecasting	12	$ 23,965	1.8
Grid design and system hardening	21	$ 962,547	73.6
Asset management and inspections	13	$ 60,101	4.6
Vegetation management and inspections	5	$ 137,219	10.5
Grid operations and protocols	12	$ 22,447	1.7
Data governance	-	-	-

[44] SCE 2020 WMP, page 33, Table SCE 4-1.
[45] Wildfire Safety Division – Compliance Operational Protocols, published February 16, 2021, suggested Utilities categorize their initiatives within 10 WMP Categories. SCE 2020 WMP categorized their initiatives under 6 of the 10 categories; 1. Risk assessment and mapping, 2. Situational awareness and forecasting, 3. Grid design and system hardening, 4. Asset management and inspections, 5. Vegetation management and inspections, 6. Grid operations and protocols, 7. Data governance, 8. Resource allocation methodology, 9. Emergency planning and preparedness.
10. Stakeholder cooperation and community engagement.
[46] SCE 2020 WMP, Appendix B, Tables 21, 27, 28, and 30.

Initiative Category	No. of Initiatives	2020 Planned Spend ($K)	% of 2020 WMP Planned Budget
Resource allocation methodology	(1)[47]	$ 78,519	6.0
Emergency planning and preparedness	6	$23,472	1.8
Stakeholder cooperation and community engagement	-	-	-
Total	**69**[47]	**$ 1,308,270**	**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 SCE 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 SCE's planned 2020-2022 WMP spend.[48]

Table 2: SCE's Planned Expenditure broken down by year with totals for 2020-2022 WMP Expenditures (Based on CPUC Resolution WSD-004 [49])

Planned 2020-2022 WMP Costs	
2020	1.60 billion
2021	1.40 billion
2022	1.50 billion
2020-2022 Plan Period	**4.5 billion**

Table 3 lists the top 10 initiatives by planned spend. The last row in *Table 3* shows that the 10 listed initiatives (out of 69 total) make up 91% of SCE's total 2020 WMP planned spend.

[47] SCE did not attribute an initiative to this category in its 2020 WMP (see Table SCE 5-1, pages 67-75); however, in its EC ARC, SCE reported planned spend associated with this initiative category (see EC ARC, Attachment C, page 57 of 58 in pdf file).
[48] CPUC Resolution WSD-004, pages 4-5.
[49] Planned spend as reported in CPUC Resolution WSD-004, pages 4-5, differs from SCE's reported spend in its 2021 WMP.

Table 3: SCE's 2020 WMP Top 10 Plan Spend Initiatives based on SCE's EC ARC cost variance table

Initiative #	Initiative	2020 Planned Spend ($K)	% of 2020 WMP Planned Budget
5.3.3.3.1	Covered conductor installation: covered conductor (SH-1)	$ 454,369	35%
5.3.3.12.1	Other corrective action: distribution remediations (SH-12.1)	$ 327,535	25%
N/A	Resource Allocation: Organizational Support - PMO, OCM, and wildfire-related IT support	$ 78,519	6%
5.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	$ 76,281	6%
5.3.3.12.2	Other corrective action: transmission remediations (SH-12.2)	$ 71,320	5%
5.3.3.6.1	Distribution pole replacement and reinforcement, including with composite poles: composite poles and crossarms (SH-3)	$ 56,833	4%
5.3.5.16.1	Removal and remediation of trees with strike potential to electric lines and equipment: hazard tree (VM-1)	$ 54,097	4%
5.3.4.9.2	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: aerial inspections (IN-6.1)	$ 40,059	3%
5.3.3.7	Expulsion fuse replacement: branch line protection strategy (SH-4)	$ 16,799	1%
5.3.3.3.2	Covered conductor installation: tree attachment remediation (SH-10)	$ 15,183	1%
Total		$ 1,190,995	91%

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 SCE Self-Assessed Compliance Reporting

SCE timely submitted its EC ARC (SCE's EC ARC) on March 31, 2021. In its EC ARC, SCE reported the following:

1. SCE did not meet its targets for four of its 69 initiatives.[50] Generally, SCE attributed the missed targets to operational and physical limitations or delays due to the COVID-19 pandemic and diversion of resources to wildfire and PSPS response activities amid increased extreme fire weather events in 2020. SCE reported that although the targets for the four initiatives were missed, it had substantially completed the initiatives but still fell slightly short of its targets.[51]
   a. 5.3.3.12.1 – Distribution Remediation (SH-12.1): completed 97% of remediations against a target of 100%.
   b. 5.3.3.12.2 – Transmission Remediation (SH-12.2): completed 95% of remediations against a target of 100%.
   c. 5.3.4.9.2.1 – Advanced Unmanned Aerial Systems Study (AT-2.2): 42 staff trained as unmanned aerial system (UAS) operators against a target of 50 (84% completion).
   d. 5.3.4.10.2 – Transmission Aerial Inspections (IN-6.2): completed 31,380 inspections against target of 33,500 (94% completion).[52]
2. Thus far, sectionalization of its circuitry has proven to be one of the most effective measures for mitigating PSPS impacts.[53]
3. Advancements made in its risk modeling efforts allowed SCE to reassess the wildfire risk of its circuits and circuit-segments based on its latest circuit and environmental information to increase PSPS windspeed thresholds for certain circuits or circuit-segments determined to be of sufficiently low wildfire risk.
   a. This process resulted in windspeed threshold changes to 26 circuits and reduced PSPS de-energizations to over 31,000 customers in 2020.[54]
4. SCE achieved full covered conductor installation on two of its distribution circuits (Gunsite and Cuddeback) in 2020, resulting in increased PSPS windspeed thresholds for those circuits.[55]

---

[50] See Section 4.1 for an explanation of the source of some reporting discrepancies in initiative numbers and targets.
[51] SCE's EC ARC, page 3.
[52] SCE's EC ARC, Attachment A, pages 3-14.
[53] SCE's EC ARC, page 13.
[54] SCE's EC ARC, page 14.
[55] Id.

5. SCE's deployment of WMP initiatives resulted in over 200,000 fewer customer outages, 27 fewer circuits de-energized, and over 260 million customer minutes of service interruptions avoided from PSPS events in 2020.[56]
6. In areas where SCE has installed covered conductor, its preliminary data showed that no ignitions due to the risk drivers covered conductor protects against occurred in those areas.[57] However, SCE noted that it had less than two years of data collected and cautioned that more time is required to draw meaningful conclusions from this data.[58]
7. SCE asserted that it met the risk reduction intent of its 2020 WMP by substantially meeting or exceeding most of its initiative targets.[59]

For its four missed initiatives, SCE reported the following actions it had taken or planned to take to improve its performance:

- **5.3.3.12.1 – Distribution Remediation (SH-12.1)**: Ongoing detailed line-by-line analysis of the outstanding 2020 notifications to help all regions clear remaining obstacles to completion.[60]
- **5.3.3.12.2 – Transmission Remediation (SH-12.2)**: Ongoing detailed line-by-line analysis of the outstanding 2020 notifications to help all regions clear remaining obstacles to completion.[61]
- **5.3.4.9.2.1 – Advanced Unmanned Aerial Systems Study (AT-2.2)**: Plans to certify an additional eight resources to take and pass the Federal Aviation Administration's FAA Part 107 exam in 2021.[62]
- **5.3.4.10.2 – Transmission Aerial Inspections (IN-6.2)**: Ongoing evaluation of structures that were not completed or partially completed in 2020 to determine which structures can be rolled over for inspection in 2021 and which structures are unlikely to be captured from the air due to a permanent condition (e.g., geographical restrictions). Implementation of plans to start inspections earlier in the year in 2021 (e.g., Q1 2021) to make greater progress ahead of fire season.

5.2 Independent Evaluator Review

SCE selected NV5 as the independent evaluator to assess its compliance with the 2020 WMP. The contract between SCE and NV5 was executed on May 18, 2021,[63] and NV5 issued its SCE IE

[56] SCE's EC ARC, Figure 1, page 13.
[57] SCE's EC ARC, page 4.
[58] SCE's EC ARC, Attachment B, pages 228-229.
[59] SCE's EC ARC, page 4.
[60] SCE's EC ARC, page 17.
[61] Id.
[62] SCE's EC ARC, page16.
[63] SCE IE ARC, page 3.

ARC on July 1, 2021. Energy Safety carefully weighed the quality and utility of the SCE IE ARC when evaluating SCE's compliance with its approved 2020 WMP.

Due to the short time between the execution of its IE contract and the production of the SCE IE ARC, and following deliberation with Energy Safety, NV5 proposed to focus its efforts and available resources on SCE's 2020 WMP initiatives it deemed to have the greatest impact on SCE's efforts to mitigate its wildfire and PSPS risk.[64] As a result, of the 69 initiatives in SCE's 2020 WMP, NV5 reviewed 25 (or 36%).[65] NV5's findings related to the 25 initiatives reviewed generally fell into three categories as follows:

1. **Compliant** – NV5 indicated having reasonable assurance that SCE met the WMP target.
2. **Noncompliant** – NV5 determined that SCE did not meet the WMP target.
3. **Undetermined** – NV5 was unable to determine whether SCE met the WMP target.

Table 4 below provides a summary of NV5's findings grouped by the above categories.

Table 4: Summary of SCE IE ARC Findings by Finding Category

Finding Category	No. of Initiatives
Compliant	15
Noncompliant	3
Undetermined	7
Total	**25**

The three noncompliant initiatives (5.3.3.12.1 – Distribution Remediation (SH-12.1), 5.3.3.12.2 – Transmission Remediation (SH-12.2), and 5.3.4.10.2 – Transmission Aerial Inspections (IN-6.2)) aligned with the missed initiative targets self-reported in SCE's EC ARC. In its EC ARC, SCE identified an additional fourth initiative with a missed target (5.3.4.9.2.1 – Advanced Unmanned Aerial Systems Study (AT-2.2)); however, this initiative was not one of the 25 reviewed by NV5.

In addition to the above findings, NV5 noted that it discovered several issues through its field inspection work related to SCE initiatives 5.3.3.3.1 – Covered Conductor Installation (SH-1) and 5.3.5.5.1 – Expanded Pole Brushing (VM-2). While SCE met its targets for these initiatives, resulting in NV5 finding SCE to be compliant, the issues discovered through field inspections prompted NV5 to recommend Energy Safety consider further investigation of SCE's implementation of these initiatives.[66]

[64] SCE IE ARC, page 9.
[65] SCE IE ARC, pages 110-114.
[66] SCE IE ARC, page 30.

Of the 23 structures NV5 inspected in which covered conductor was reportedly installed by SCE in 2020, pursuant to initiative 5.3.3.3.1, NV5 discovered issues at two locations.[67] Both issues pertained to NV5's determination that the work was not completed in 2020, as reported by SCE. At one location, NV5 reported that its inspector spoke with SCE staff onsite who indicated the covered conductor installation was completed the day before. At the second location, NV5 believed it was unlikely that the covered conductor installation was completed in 2020 due to the presence of a pole tag indicating work was done in 2021.[68]

NV5 also reported issues pertaining to SCE initiative 5.3.5.5.1 – Expanded Pole Brushing (VM-2) through its field inspection work. NV5 inspected 25 locations where SCE completed work pursuant to this initiative in 2020 and discovered noncompliant conditions at 15 of these locations.[69] The noncompliant conditions reported for this initiative by NV5 included encroachment, overgrowth, and vegetation within a 10-foot radius of the pole.[70]

SCE responded to NV5's IE ARC and the findings therein on August 16, 2021.[71] SCE generally disagreed with NV5's findings except for those initiatives in which SCE self-reported missing its targets in its EC ARC.[72] SCE attributed time constraints, the extensive amount of evidence provided to NV5, and misunderstandings as the primary reasons why NV5 could not validate evidence of SCE's 2020 WMP compliance.[73]

Pertaining to NV5's inspection-related findings, SCE provided the following in its response:

- Initiative 5.3.3.3.1 – Covered Conductor Installation (SH-1):
  - SCE explained that it does not use pole tags to identify its system hardening work and what NV5 interpreted as a pole tag indicating covered conductor was installed in 2021 was more than likely a pole tag indicating an intrusive pole inspection was performed in 2021, which was the case for Structure 1685578.[74]
  - SCE noted that while the covered conductor installation on Structure 1248624E was completed in 2021, as indicated to NV5 by SCE personnel in the field, "this structure was not part of the covered conductor work reflected in SCE's data for 2020 completed covered conductor work."[75] SCE indicated that it believes NV5 inadvertently identified this structure from data provided for initiative 5.3.5.5.1 – Expanded Pole Brushing (VM-2), which was in scope for 2020 work.[76]

[67] SCE IE ARC, pages 21-22.
[68] SCE IE ARC, page 21.
[69] SCE IE ARC, pages 29-30.
[70] SCE IE ARC, page 29.
[71] SCE Response to SCE IE ARC.
[72] SCE Response to SCE IE ARC, page 2.
[73] SCE Response to SCE IE ARC, pages 2-3.
[74] SCE Response to SCE IE ARC, page 4.
[75] SCE Response to SCE IE ARC , page 3.
[76] SCE Response to SCE IE ARC, pages 3-4.

- Initiative 5.3.5.5.1 – Expanded Pole Brushing (VM-2):
  - SCE explained that, in accordance with the scope of work for the independent evaluator review, it classified data provided to NV5 under this initiative as "Large Volume Quantifiable Goal – Not Field Verifiable."[77]
  - SCE argued that expanded pole brushing is not a field verifiable initiative because, depending on the time difference between completion of the pole brushing work and inspection, vegetation may grow into the clearance distance.[78]

Energy Safety reviewed NV5's IE ARC and SCE's response and finds SCE's explanations to be supported. Therefore, Energy Safety concurs with SCE that the above issues discovered during NV5's inspections are erroneous.

5.3 Inspections

Energy Safety conducted a total of 732 inspection activities of SCE's infrastructure in 2020. A summary of inspection activities and defects is presented in Table 5 below.

Table 5: 2020 Inspection Results of SCE Service Territory[79]

Metrics Considered	Totals
Total Activities	732
Total Defects	11
Defect Rate	1.5%
Total Defect Resolutions	11
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 as well as electrical infrastructure and equipment conditions. Vegetation management defects included vegetation touching the anchor guy above the insulator and vegetation encroachments. Energy Safety noted dangerous conditions, such as unattached anchor guys and uncovered conductors and connections.

[77] SCE Response to SCE IE ARC, page 9.
[78] Id.
[79] SCE EC ARC, pages 16-17.

In 2020, SCE had a defect rate of 1.5% and timely resolved all the defects identified by Energy Safety.

5.4 Audits

Energy Safety conducted two audits on SCE'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 April 13, 2022, Energy Safety issued its SVM audit for SCE. In the audit, Energy Safety evaluated SCE's quantitative commitments[80] and verifiable statements.[81] For most initiatives, SCE made multiple quantitative commitments and verifiable statements. Energy Safety then reviewed available information and requested additional documentation to support the assessment of whether SCE fully met its quantitative commitments and executed its verifiable statements. Energy Safety found SCE compliant with 20 out of the 20 vegetation initiatives audited in its 2020 WMP, as detailed in **Error! Reference source not found.**Table below.[82]

Table 6: Energy Safety's Analysis of SCE's 2020 WMP Vegetation Management Initiatives

2020 WMP Initiative Number	2020 WMP Initiative Name	Determination[83]
5.3.5.1	Additional Efforts to Manage Community and Environmental Impacts	Compliant
5.3.5.2	Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment	Compliant
5.3.5.3	Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment	Compliant

[80] E.g., miles of lines to inspect, minimum work quality thresholds, etc.
[81] E.g., holding public meetings with communities regarding future vegetation management activities, training personnel on utilities protocols, etc.
[82] SCE SVM audit, page 1 (https://efiling.energysafety.ca.gov/).
[83] As used in this context, "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	Determination[83]
5.3.5.4	Emergency Response Vegetation Management Due to Red Flag Warning or Other Urgent Conditions	Compliant
5.3.5.5	Fuel management and reduction of "slash" from vegetation management activities	Compliant
5.3.5.5.1	Expanded Pole Brushing (VM-2)	Compliant
5.3.5.5.2	Expanded Clearance for Legacy Facilities (VM-3)	Compliant
5.3.5.6	Improvement of Inspections	Compliant
5.3.5.7	LiDAR Inspection of Vegetation Around Distribution Electric Lines and Equipment	Compliant
5.3.5.8	LiDAR Inspection of Vegetation Around Transmission Electric Lines and Equipment	Compliant
5.3.5.9	Other Discretionary Inspections of Vegetation Around Distribution Electric Lines and Equipment Beyond Inspections Mandate by Rules and Regulations	Compliant
5.3.5.10	Other Discretionary Inspections of Vegetation Around Transmission Electric Lines and Equipment Beyond Inspections Mandate by Rules and Regulations	Compliant
5.3.5.11	Patrol Inspections of Vegetation Around Distribution Electric Lines and Equipment	Compliant
5.3.5.12	Patrol Inspections of Vegetation Around Transmission Electric Lines and Equipment	Compliant
5.3.5.13	Quality Assurance/ Quality Control of Inspections (VM-5)	Compliant
5.3.5.14	Recruiting and Training of Vegetation Management Personnel	Compliant
5.3.5.15	Remediation of At-Risk Species	Compliant
5.3.5.16.1	Hazard Tree (VM-1)	Compliant
5.3.5.16.2	Drought Relief Initiative (DRI) (VM-4)	Compliant
5.3.5.17	Substation Inspections	Compliant
5.3.5.18	Substation Vegetation Management	Compliant
5.3.5.19	Vegetation Inventory System	Compliant
5.3.5.20	Vegetation Management to Achieve Clearance Around Electric Lines and Equipment	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.[84] 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 SCE's actual expenditures to date, and documented future planned expenditures, comported with the activities approved in the 2019 and 2020 WMPs and for which SCE received funding in its GRC or similar applications submitted to the CPUC between 2017 and 2020.[85] The audit did not contain negative findings related to this objective.[86]

5.5 Data Analysis

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

5.5.1 Risk Prioritization Analysis

In its 2020 WMP, SCE stated that it would prioritize hardening initiatives based on existing locational risk analysis to complete more work in the higher-risk areas.[87]

Energy Safety conducted a risk prioritization analysis of SCE's non-routine vegetation management and covered conductor and undergrounding (CCU) projects to assess where

[84] 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.
[85] SCE's 2019 and 2020 Wildfire Mitigation Plans (WMPs) Engagement letter, date: October 2, 2020.
[86] Performance Audit of SCE Wildfire Mitigation Plan Expenditures Final Report, date: December 9.2021.
[87] SCE 2020 WMP, page 31, paragraph 1, page 32, paragraph 2.

those projects were completed relative to where SCE understood the risks on its distribution system to be in 2020.[88]

SCE's non-routine vegetation management work incorporated into the scope of this analysis included the following 2020 WMP initiatives:

- Hazard trees.
- Tree mortality.
- Drought Resolution Initiative (DRI) program inspect.
- Enhanced clearance.
- Weed abatement.

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

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

Energy Safety relied upon data submitted by SCE that assigned wildfire risk scores to individual circuit segments. Energy Safety refers to these individual circuit segments with assigned risk scores as "risk segments."[89] Energy Safety notes that SCE's reported risk segments are only representative of its overhead distribution lines in high fire risk areas. Energy Safety rank ordered each risk segment from highest to lowest wildfire risk and grouped the risk segments into five bins of approximately equal risk.[90] Each equal risk bin is representative of 20 percent of the wildfire risk on SCE's distribution lines and is ranked from highest to lowest risk. Energy Safety applied a buffer of 100-200 meters[91] to the risk segment location to account for potential locational imprecision of the SCE submitted data. Energy Safety then used SCE 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.

[88] Non-routine vegetation management and CCU project data used is this analysis was received through SCE's QDRs from 2020 Q2 through 2020 Q4, file names: "SCE_20200909 CONFIDENTIAL.gdb", "SCE_20201209 Confidential.gdb", "20210205_SCE_QDR_SDP_Confidential.gdb" and "SCE_20210205_NonConfidential.gdb," respectively.

[89] Risk segments may significantly vary in length.

[90] The risk segment data used in this analysis was provided by SCE in response to Energy Safety data request number Data Request GG-SCE-2020 ES-CAC-DRGGSC202112-1, Question 1.

[91] 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.

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 SCE'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 7: Length of SCE's Overhead Distribution System Relative to HFTD Areas and Risk Segments

Distribution OH (mi)[92]	HFTD (mi)[93]	Risk Segments (mi)[94]
38,702	9,467	8,529

Table 8: Total Length (in miles) of All Risk Segments in Each Risk Segment Quintile

Risk Bin	Total Length (mi)	Risk Score	Risk per Mile
Top 20% of Risk	37	1931691	52220
61-80% of Risk	96	1929205	20120
41-60% of Risk	263	1930092	7334
21-40% of Risk	625	1930275	3090
0.01-20% of Risk	11606	1930302	166
Risk Score of 0	22697	0	0

Table shows that of the more than 38,000 miles of overhead distribution lines in SCE's service territory, approximately 24% (over 9,000 miles) are in HFTD areas. As shown in Table, the average risk per circuit mile is highest in the "Top 20% of Risk" bin and steadily decreases. In addition, SCE's three highest risk bins, comprising approximately the top 60% of SCE's risk, is made up of just 400 circuit miles (or approximately four percent of its distribution mileage in HFTD areas). Said another way, by its own calculated risk segment risk scores, SCE could mitigate approximately 60% of the wildfire risk on its overhead distribution system by hardening approximately 400 identified miles.

5.5.1.1 Covered Conductor and Undergrounding Project Results

[92] SCE Q1 2021 QDR, Table 8, sum of columns X-AB for metrics 1k, 2k, and 3k.
[93] SCE Q1 2021 QDR, Table 8, sum of columns Z-AB for metrics 1k, 2k, and 3k.
[94]The risk segment data used in this analysis was provided by SCE in response to Energy Safety data request number Data Request GG-SCE-2020 ES-CAC-DRGGSC202112-1, Question 1.

SCE reported completion of 894 miles of CCU projects in 2020. Table provides an overview of the proportion of CCU projects completed by SCE that were within and outside the scope of this analysis (i.e., further than 100 meters from the nearest risk segment).

Table 9: Overview of CCU Line Data

Row Labels	CCU Projects (Miles)	CCU Projects (%)
Within Scope	774	87%
Outside of Scope	120	13%
Overall Total	**894**	**100%**

Figure 1 below illustrates the results of Energy Safety's analysis of SCE'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 Miles by Equal Risk Bins

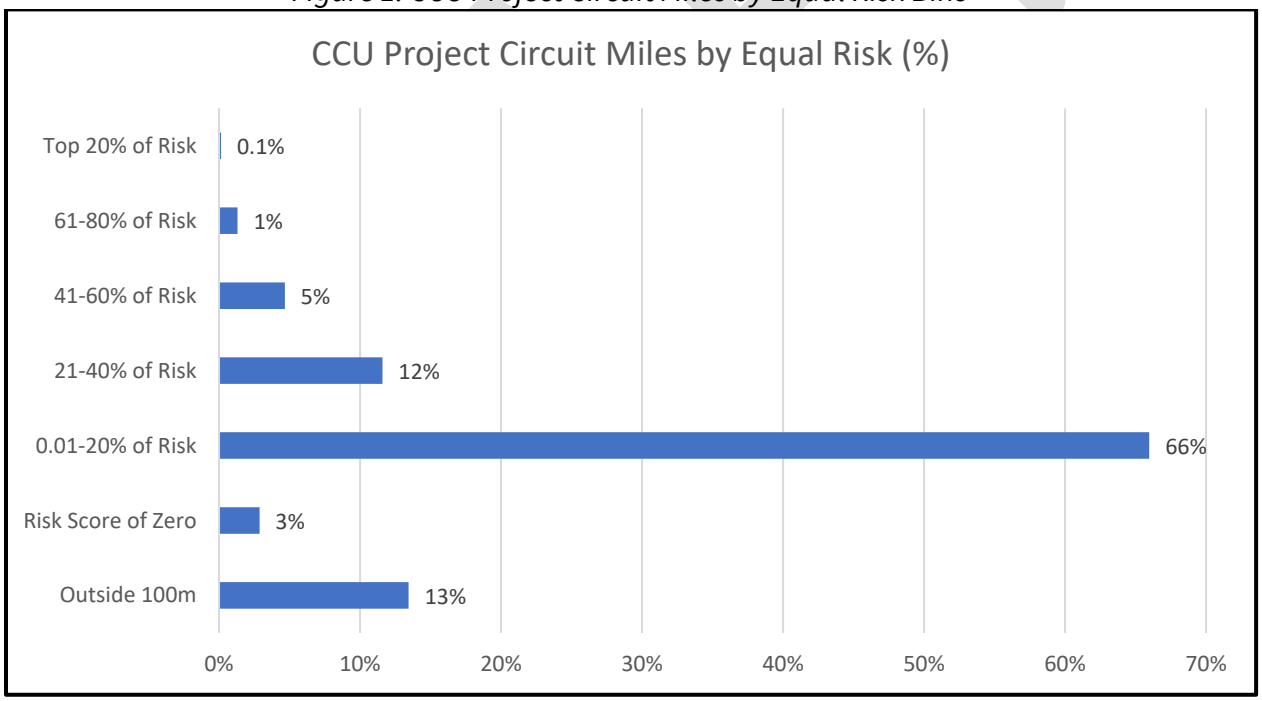


Figure 1 above indicates the length of CCU work in each quintile of risk, as well as the amount of CCU work that SCE performed on risk segments that had a score of zero or were more than 100 meters away from a risk segment. Most of SCE's CCU work was completed on segments that, when sorted from most to least risk, make up the bottom 20% of risk segments scored by SCE. A little over 10% of SCE's CCU work was completed in locations that were over 100 meters away from the nearest circuit segment with an assigned risk score. That said, when

overlaid on the HFTD map, Energy Safety notes that 98% of SCE's CCU work occurred in HFTD areas with over 70% in Tier 3 HFTD areas.

5.5.1.2 Vegetation Management Results

Energy Safety's analysis of vegetation management work only included work designated as a non-routine work type by SCE.[95] 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. For non-routine vegetation management work, Energy Safety analyzed vegetation management inspections (VMI) and vegetation management projects (VMP) separately, as these are distinct phases of completing vegetation management work.

Table 10 lists the specific work type attributes that constitute VMI and VMP. **Error! Reference s ource not found.** Table 11 provides an overview of the proportion of VMI and VMP completed by SCE that were within and outside the scope of this analysis (i.e., further than 200 meters from the nearest risk segment).

Table 10: VMI and VMP Non-Routine and Routine Work Type Attributes

	VMI Attributes	VMP Attributes
Non-Routine	Hazard trees, Tree mortality	Drought Resolution Initiative (DRI) program inspect, Enhanced clearance, Weed abatement

Table 11: Overview of Non-Routine Vegetation Points

Scope	VMI Points	VMI Points (%)	VMP Points	VMP Points (%)
Within Scope	63,561	93%	158,285	96%
Outside of Scope	4,539	7%	6,736	4%
Overall Total	68,100	100%	176,563	100%

5.5.1.2.1 Vegetation Management Inspections

Figure 2**Error! Reference source not found.** below presents the results of Energy Safety's a nalysis of SCE's completed non-routine VMI. Non-routine VMI work completed on risk

[95] In instances where SCE 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.

segments with a score of zero and non-routine VMI work more than 200 meters from a risk segment were sorted into separate bins, respectively.

Figure 2: Vegetation Management Inspection Point Allocation by Equal Risk Bins

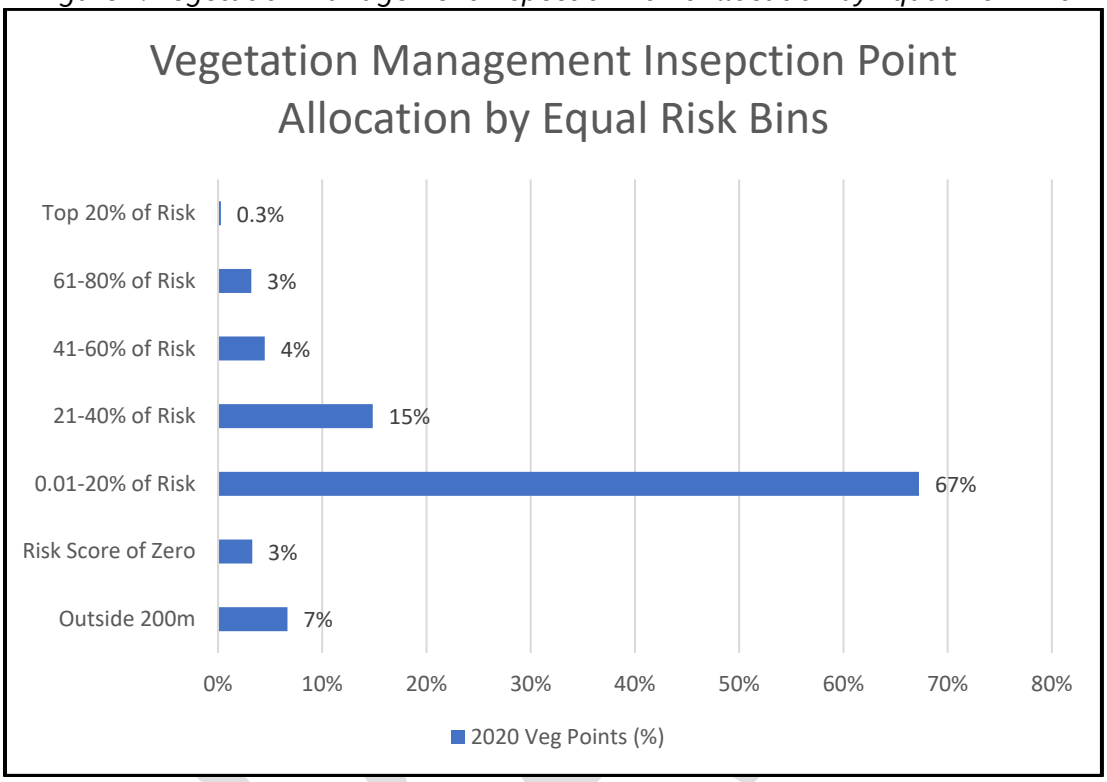


Figure 2 indicates the number of vegetation management inspections that are in each risk bin, as well as the number of inspections that SCE performed near risk segments that had a score of zero or were more than 100 meters away from a risk segment. Most of the VMI work was located near the distribution segments that, when sorted from most to least risky, make up the bottom 20% of risk segments scored by SCE.[96]

5.5.1.2.2 Vegetation Management Projects

Figure 3 below presents the results of Energy Safety's analysis of SCE'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.

[96] As discussed earlier, SCE only scored segments located within its designated High Fire Risk Area.

Figure 3: Vegetation Management Project (VMP) Points Allocation by Equal Risk Bins

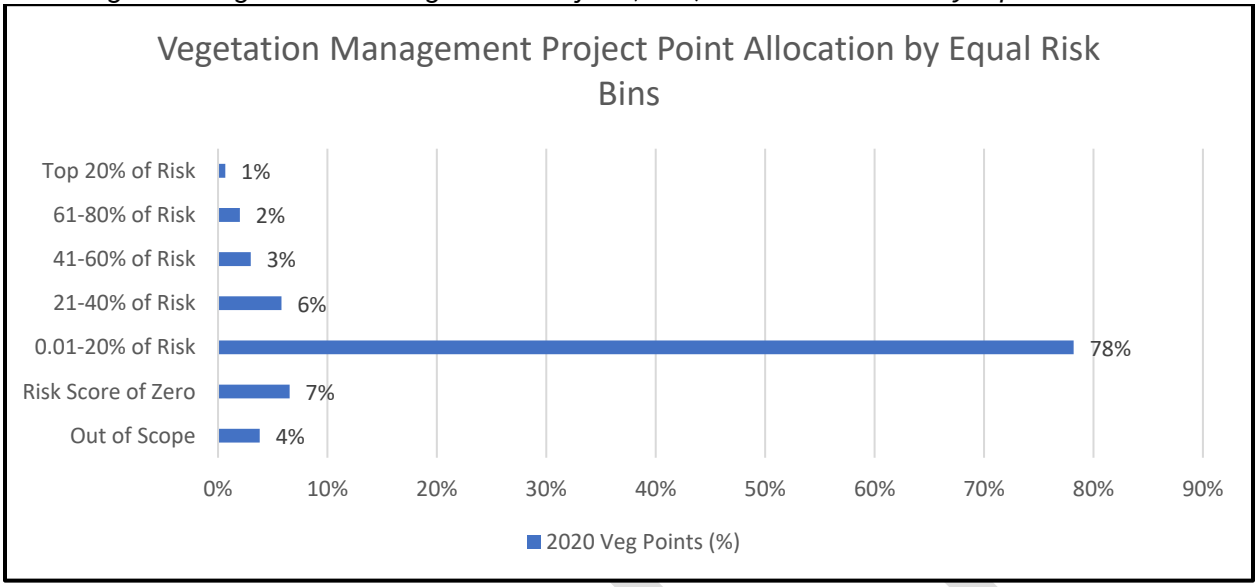


Figure 3 indicates the number of vegetation management projects that are in each risk bin as well as the number of projects that SCE performed near risk segments that had a score of zero or were more than 100 meters away from a risk segment. Most of the VMP points were located near the distribution segments that, when sorted from most to least risky, make up the bottom 20% of risk segments scored by SCE.

5.5.2 Initiative Performance Analysis

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

5.5.2.1 Results

In accordance with the 2020 Compliance Operational Protocols issued on February 16, 2021, SCE timely submitted its 2020 Q4 QIU. SCE's 2020 Q4 QIU contained 69 initiatives, as shown in Table 12 below. Of SCE's 69 total WMP initiatives, 25 contained quantitative targets and 44 contained qualitative targets.

Table 12: SCE 2020 Initiatives by quantitative targets, qualitative

SCE's 2020 WMP Initiatives (QIU data)	Numbers
Initiatives with Quantitative Targets	25
Initiatives Qualitative Targets	44
Total Initiatives	**69**

Results for Initiatives with Quantitative Targets

In its 2020 Q4 QIU, SCE reported that it had either met or exceeded the targets for 21 of 25 initiatives (or 84%) with quantitative targets. As shown in Table 13, of the four initiatives in which SCE failed to meet the targets, the miss was by an average of less than eight percent.

Regarding covered conductor, however, based on documents provided by SCE, Energy Safety identified the following data discrepancies. In its 2020 Q4 QIU and its SCE's EC ARC, SCE reported that it installed approximately 960 miles of covered conductor in 2020. However, Energy Safety sent a data request to SCE on April 15, 2022, for data provided by SCE to NV5 in support of its independent evaluation, which yielded conflicting results.[97] Energy Safety reviewed two separate Excel files, an original and a supplement,[98] that contained covered conductor data including work order numbers, miles installed, completion dates, and other information. Based on review of this data, Energy Safety determined that the original Excel file provided by SCE to NV5 showed that SCE installed at least 794 miles of covered conductor in 2020. However, Energy Safety found that in the supplemental Excel file provided to NV5, SCE reported 970 miles of covered conductor installed in 2020. Energy Safety's analysis revealed that 52 work orders provided in the supplemental Excel file were not included in the original. The sum of covered conductor miles installed in those 52 work orders was approximately 176 miles, which accounts for the discrepancy in reported miles of covered conductor installed (970 – 176 = 794).

Table 13: Initiatives with only Quantitative Targets

Initiative No.	Initiative Name	WMP Target	Reported Actual Progress		
			QIU	QAL	EC ARC
5.3.2.1	Advanced Weather Monitoring	375	590	590	590

[97] Energy Safety DR-076, Question 1.
[98] Original file name: "SH-1 Covered Conductor.xlsx" and Supplemental file name: "001_SH-1 Covered Conductor_Supplemental.xlsx."

Initiative No.	Initiative Name	WMP Target	Reported Actual Progress		
			QIU	QAL	EC ARC
5.3.3.2.1	Circuit Breaker Maintenance	55	92	100	100
5.3.3.3.1	Covered Conductor	700	960	960	960
5.3.3.3.2	Tree Attachment Remediation	325	426	400	400
5.3.3.6.1	WCCP Fire Resistant Poles	5200	6090	6090	6090
5.3.3.7	Install Replace Fuses	3025	3025	3025	3025
5.3.3.9	The Installation of System Automation Equipment - RAR/RCS	45	48	49	49
5.3.3.12.1	The Remediations Distributions Section	100%	97%	97%	97%
5.3.3.12.2	The Remediations Transmission Section	100%	95%	95%	95%
5.3.3.12.3	The Remediations Generation Section	100%	100%	100%	100%
5.3.4.4	Infrared Inspection of Energized Overhead Distribution Facilities	50%	50%	50%	50%
5.3.4.5	Infrared Inspection of Energized Overhead Transmission Facilities (IN-4)	1,000	1,000	1,000	1,000
5.3.4.9.2.2	The Unmanned Aerial (UAS) Operations Training (OP-3)	50	42	43	42
5.3.4.9.1	Distribution High Fire Risk Informed (IN-1.1)	105,000	199,000	199,000	199,000
5.3.4.9.2	Distribution Aerial Inspections	165,000	168,000	168,000	168,000
5.3.4.10.1	Transmission High Fire Risk Informed Inspections in HFRA (IN-1.2)	25,500	33,500	33,500	35,500
5.3.4.10.2	Transmission Aerial Inspections (IN-6.2)	33,500	31,380	31,380	31,380
5.3.4.14	Quality Oversight/Quality Control (IN-2)	15,000	17,400	17,400	17,400
5.3.4.16	Generation High Fire Risk Informed Inspections (IN-5)	200	290	290	290
5.3.5.5.1	Expanded Poles Brushing (VM-2)	200,000	200,000	200,000	200,000
5.3.5.5.2	Expanded Clearances for Legacy Facilities (VM-3)	30%	30%	39%	39%
5.3.5.13	Vegetation Management Quality Control (VM-5)	3,000	6,100	6,100	6,100

Initiative No.	Initiative Name	WMP Target	Reported Actual Progress		
			QIU	QAL	EC ARC
5.3.5.16.1	Hazard Tree Management Program (VM-1)	75,000	99,500	99,500	99,500
5.3.3.16.2	Drought Relief Initiative (DRI) Inspections and Mitigations (VM-4)	94%	95%	95%	95%
5.3.6.5.1	Community Resource Centers (PSPS-2)	23	56	56	56

Results for Initiatives with Qualitative Targets

In its 2020 Q4 QIU, SCE reported that it had completed all 44 of its 2020 WMP initiatives with qualitative targets, including mitigation activities such as evaluation of technologies and pilot programs, refinement and updating of standards and protocols, and implementation of advancements in SCE's risk models.

5.6 Wildfire and Risk Reduction Outcomes

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 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.[99] 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 SCE'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.

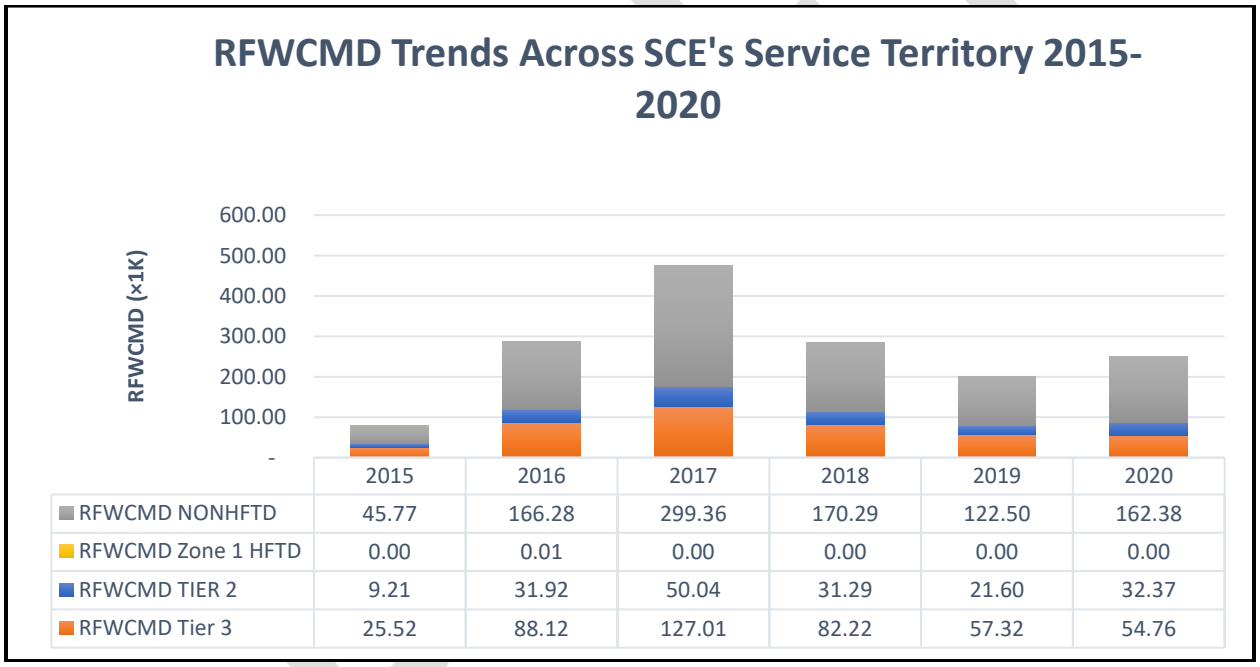
Energy Safety relied upon data reported in an electrical corporation's 2020 WMP as well as Quarterly Data Report (QDR) submissions from May 3, 2021. Energy Safety also performed analysis that compared the electrical corporation's performance during the 2020 WMP

[99] See Attachment 4 of CPUC Resolution WSD-001, titled "WMP Metrics."

compliance period to trends from previous years.[100] Metrics analyzed are discussed in the following sections.

As shown in Figure 4 below, SCE has seen a change 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, red flag warnings per circuit mile day (RFWCMD), to depict wildfire risk normalized for the size of and 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 reported continues, the uptick in RFWCMD experienced in 2020 forecasts steady increases in extreme fire weather in the near-term (i.e., next few years) for SCE.

Figure 4: Variances in Extreme Fire Weather Across SCE Territory from 2015-2020 by HFTD location



	2015	2016	2017	2018	2019	2020
RFWCMD NONHFTD	45.77	166.28	299.36	170.29	122.50	162.38
RFWCMD Zone 1 HFTD	0.00	0.01	0.00	0.00	0.00	0.00
RFWCMD TIER 2	9.21	31.92	50.04	31.29	21.60	32.37
RFWCMD Tier 3	25.52	88.12	127.01	82.22	57.32	54.76

5.6.1 Ignition Risk

Energy Safety evaluated ignition risk as a function of various metrics reported in SCE's QDR submission. SCE 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:

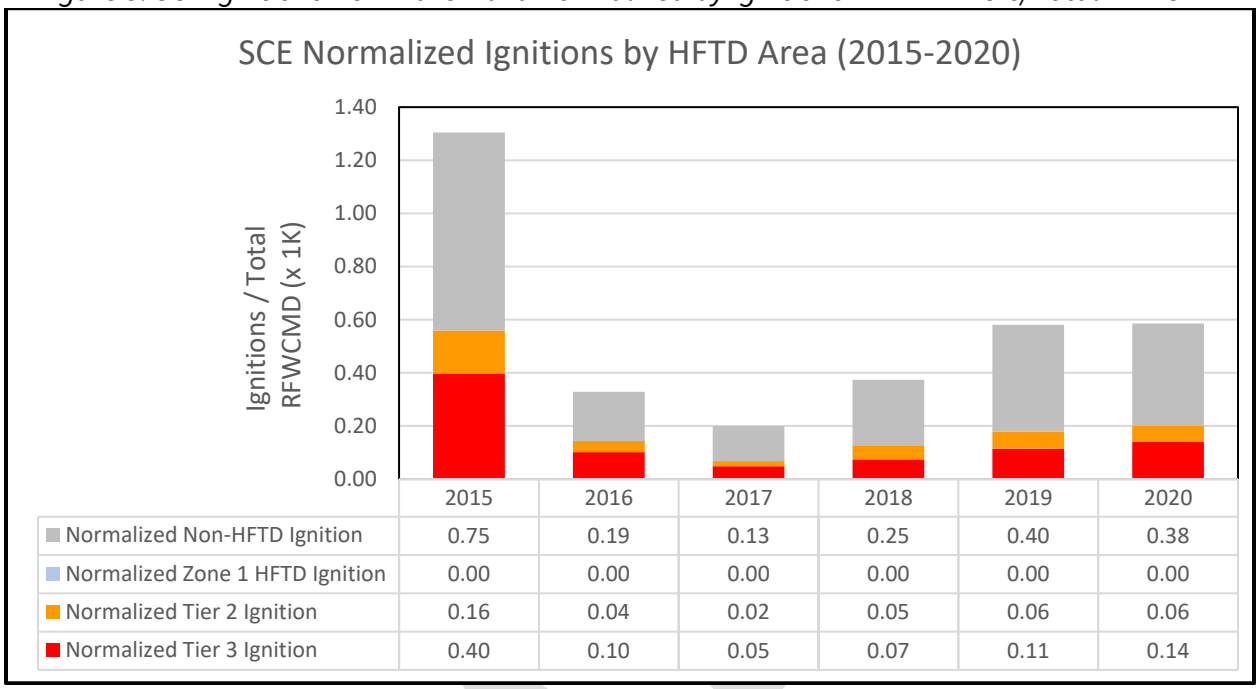
[100] Energy Safety looked at previous year performances dating back to 2015, where available and reported in SCE's data submissions, or any year thereafter for which data was available and reported.

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 includes data on SCE's ignitions from 2015 through 2020, plotted below. Figure 5 shows the ignitions across SCE's service territory normalized by the total RFWCMD for each year and broken out by location (i.e., Tier 3 HFTD areas, Tier 2 HFTD areas, Zone 1 HFTD areas, and non-HFTD areas). Figure 6 shows the ignitions in Tier 3 HFTD areas of SCE's service territory normalized by the RFWCMD in Tier 3 only for each year. Figure 7 shows the ignitions in Tier 2 HFTD areas of SCE's service territory normalized by the RFWCMD in Tier 2 only for each year.

Figure 5: SCE Ignitions from 2015-2020 Normalized by Ignitions in HFTD Tiers/Total RFWCMD



	2015	2016	2017	2018	2019	2020
Normalized Non-HFTD Ignition	0.75	0.19	0.13	0.25	0.40	0.38
Normalized Zone 1 HFTD Ignition	0.00	0.00	0.00	0.00	0.00	0.00
Normalized Tier 2 Ignition	0.16	0.04	0.02	0.05	0.06	0.06
Normalized Tier 3 Ignition	0.40	0.10	0.05	0.07	0.11	0.14

Figure 6: SCE Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 3 Only

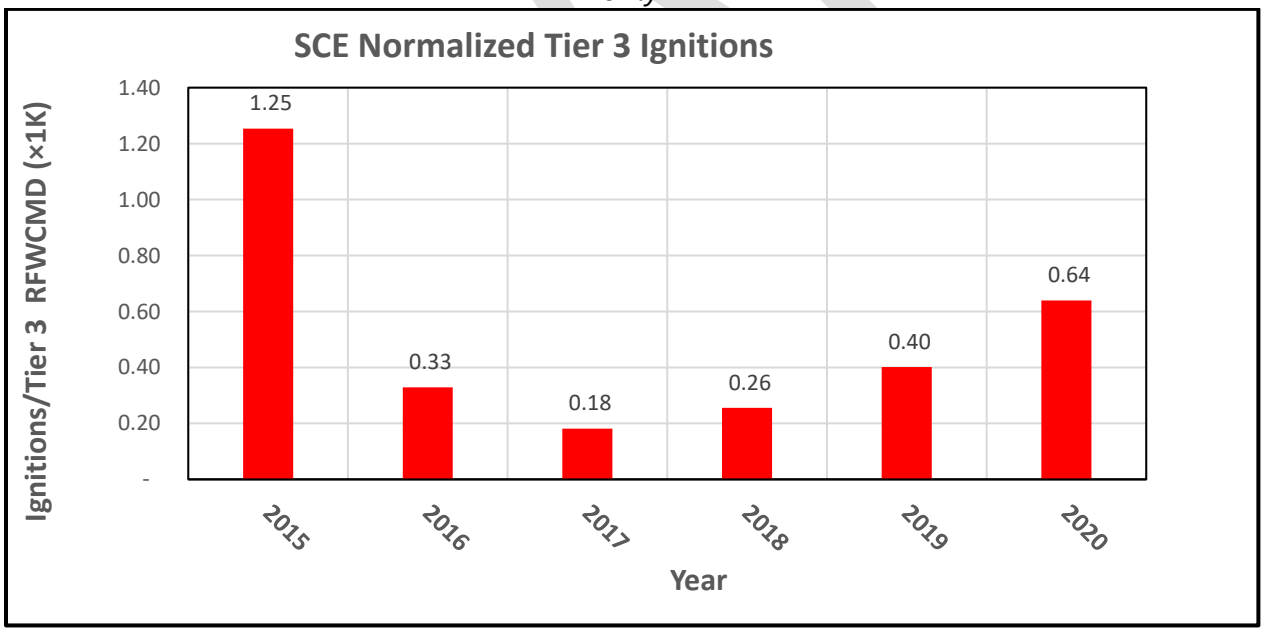
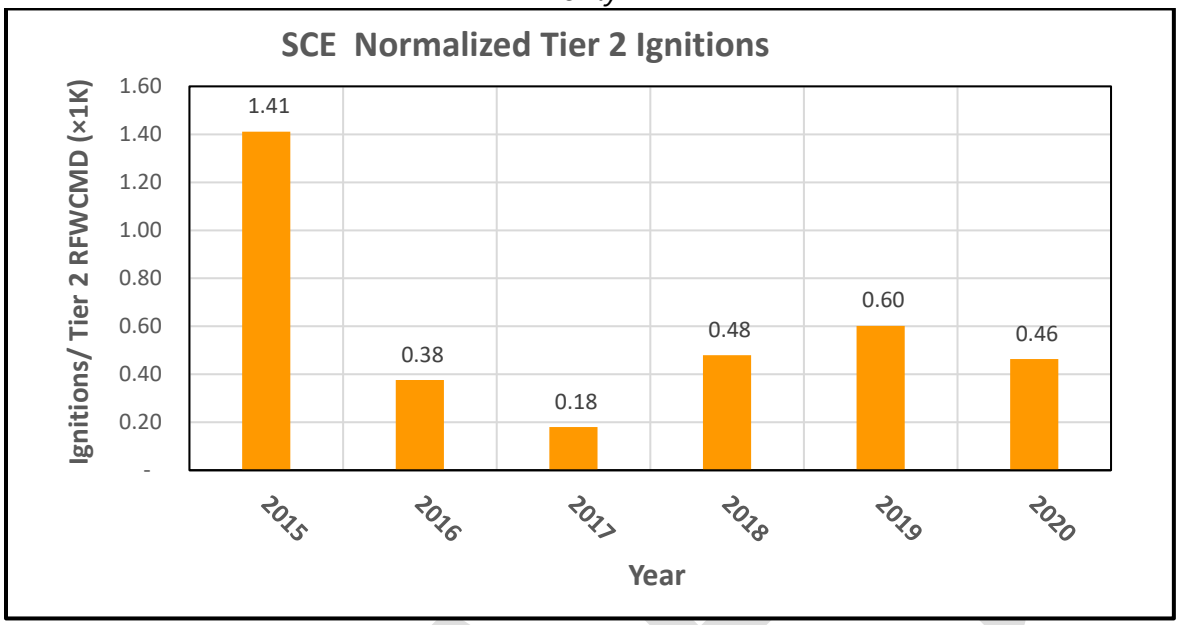


Figure 7: SCE Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only



As can be seen from the above figures, after starting at a peak in 2015, SCE's normalized ignitions made a steep decline over the next two years, followed by a steady upward trend from 2017 through 2020. In Tier 3 HFTD areas, which are of extreme wildfire risk, SCE's normalized ignitions in 2020 were one-third greater than the five-year average from 2015-2019. In addition, on average, SCE's normalized ignitions in Tier 3 HFTD areas have increased by over 50% annually since 2017. In contrast, SCE's 2020 normalized ignitions in Tier 2 HFTD areas were approximately 25% fewer than the five-year average from 2015-2019.

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

Figure 8: SCE Distribution Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 3 Only Broken out by Risk Driver

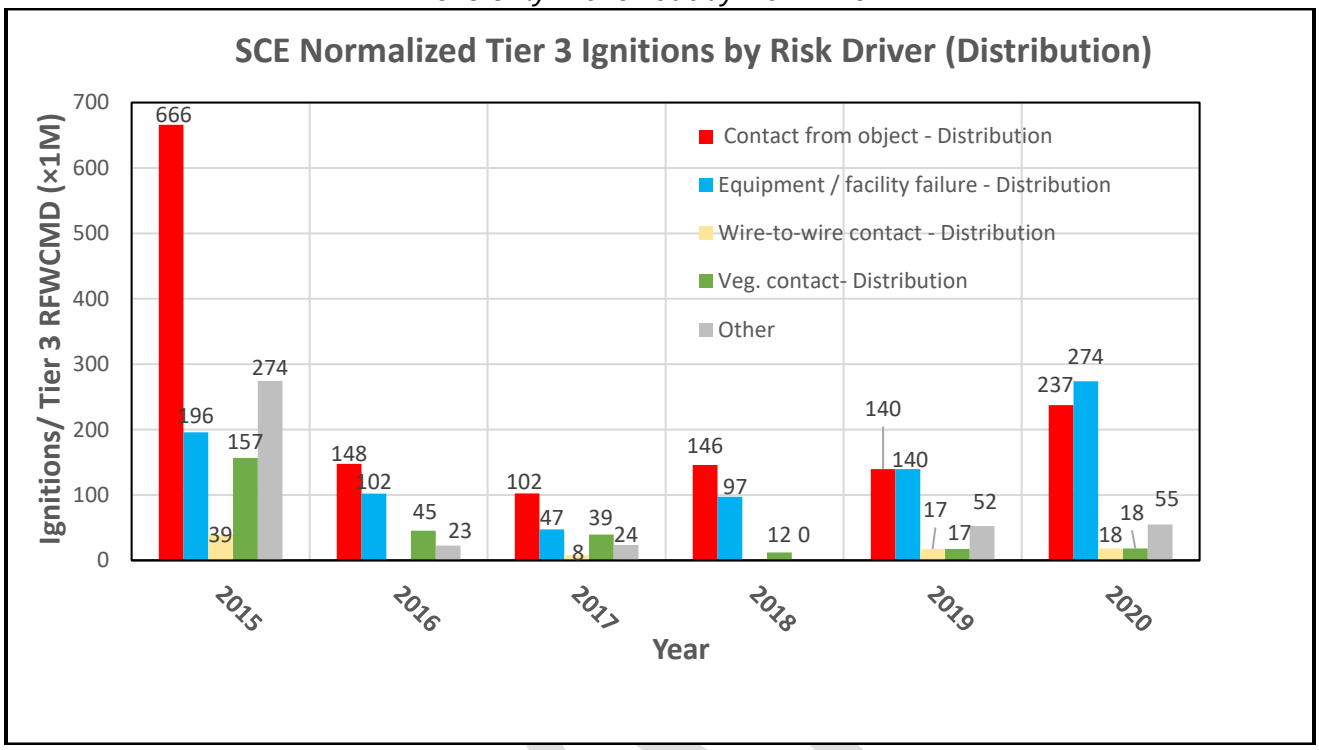


Figure 9: SCE Distribution Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only Broken out by Risk Driver

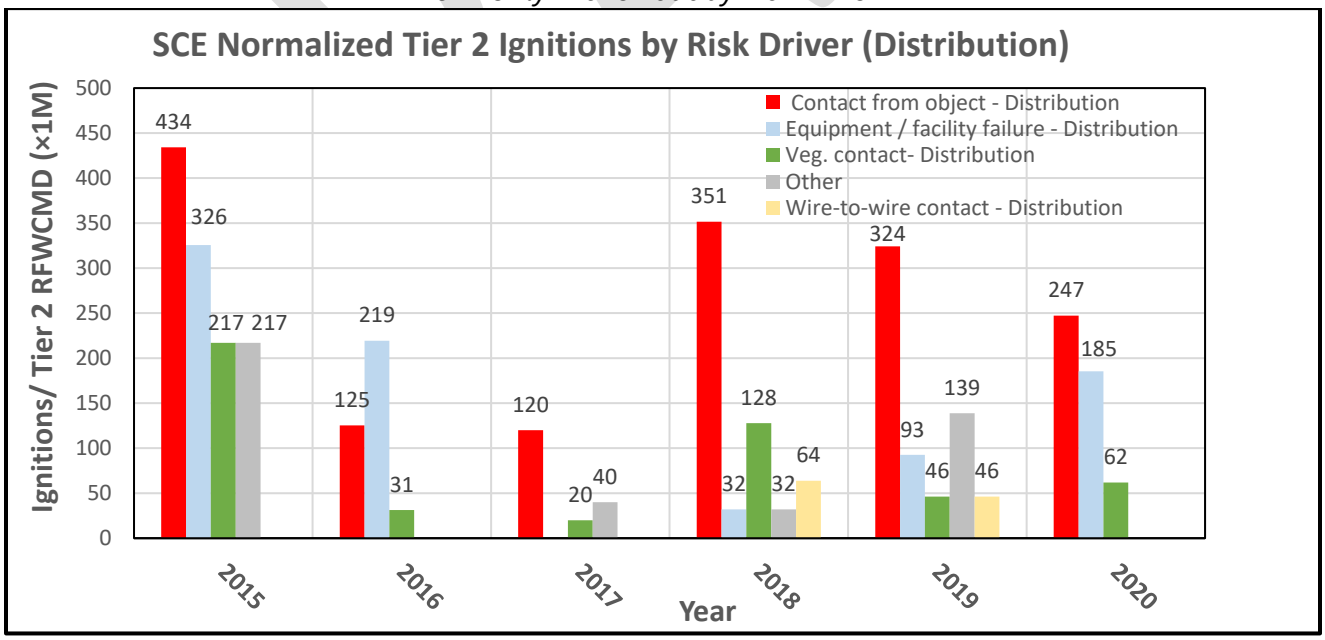


Figure 10: SCE Transmission Ignitions in Tier 3 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 3 Only Broken out by Risk Driver

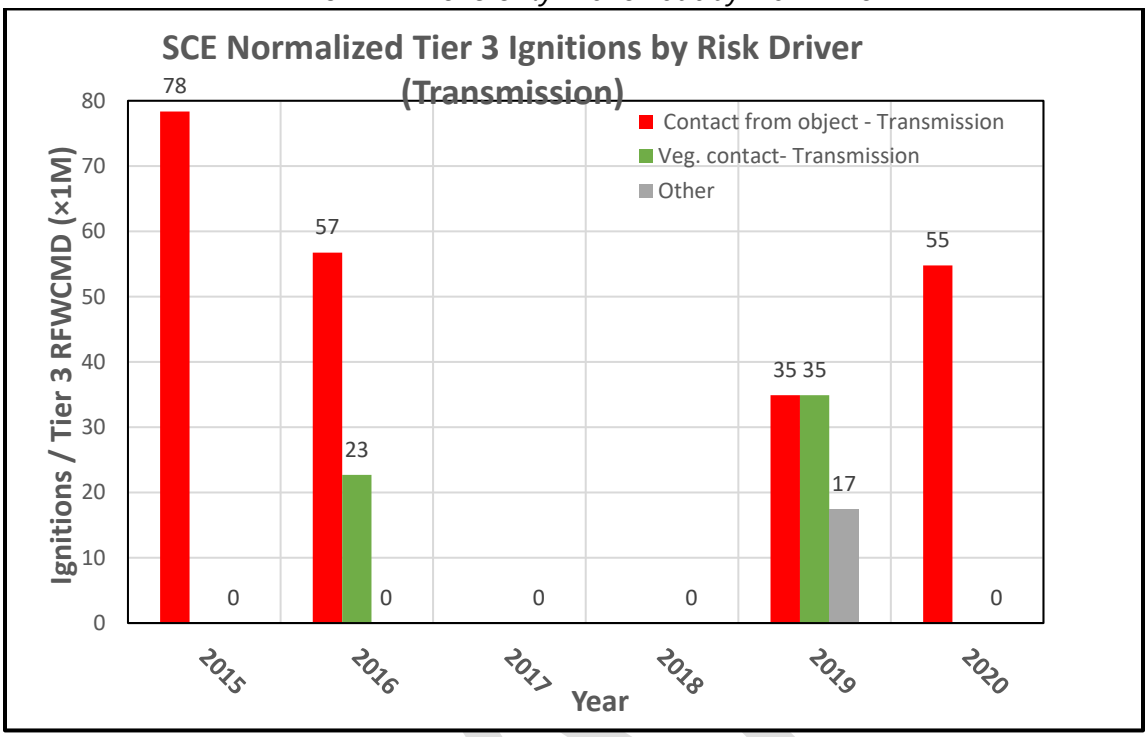
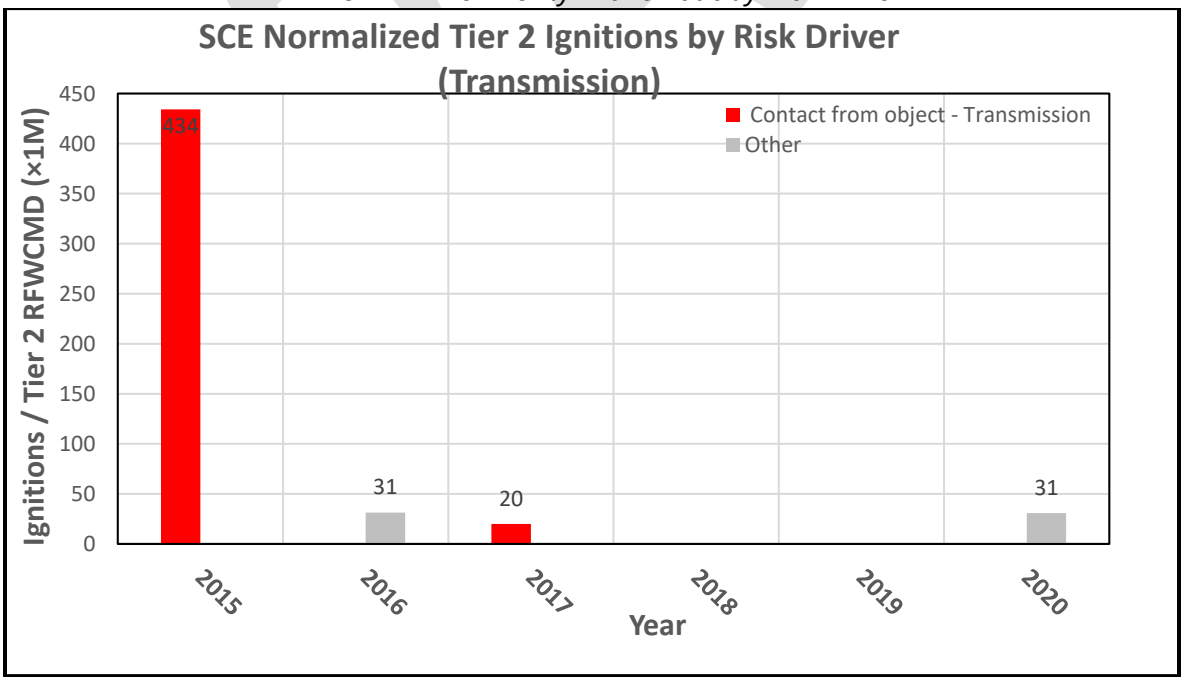


Figure 11: SCE Transmission Ignitions in Tier 2 HFTD Areas from 2015-2020 Normalized by RFWCMD in Tier 2 Only Broken out by Risk Driver



As shown in the figures above, with few exceptions, contact from objects was generally the top driver of SCE'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 SCE's normalized distribution ignitions in Tier 2 and Tier 3 HFTD areas, Energy Safety discovered the following:

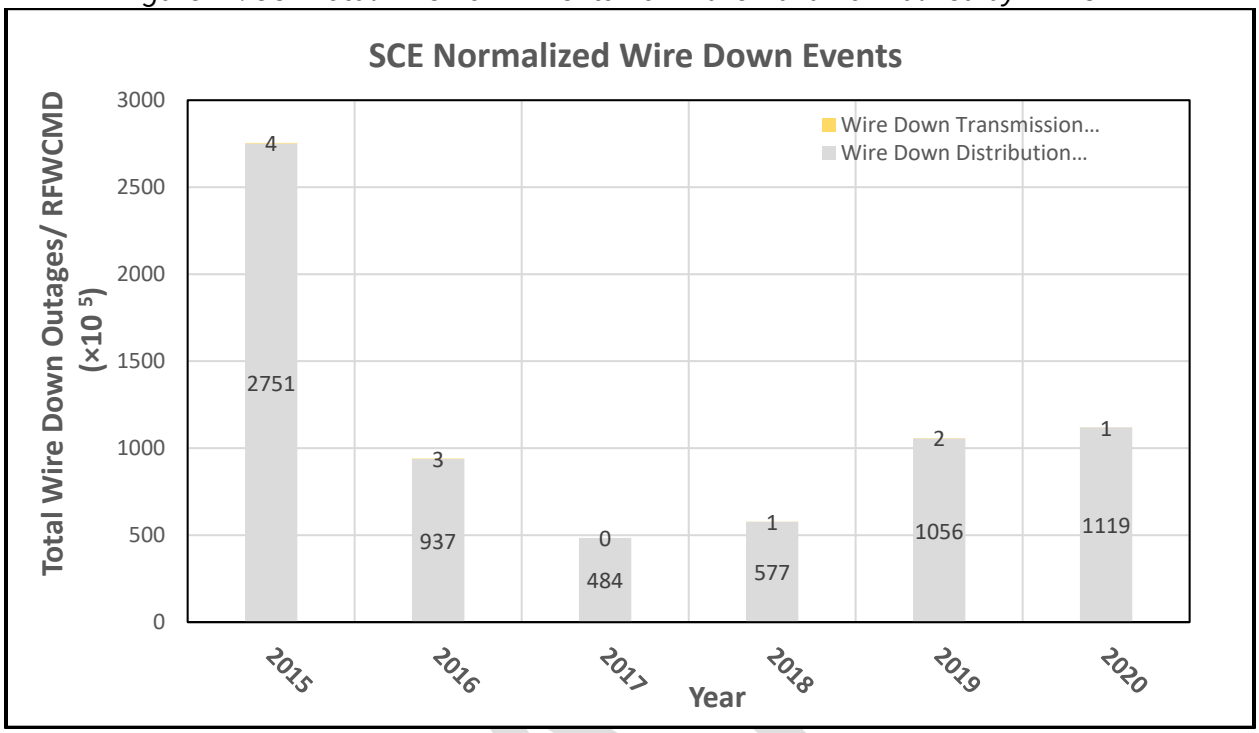
- **Contact from objects** – In 2020, contact from object ignitions in Tier 3 HFTD areas remained approximately equal to the five-year average from 2015 through 2019. While in Tier 2 HFTD areas, contact from object ignitions decreased by approximately 10% from the five-year average in 2020.
- **Equipment/facility failure** – In 2020, equipment/facility failure ignitions in Tier 3 HFTD areas increased by over 135% compared to the five-year average from 2015 through 2019. Similarly in Tier 2 HFTD areas, equipment/facility failure ignitions increased by nearly 40% from the five-year average in 2020. In addition, on average, equipment/facility failure ignitions in Tier 3 HFTD areas have increased by over 80% annually since 2017.
- **Vegetation contact** – In 2020, vegetation contact ignitions in Tier 3 HFTD areas decreased by two-thirds compared to the five-year average from 2015 through 2019. Similarly in Tier 2 HFTD areas, vegetation contact ignitions decreased by approximately 30% from the five-year average in 2020.

Outside of 2015, SCE'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, SCE reported only having object contact ignitions on its transmission infrastructure in Tier 3 HFTD areas, which increased by over 60% in 2020 when 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 SCE's distribution and transmission wire down events from 2015 through 2020, which are normalized for RFWCMD and plotted below in Figure 12. Wire down events can be a precursor to ignitions; therefore, Energy Safety will look for a downward trend over time.

Figure 12: SCE Total Wire Down Events from 2015-2020 Normalized by RFWCMD

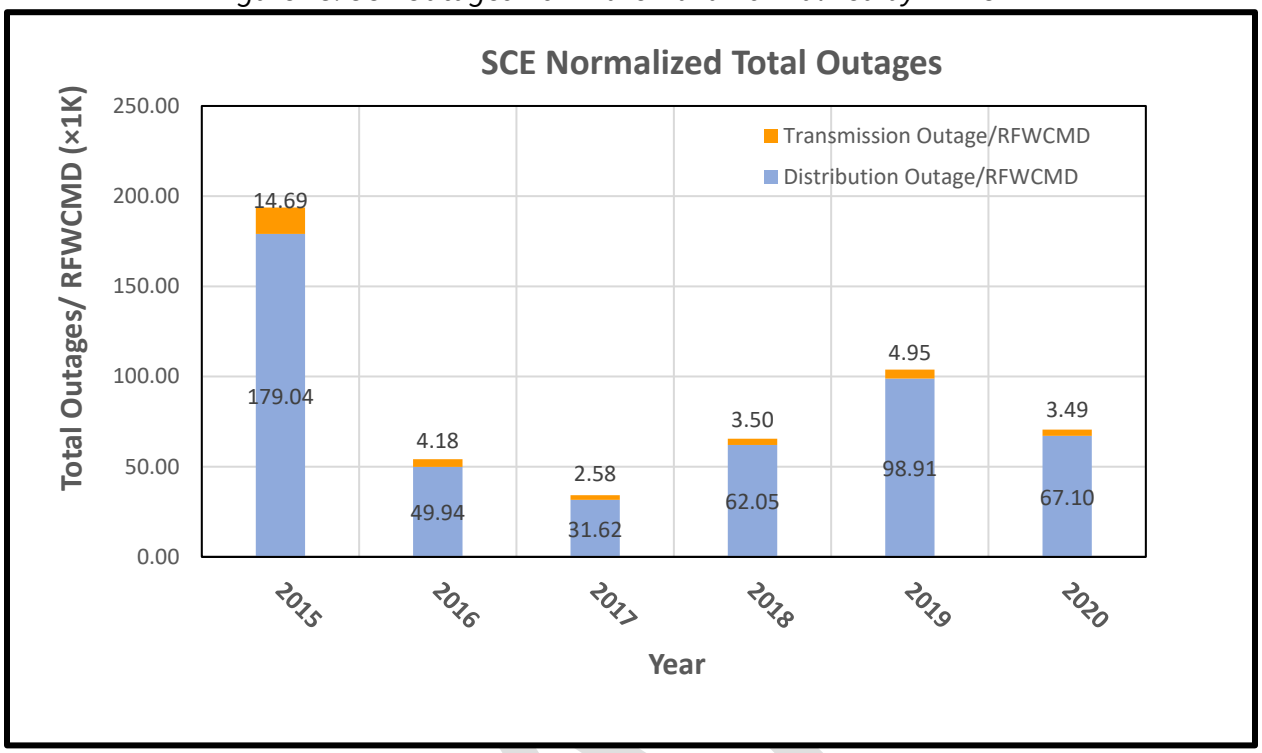


SCE's normalized wire down events trended down over the 2015 through 2020 period. In 2020, SCE's normalized transmission wire down events decreased by half when compared to the five-year average from 2015 through 2019, while distribution wire down events remained approximately equal to the previous five-year average. Although, like trends in equipment/facility failure distribution ignitions, on average, normalized distribution wire down events have increased by over 35% annually since 2017. However, in 2020, the rate of this annual increase in normalized distribution wire down events slowed for SCE (a greater than 80% increase from 2018 to 2019 compared to a less than 10% increase from 2019 to 2020).

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. Unplanned or unscheduled outages correlate to a potential for ignitions on the system, although they are not as strong a predictor as wire down events. Figure 13 below plots SCE's transmission and distribution outages normalized for RFWCMD.

Figure 13: SCE Outages from 2015-2020 Normalized by RFWCMD

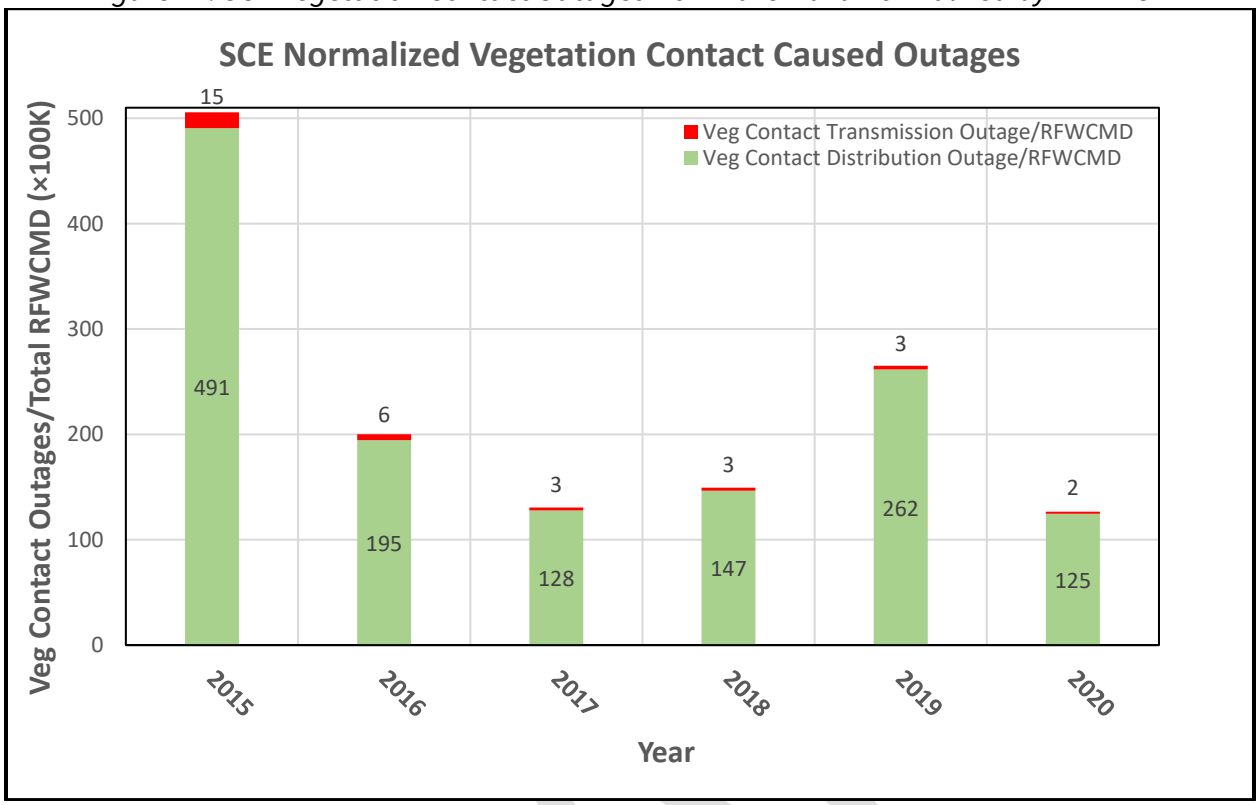


Normalized total outages decreased over the 2015 through 2020 period. A sharp decrease in normalized total outages from 2015 through 2017 was followed by a steady increase from 2017 through 2019 and a significant drop in 2020. In 2020, as compared to the five-year average from 2015 through 2019, SCE's normalized total transmission and distribution outages decreased by approximately 40% and 20%, 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 14 below plots SCE's transmission and distribution vegetation contact-caused outages normalized for RFWCMD.

Figure 14: SCE Vegetation Contact Outages from 2015-2020 Normalized by RFWMCD



Although there was an uptick in 2019, normalized outages due to vegetation contact trended lower over the 2015 through 2020 timeframe. Also, in 2020, as compared to the five-year average from 2015 through 2019, SCE's normalized total transmission and distribution outages due to vegetation contact decreased by approximately 67% and 50%, 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 San Diego Gas & Electric Company, for most electrical corporations, broad use of PSPS as a wildfire mitigation measure did not occur until 2018. As such, limited data is available to conduct a trend analysis.

SCE 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 and continuing into 2020, reflective of SCE's broad deployment of PSPS in those years.

Figure 15: Normalized Frequency of PSPS Events

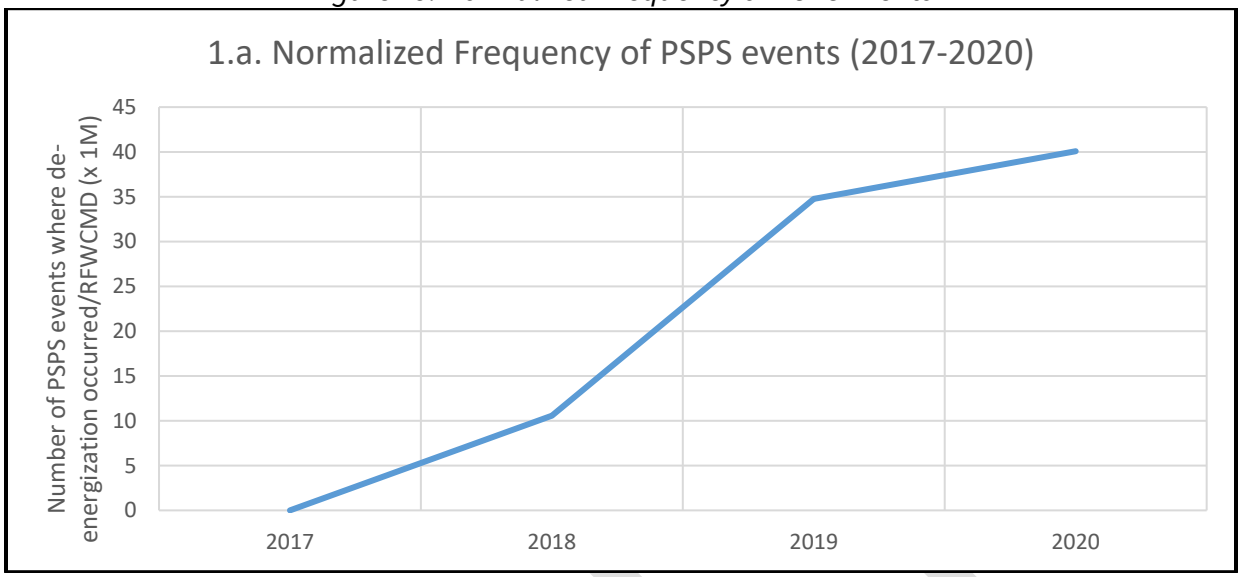


Figure 16: Normalized Scope of PSPS Events

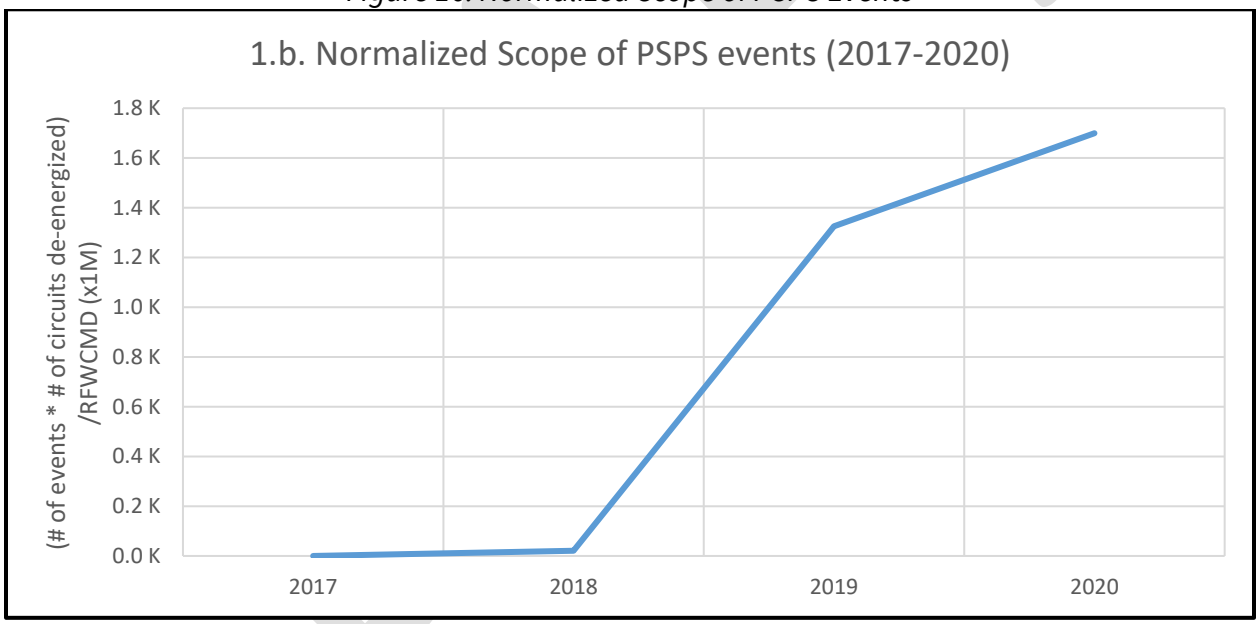


Figure 17: Normalized Duration of PSPS Events

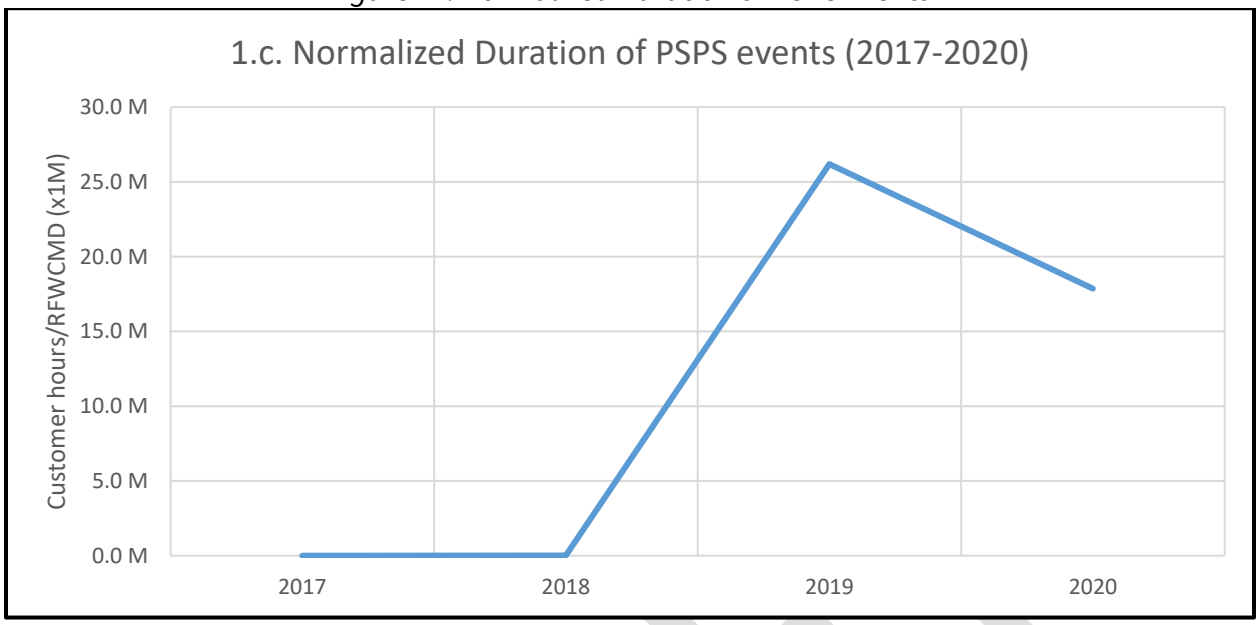


Figure 18: Normalized Critical Infrastructure PSPS Impact

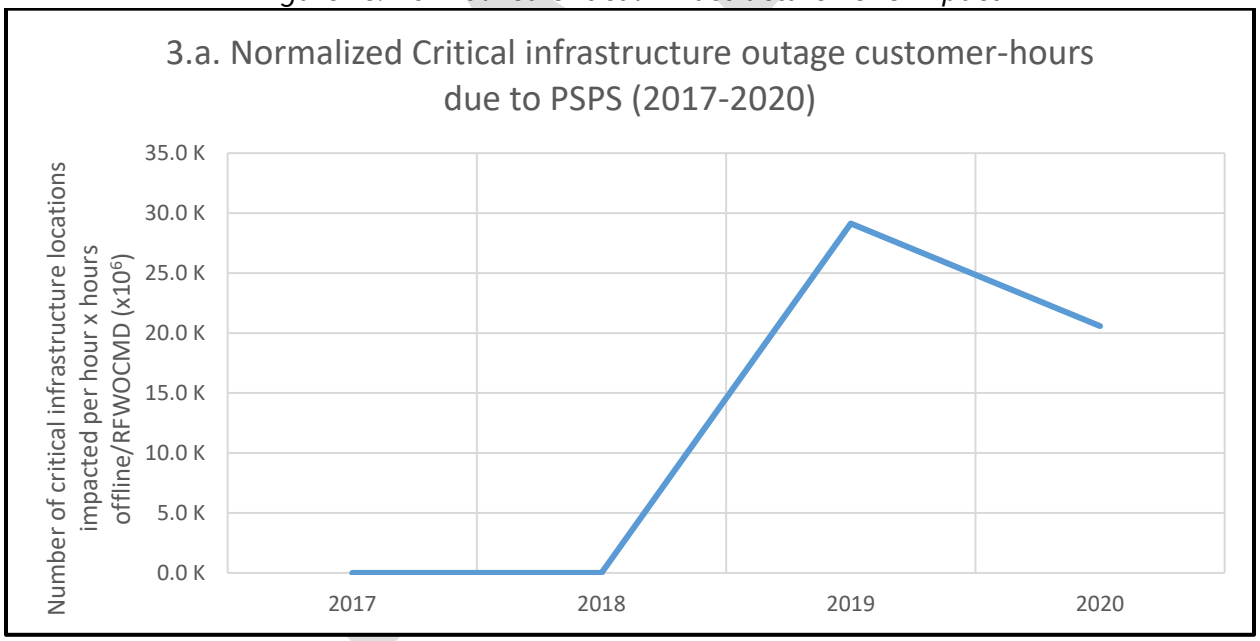


Figure 19: Normalized PSPS Customer Impact

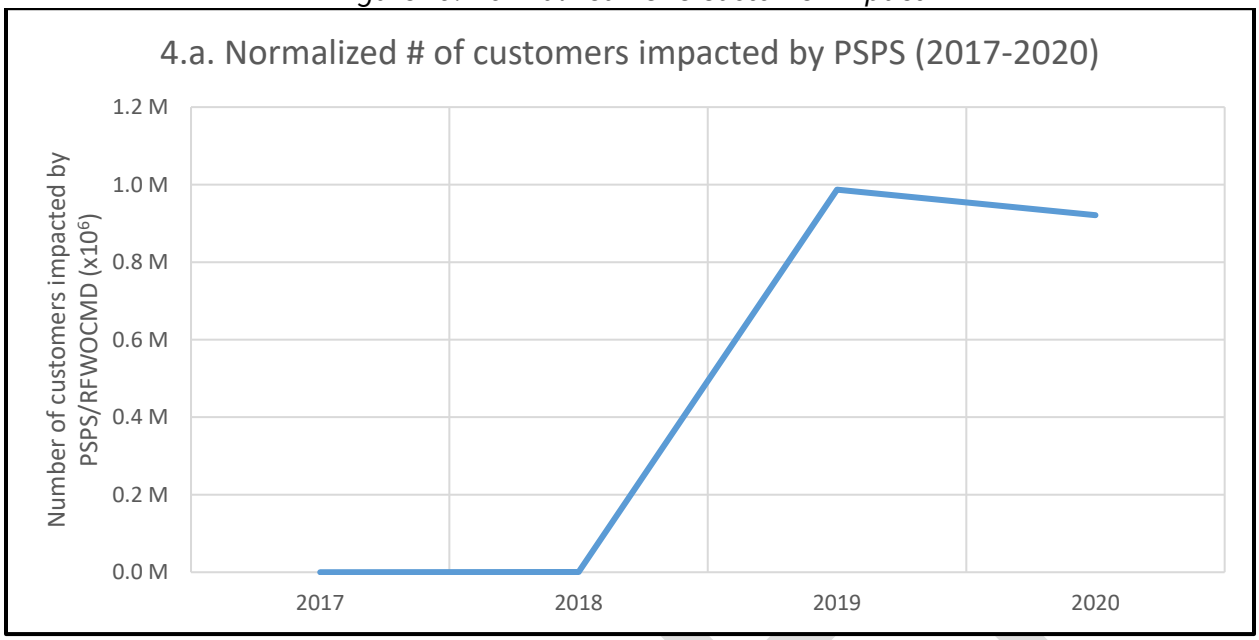


Figure 15 and Figure 16 show that the normalized scope and frequency of SCE's PSPS events continued to increase in 2020. Stated differently, SCE implemented PSPS on more circuits and more frequently in 2020 than in previous years. However, as shown in Figure 17 through Figure 19, PSPS events in 2020 were shorter, impacted fewer customers, and had reduced impacts on critical infrastructure.[101] Nevertheless, Energy Safety noted that SCE's use of PSPS in 2019 was significant, setting a low bar for improvement in 2020.

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.

In Table 1 of its QDR (QDR Table 1), SCE reported data on findings from inspections it performed in accordance with its 2020 WMP.[102] 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).

[101] Critical infrastructure including, but not limited to, hospitals, police stations, and grocery stores are heavily relied upon in times of emergency.
[102] QDR Table 1, Metric 1 titled, "Grid Condition Findings."

- Location (i.e., in or out of HFTD areas).
- Priority of findings (i.e., Level 1, Level 2, or Level 3).[103]
- 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.[104]

In addition to data on inspection findings, Energy Safety assessed data on SCE's progress on fixing the unresolved conditions. Energy Safety requested data from SCE on the number and type of conditions it fixed during the 2020 WMP compliance period.[105] The data on conditions fixed by SCE is of the same detail and includes the same assumptions as the inspection finding data in QDR Table 1.

Table 14 below provides an overview of the circuit miles SCE inspected in 2020, broken out by inspection type.

Table 14: Miles of Inspection Completed by SCE in 2020

Inspection Type	Distribution Miles Inspected		Transmission Miles Inspected		Transmission & Distribution Miles Inspected	
Patrol	10,024	31.3%	4,438	29.8%	14,462	30.8%
Detailed	16,450	51.4%	9,309	62.6%	25,759	54.9%
Other	5,530	17.3%	1,135	7.6%	6,665	14.2%
Total	**32,004**	**100%**	**14,882**	**100%**	**46,886**	**100%**

SCE completed nearly 47,000 miles of inspections in 2020; approximately 70% of which was performed on its distribution lines and equipment. In total, patrol inspections made up over

[103] 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.
[104] See CPUC GO 95, Rule 18(B)(1)(a).
[105] DR-89 sent on 5/10/2022.

30% of all inspections performed, while detailed inspections made up nearly 55%, and other inspections less than 15%.

Table 15 and Table 16 below detail the number of inspection findings and fixes, broken out by priority level, SCE made on its distribution and transmission infrastructure, respectively.

Table 15: Conditions Found and Fixed on SCE's Distribution Infrastructure in 2020

	Level 1	Level 2	Level 3	Total
Conditions Found	3,750	38,869	31,687	**74,306**
Conditions Fixed	4,445	37,589	21,279	**63,313**
Difference	**695 More Fixed**	**1,280 More Found**	**10,408 More Found**	**10,993 More Found**

Table 16: Conditions Found and Fixed on SCE's Transmission Infrastructure in 2020

	Level 1	Level 2	Level 3	Total
Conditions Found	158	12,398	1,693	**14,249**
Conditions Fixed	94	8,774	697	**9,565**
Difference	**64 More Found**	**3,624 More Found**	**996 More Found**	**4,684 More Found**

As shown in the above tables, in 2020, SCE found more conditions that required repair or remediation than it was able to fix on both its transmission and distribution infrastructure. On its distribution infrastructure, the large difference in findings over fixes is attributed to the significant amount of Level 3 condition findings compared to the amount fixed – a difference of over 10,000 (nearly 95% of the total difference). However, SCE was able to fix more Level 1 conditions than it found on its distribution infrastructure in 2020, which are of highest risk and potential impact to safety and reliability. In contrast, on its transmission infrastructure, SCE found more conditions than it was able to fix across all priority levels (i.e., Level 1, Level 2, and Level 3). Although, unlike on the distribution infrastructure, the largest difference in conditions found versus fixed on SCE's transmission infrastructure were attributable to Level 2 conditions – making up over 75% of the total.

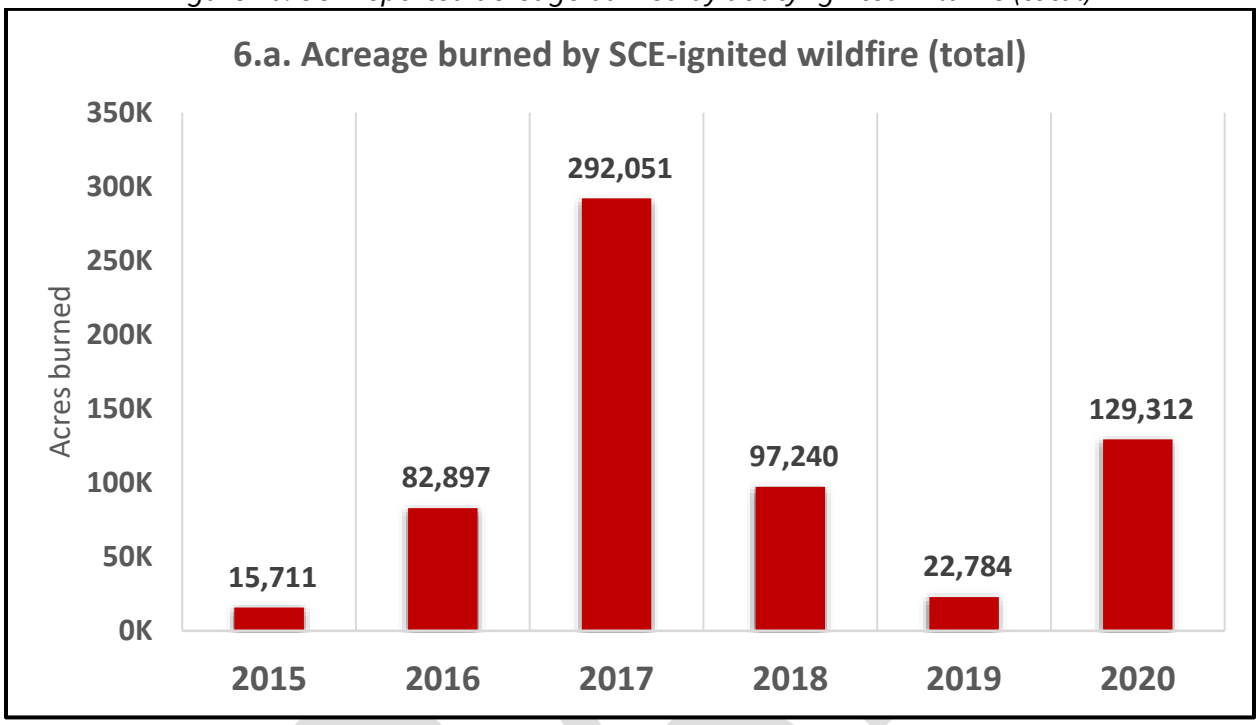
5.6.4 Wildfire Outcomes

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

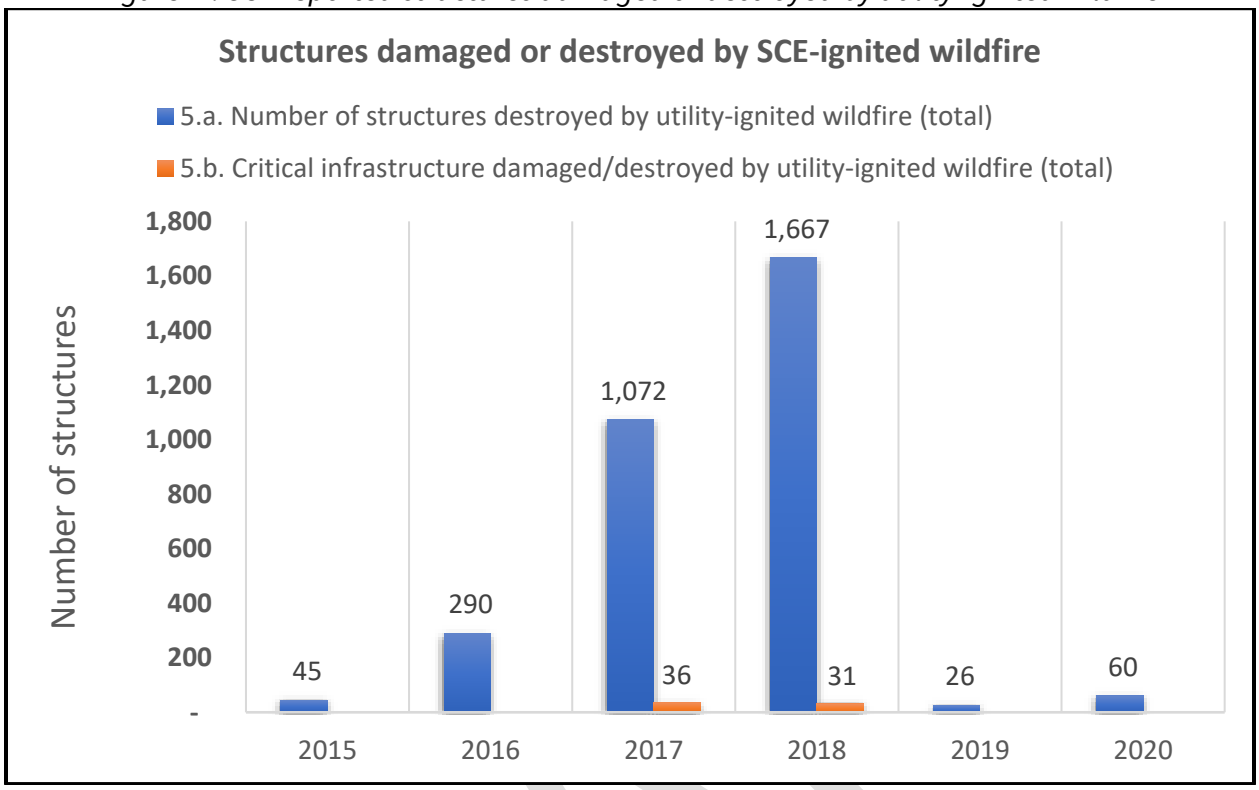
Presented in the figures below are SCE's performance relative to the above outcome metrics from 2015 through 2020.

Figure 20: SCE reported acreage burned by utility-ignited wildfire (total)



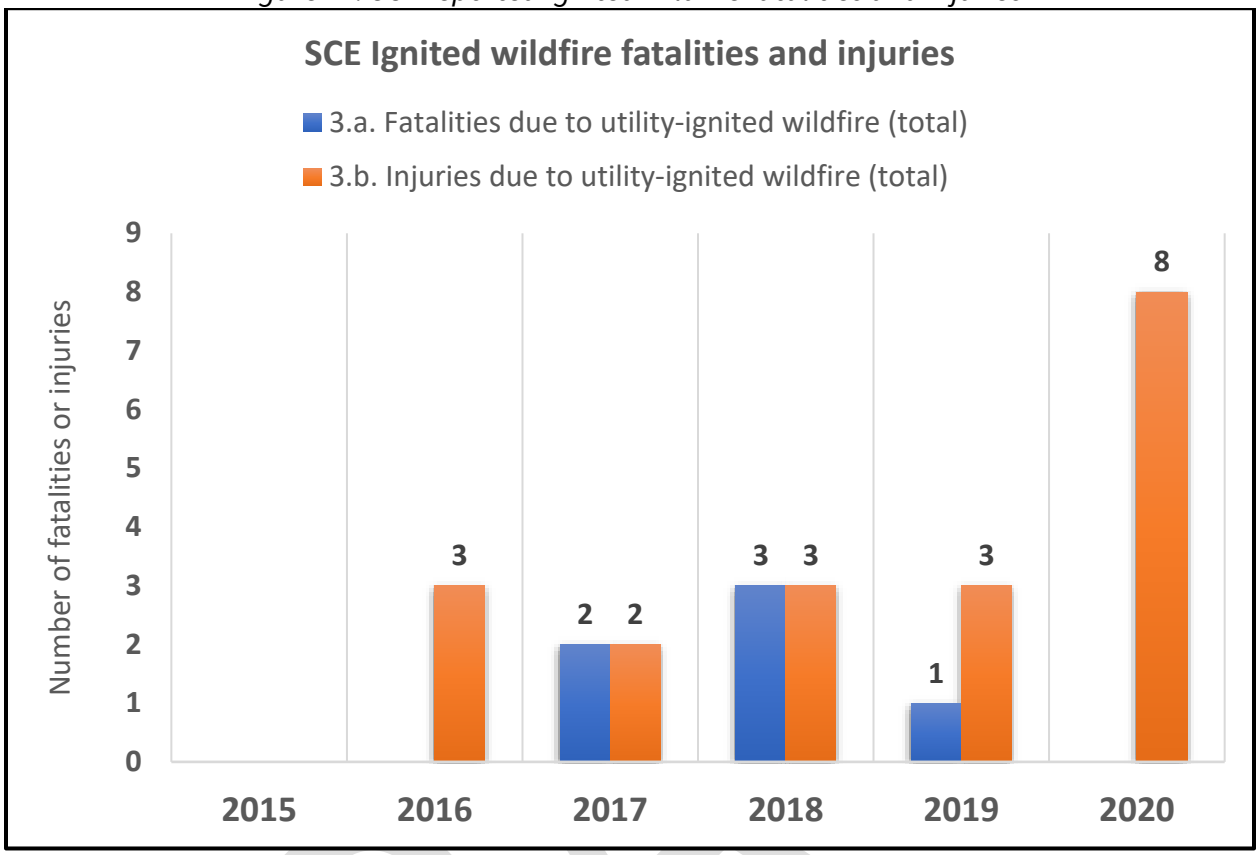
As shown above, the acres burned from wildfires ignited by SCE's infrastructure over the six-year reporting period generally follows a normal distribution and indicates a decline since 292,051 acres burned in 2017. As compared to the five-year average of acres burned from wildfires ignited by SCE's infrastructure from 2015 through 2019, the 129,312 acres burned reported in 2020 represents an increase of over 25%.

Figure21: SCE reported structures damaged or destroyed by utility-ignited wildfire



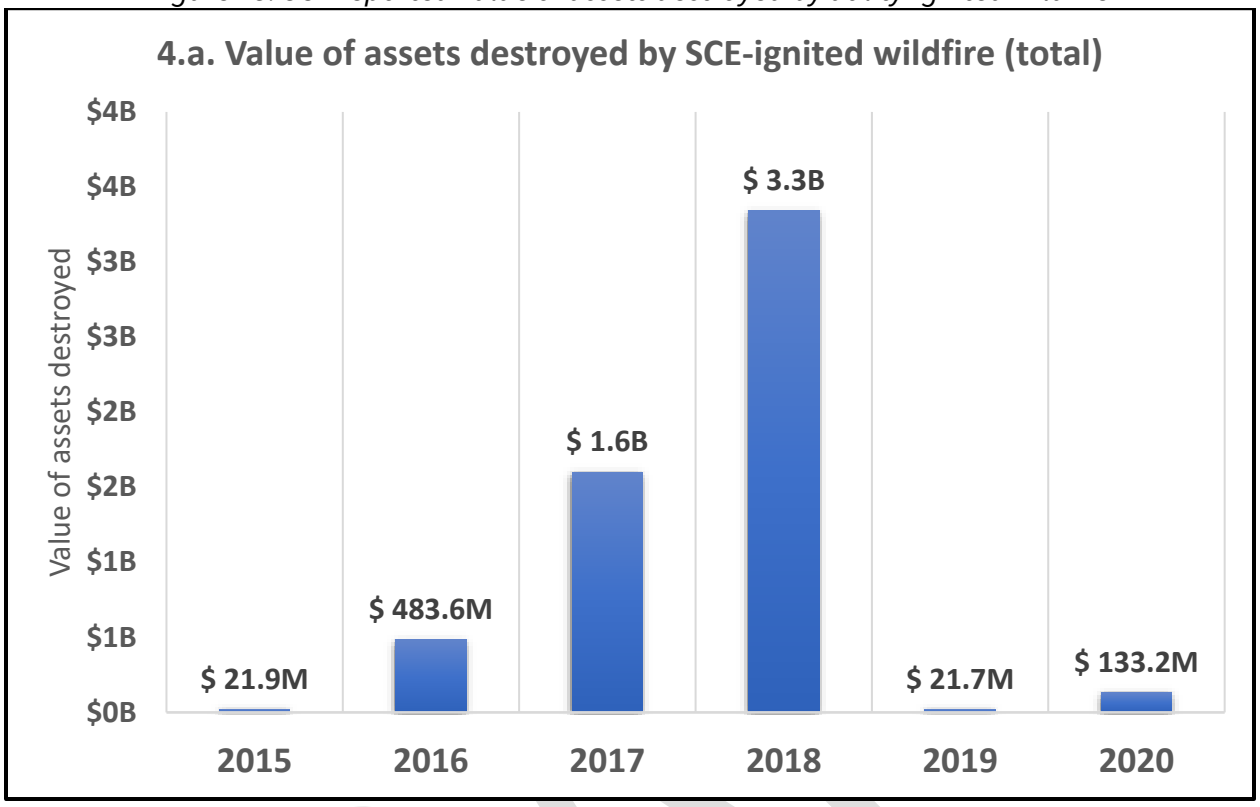
The number of structures and critical infrastructure damaged or destroyed from wildfires related to SCE's electrical lines and equipment decreased significantly in 2020 compared to the five-year average from 2015 through 2019. Following a consistent and sharp annual increase in structures damaged or destroyed from 2015-2018, SCE-ignited wildfires caused substantially less damage in 2019 and 2020.

Figure 22: SCE reported Ignited wildfire fatalities and injuries



Following three consecutive years of fatalities resulting from SCE-ignited wildfires between 2017 and 2019, which claimed the lives of six individuals, there were no fatalities attributable to SCE-ignited wildfires in 2020. Conversely, the eight injuries attributable to SCE-ignited wildfires in 2020 represented an increase of over 250% when compared to the five-year average from 2015 through 2019.

Figure 23: SCE reported value of assets destroyed by utility-ignited wildfire



In the five-year period from 2015 through 2019, SCE-ignited wildfires were responsible for destroying over $5.4 billion worth of assets. From 2015 through 2018, the value of assets destroyed by SCE-ignited wildfires significantly increased annually from a low of $21.9 million in 2015 to a high of $3.3 billion in 2018, followed by a sharp decline in 2019. The value of assets destroyed by SCE-ignited wildfires in 2020 was reported as $133.2 million. When compared to the five-year average from 2015 through 2019, the $133.2 million worth of assets destroyed by SCE-ignited wildfires represented a nearly 90% reduction. Energy Safety notes that the value of damage from SCE-ignited wildfires from 2017 and 2018 was significant, skewing averages over the small sample size and making reductions in value of assets destroyed in subsequent years far more easily attainable.

5.7 Disposition of 2020 WMP Conditions

In 2020, Energy Safety issued a conditional approval of SCE'S 2020 WMP. The conditional approval identified the severity of each issue (as set forth below) and set forth required remediations.

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 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 SCE'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 SCE's 2021 WMP update.

SCE timely submitted its RCP and First Quarterly Report (QR) as required by Resolutions WSD-002 and WSD-004. 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 17 and Table 18 below provide the conditions and Energy Safety's determination of sufficiency.

SCE failed to resolve three of four Class A deficiencies and 14 out of 28 Class B deficiencies within the 2020 WMP compliance period.

Table 17: Class A Deficiencies from SCE's 2020 WMP

#	Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
1	Guidance-3	Lack of risk modeling to inform decision-making	Insufficient
2	SCE-2	Determining cause of near misses	Insufficient
3	SCE-12	SCE does not provide evidence of effectiveness of increased vegetation clearances	Insufficient
4	SCE-13	Lack of advancement in vegetation management and inspections	Sufficient

Table 18: Class B Deficiencies from SCE'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	Sufficient
3	Guidance-4	Lack of discussion on PSPS impacts	Insufficient
4	Guidance-5	Aggregation of initiatives into programs	Sufficient
5	Guidance-6	Failure to disaggregate WMP initiatives from standard operations	Sufficient

#	Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
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
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	SCE-1	Lessons learned not sufficiently described.	Insufficient
12	SCE-3	Failure of commitment.	Insufficient
13	SCE-4	SCE risk reduction estimation requires further detail.	Sufficient
14	SCE-5	Detailed timeline of WRRM implementation not provided.	Insufficient
15	SCE-6	SCE lacks sufficient weather station coverage.	Insufficient
16	SCE-7	Does not describe whether fire-resistant poles were factored into risk analysis	Sufficient
17	SCE-8	Lack of detail on hotline clamp replacement program.	Insufficient
18	SCE-9	Lack of detail regarding Pole Loading Assessment Program.	Sufficient
19	SCE-10	Lack of detail on effectiveness of inspection program QA/QC.	Insufficient
20	SCE-11	Lack of explanation around shift to risk-based asset management.	Sufficient
21	SCE-14	SCE relies only on growth rate to identify "at-risk" tree species.	Insufficient
22	SCE-15	Lack of detail on how SCE addresses fast-growing species.	Insufficient
23	SCE-17	Details not provided for collaborative research programs.	Insufficient
24	SCE-18	Discussion of centralized data repository lacks detail.	Sufficient
25	SCE-19	SCE does not sufficiently justify the relative resource allocation of its WMP initiatives to its covered conductor program.	Insufficient
26	SCE-20	Potential notification fatigue from frequency of PSPS communications.	Sufficient

#	Deficiency/ Condition No.	Deficiency Title	Sufficiency Finding
27	SCE-21	Lack of sufficient detail on sharing of best practices.	Sufficient
28	SCE-22	SCE does not describe resources needed on fuel reduction efforts.	Sufficient

6.0 DISCUSSION

Energy Safety considered the totality of the evidence before it and determined that SCE substantially complied with its 2020 WMP. SCE met most of its WMP initiative targets, satisfied its objectives, and took actions consistent with improving its ability to assess and mitigate wildfire risk. While Energy Safety acknowledges that SCE achieved its overarching objectives, there are still areas for improvement and continued learning.

Below, Energy Safety presents its assessment of SCE's performance to each of the evaluation criteria set forth in the Compliance Framework followed by an assessment of a data governance issue.

6.1 Completion of 2020 Initiatives

Energy Safety found that SCE met or exceeded the targets of 65 of its 69 (or 94%) 2020 WMP initiatives. SCE met all 44 of the targets for qualitative initiatives and all but four of its 25 targets for quantitative initiatives.

The following are the four quantitative initiative targets SCE missed:

1. Initiative 5.3.3.12 (SH-12.1) Remediations Distributions – completed 97% of remediations against a target of 100%.
2. Initiative 5.3.3.12.2 (SH-12.2) Remediations Transmission – completed 95% of remediations against a target of 100%.
3. Initiative 5.3.4.10 (IN 6.2) Aerial Inspections Transmission – completed 31,380 inspections against target of 33,500.
4. Initiative 5.3.4.9.2.2 (OP-3) Unmanned Aerial (UAS) – 42 staff trained as unmanned aerial system (UAS) operators against a target of 50.

Energy Safety finds that SCE's missed targets or the impacts of those failures did not substantially hinder SCE's ability to mitigate its wildfire risk. In general, the margins of the

misses were minor and attributable to delays and resource constraints related to COVID-19 and other emergency events.[106]

SCE exceeded its target to install at least 700 circuit miles of covered conductor, which is its primary wildfire mitigation initiative as evidenced by SCE allocating more than one-third of its 2020 WMP budget to this initiative.[5] Energy Safety finds that SCE completed installation of 794 miles of covered conductor.[107] In addition, SCE also exceeded its target for installation of automated sectionalizing devices (initiative 5.3.3.9), which it reports to be an effective means of reducing the number of customers affected by PSPS events (see Section 5.1).

While SCE implemented the vast majority of its 2020 WMP initiatives, as discussed further in Section 6.3, Energy Safety finds that in some cases SCE failed to deploy those initiatives in areas of highest risk.

6.2 Achieving 2020 WMP Objectives

SCE noted that its WMP objectives reflected its "commitment to protect public safety" and are consistent with Public Utilities Code section 8386(a).[108] SCE's 2020 WMP objectives were generally broad and lacked specific measurable outcomes. Nevertheless, given that 2020 was the base year for the first three-year cycle and was therefore setting the baseline against which to measure SCE, Energy Safety finds that SCE fulfilled many of its 2020 WMP objectives.

Energy Safety's analysis of SCE's performance to its objectives is 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 SCE's performance to its overall stated objective to: "set forth an actionable, measurable, and adaptive plan for 2020 to 2022 to reduce the risk of potential wildfire-causing ignitions associated with SCE's electrical equipment within SCE's HFRA." [109]

Before the 2020 wildfire seasons, SCE committed to the following: [110]

- Prioritize hardening initiatives based on existing locational risk analysis to complete more work in the higher-risk areas.
- Prioritize operational enhancements that aim to reduce the impact of PSPS.
- Complete 360-degree (aerial & ground) inspections on the highest risk structures within HFRA.

---

[106] SCE's EC ARC, Page 3.
[107] *SH-1 Covered Conductor* and *001_SH-1 CoveredConductor_Supplemental.xlsx* workbooks.
[108] SCE 2020 WMP, page 31.
[109] Id.
[110] SCE 2020 WMP, Table SCE 4-1, Page 33.

Prioritize Hardening Initiatives Based on Risk:
Energy Safety finds that SCE has generally met this objective. SCE conducted 98% of its grid hardening work (covered conductor and undergrounding) in high-risk areas (i.e., the HFTD). However, Energy Safety notes that, although SCE conducted its hardening work in the HFTD, it focused on areas of lower risk *within* the HFTD. As shown in Section 5.5.1, when dividing the circuits for which SCE provided risk scores (almost all within the HFTD or SCE's self-designated HFRA), SCE conducted over two-thirds of its hardening work in the bottom quintile of risk. Stated differently, SCE focused on the lowest areas of high risk instead of the highest areas of high risk.

Based on its evaluation, Energy Safety finds that there were seemingly minor inconsistencies between SCE's stated objectives and initiative descriptions that had direct and significant implications on the results of this ARC. For example, when outlining its WMP objectives, as discussed in Section 4.2 above, SCE stated that it considered installation of covered conductor to be one of its major wildfire risk mitigation activities and that it was prioritizing that work based on its risk analyses, which enabled SCE to complete more work in *higher*-risk areas.[111] However, when discussing its covered conductor installation program, SCE stated that its more granular understanding of wildfire risk at the circuit segment level allowed it to "prioritize the *highest* risk circuit segments in HFRA."[112] While seemingly similar statements with similar intent, the term "*highest* risk" sets a compliance threshold that is significantly greater than the term "*higher* risk" when referring to the prioritization of hardening work. For the purposes of assessing whether SCE achieved its objectives in this ARC, Energy Safety considered the language of the objectives as stated in SCE's 2020 WMP, Section 4.1 and therefore finds that SCE met its objective. However, Energy Safety notes this inconsistency and expects SCE to use more specific language going forward and prioritize hardening initiatives in the highest risk areas.

Prioritize Operational Enhancements to Reduce PSPS Impacts:
SCE reported that installation of sectionalizing devices has proven to be one of the most effective means of mitigating PSPS impact on its customers.[113] In its 2020 WMP, SCE's initiative 5.3.3.9 – Installation of System Automation Equipment (SH-5) detailed its plans for installation of such sectionalizing devices. After exceeding its target to install 50 such devices in 2019, SCE again exceeded its 2020 WMP target to install 45 sectionalizing devices (see Sections 5.1 and 5.5.2). As discussed in Section 5.6.2 above, Energy Safety finds that SCE implemented PSPS on more circuits and more frequently in 2020 than in previous years. With regard to PSPS events that led to de-energization, the outages were shorter in duration,

[111] "*higher-risk*" italicized by Energy Safety for emphasis.
[112] SCE 2020 WMP, pages 119-120.
[113] SCE's EC ARC, page 13.

impacted fewer customers, and had reduced impacts on critical infrastructure.[114] This finding is further corroborated by data reported by SCE indicating that its mitigation efforts in 2020 resulted in over 260 million customer minutes of interruptions avoided due to PSPS.[115]

Another operational enhancement that potentially mitigated the need for PSPS was installation of additional weather stations. SCE's 2020 WMP committed to installing 375 weather stations with a stretch goal to install 475. Energy Safety finds that SCE installed a total of 590 weather stations by the end of 2020. These weather stations, combined with SCE's enhancements in its risk modeling capabilities, increased SCE's real time situational awareness and improved its ability to forecast weather patterns accurately and effectively.

Additionally, in its 2020 WMP, SCE committed to review half of its distribution circuits in high fire risk areas to determine if modifications could improve sectionalizing capability and reduce PSPS impacts. In its Q4 2020 QIU, SCE reported completing this initiative. Furthermore, as discussed in Section 5.1 above, SCE's advancements in risk modeling allowed it to raise the PSPS windspeed thresholds on 26 circuits, reducing the frequency of PSPS events for 31,000 customers.[116] SCE's substantial implementation of initiatives directly related to PSPS impacts likely contributed to demonstrable progress in reducing PSPS impacts in 2020 compared to previous years despite an increased frequency of events.

Energy Safety notes, however, that SCE's higher frequency of PSPS events seems counterintuitive when compared to its aggressive implementation of covered conductor. Energy Safety expected that as more covered conductor was installed, the normalized number of PSPS events would decrease. Energy Safety will continue to monitor this issue in subsequent ARCs to determine if SCE's grid hardening initiatives are having an impact on the number of PSPS events that SCE implements.

Finally, Energy Safety's finding on the reduction of the impacts of PSPS events is not indicative of the success of SCE's implementation of specific PSPS events. Although outside the scope of this analysis, the CPUC found SCE's PSPS event notifications deficient in several respects.[117] Of key concern is that through SCE's reporting, the CPUC established that SCE notified more than 250,000 customers of an impending PSPS de-energization but did not turn off power to those customers.[118] Further, for the majority of its PSPS events, SCE did not provide initial notifications to customers in the required time period.[119] The CPUC also found that SCE's notifications to public safety partners were incomplete, and SCE failed to evaluate

[114] Critical infrastructure including, but not limited to, hospitals, police stations, and grocery stores are heavily relied upon in times of emergency.
[115] SCE EC ARC, Figure 1, page 13.
[116] SCE EC ARC, page 14.
[117] 2020 Public Safety Power Shutoff Post Event Report Review- Southern California Edison (CPUC).
[118] Id at Table 1, page 1.
[119] Id at page 12.

the effectiveness of its engagement with local and state public safety partners after PSPS events.[120]

Aerial and Ground Inspections in HFRA:
SCE's 2020 WMP contains eight initiatives related to its aerial and ground inspections of lines and equipment in HFRA. These initiatives include the following:

1. 5.3.4.4 – Infrared Inspections of Distribution Electric Lines and Equipment (IN-3).
2. 5.3.4.5 – Infrared Inspections of Transmission Electric Lines and Equipment (IN-4).
3. 5.3.4.9.1 – High Fire Risk Informed Inspections of Distribution Electric Lines and Equipment (IN-1.1).
4. 5.3.4.9.2 – Distribution Aerial Inspections (IN-6.1).
5. 5.3.4.10.1 – High Fire Risk Informed Inspections of Transmission Electric Lines and Equipment (IN-1.2).
6. 5.3.4.10.2 – Transmission Aerial Inspections (IN-6.2).
7. 5.3.4.16 – Generation High Fire Risk Informed Inspections in HFRA (IN-5).
8. 5.3.4.14 – Quality Assurance/Quality Control of Inspections (IN-2).

Energy Safety finds that SCE met or exceeded its targets for all but one of the above initiatives. The single deficiency was SCE's failure to complete all its Transmission Aerial Inspections. SCE only completed 31,380 inspections rather than its target of 33,500 for initiative 5.3.4.10.2 (94% completion). However, SCE largely implemented its inspection initiatives in the HFRA. Consequently, Energy Safety finds that SCE fulfilled this objective.

Before the next annual update (2021), SCE committed to the following:

- Complete all 2020 Program Targets outlined in Table SCE 5-1 of SCE's 2020 WMP.

On balance, SCE achieved this objective. Of the 69 initiatives listed in Table SCE 5-1, SCE met or exceeded 65 targets (or 94%) and came close to achieving targets for the remaining 4 initiatives (see Section 6.1).

SCE's overarching 2020 WMP objective:

SCE's overarching 2020 WMP objective was "to set forth an actionable, measurable, and adaptive plan for 2020 to 2022 to reduce the risk of potential wildfire-causing ignitions associated with SCE's electrical equipment within SCE's HFRA."

Energy Safety finds that SCE was largely successful in executing an actionable and adaptive plan for wildfire risk mitigation. However, Energy Safety notes that future WMPs could be

[120] 2020 Public Safety Power Shutoff Post Event Report Review- Southern California Edison (CPUC), page 16.

strengthened by the inclusion of additional discrete, measurable actions.[121] A majority of the initiatives included equivocating language such as "continue," "evaluate," or "refine." Nevertheless, Energy Safety finds that SCE 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 SCE's performance to its 2020 WMP goes beyond a check-box exercise of whether SCE met its initiative targets to instead evaluate whether SCE's performance in 2020 reduces the risk of SCE equipment igniting a catastrophic wildfire. As noted in the Compliance Framework, given that 2020 is the first year in a three-year cycle and the benefits of work deployed in 2020 may accrue over time, Energy Safety's evaluation largely focuses on establishing baseline measures against which to measure SCE's performance over time. However, even with limited data, Energy Safety can make some findings about SCE's ability to reduce wildfire risk on its system in 2020.

Measuring ignitions provided the most direct measure of electrical corporation wildfire risk. While 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 SCE's normalized ignitions in 2020 were one-third greater than the five-year average from 2015-2019 in Tier 3 HFTD areas. SCE's normalized ignitions in Tier 3 HFTD areas increased by over 50% annually since 2017. In contrast, SCE's 2020 normalized ignitions in Tier 2 HFTD areas were approximately 25% fewer than the five-year average from 2015-2019. SCE has also seen a 36% annual increase in wire down events over the same time period. Although, the rate of annual increases in wire down events did slow significantly from 2019 to 2020, as compared to the previous few years of steady annual increases. The general upward trend in ignitions and wire down events is concerning; however, it is also important to analyze the consequence of ignitions. Here, although acres burned from wildfires ignited by SCE's infrastructure increased by 25% in 2020 when compared to the previous five-year average, the number of structures damaged or destroyed, and the number of fatalities (0) was less in 2020 than in previous years. Injuries resulting from SCE-related wildfires, however, increased in 2020. An analysis of risk drivers reveals that for the distribution system, contact from object and equipment/facility failure accounts for a large percentage of ignitions in Tier 3, while in Tier 2, contact from object was also a significant driver. On the transmission system, the largest driver for Tier 3 ignitions was contact from object, and for Tier 2, the "Other" category accounted for the largest number of ignitions.

[121] This critique was previously noted in Resolution WSD-002, Condition Guidance–8.

Another critical element to reducing wildfire risk is SCE'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, SCE completed nearly 47,000 miles of inspections in 2020; approximately 70% of which was performed on its distribution lines and equipment. Of those inspections, nearly 55% were comprised of detailed visual inspections. Energy Safety's analysis found that in 2020, SCE found more conditions that required repair or remediation than it was able to fix on both its transmission and distribution infrastructure. However, on its distribution infrastructure, on which most ignitions occurred, in 2020, SCE was able to fix more Level 1 conditions than it found, which are of highest risk and potential impact to safety and reliability. Nearly 95% of all unaddressed findings were Level 3 conditions, which are of low risk and reduced potential impact to safety and reliability. In addition, Energy Safety's own inspections yielded a defect rate of only 1.5%, and SCE responded to and fixed all Energy Safety-identified defects in a timely manner. Finally, in its EC ARC, SCE reported that "preliminary data shows there have been no ignitions due to the risk drivers covered conductor prevents against at locations where covered conductor has been deployed."[122] As such, initial analysis indicates that SCE's execution of covered conductor is having its intended effect.[123]

Taken together, the metrics above paint a nuanced picture and underscore why Energy Safety must rely on a broader data set than one year to determine the effectiveness of wildfire mitigations. Of the ignitions that did occur, the severity of outcomes was generally reduced in 2020. However, given that the number of ignitions increased, as did the acres burned, improved structural damage and loss of life outcomes could be based on chance more so than any actions taken by SCE. 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.

6.4 Systemic Issues

To fully evaluate SCE's compliance with its 2020 WMP, including its initiative targets and objectives, Energy Safety evaluated whether there were any systemic issues that hindered SCE's ability to achieve its desired wildfire risk and consequence outcomes. Energy Safety uncovered one data governance issue that, although it did not cause any negative consequence to 2020 compliance, could, if unresolved, result in future negative outcomes. As

[122] SCE 2020 WMP Annual Report on Compliance, page 4. Energy Safety notes that SCE did not provide metrics in their SCE's EC ARC confirming this claim.
[123] Energy Safety notes that SCE did not provide metrics in their EC ARC to confirm this claim.

noted in Section 5.5.2, SCE reported an installation of roughly 960 miles[124] of covered conductor in 2020 in the EC ARC, the QIU, and the QAL; however, Energy Safety could only verify 794 miles[125] of installations. While both numbers are in excess of SCE's 700 mile target, such a discrepancy raises concerns about potential issues with SCE's data management. Although Energy Safety does not consider the data discrepancy issue pervasive and thus indicative of a broader systemic issue, the discrepancy itself was large (nearly 20%) and related to one of SCE's flagship wildfire mitigation programs (i.e., covered conductor installation). Energy Safety expects SCE to evaluate the cause of this discrepancy to determine if it was a one-off issue or something more pervasive.

7.0 CONCLUSION

After considering all the sources of information before it, Energy Safety finds that SCE substantially complied with its 2020 WMP during the compliance period. Energy Safety acknowledges that SCE undertook significant efforts to reduce its wildfire risk, and in many instances, SCE achieved its objectives and targets. On balance, Energy Safety viewed SCE's efforts in 2020 as a first step that illuminate SCE'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 SCE also took steps in 2021 and 2022 to address shortcomings identified in this ARC. SCE's performance over time will demonstrate whether it is successfully reducing wildfire risk. Energy Safety will continue to monitor SCE's implementation of its ongoing wildfire mitigation activities and push SCE to improve its ability to ultimately achieve the elimination of utility-caused catastrophic wildfires in California.

[124] *005_SCE_2020 Q4 QIU_20210401* quarterly submission workbook and SCE's EC ARC.
[125] *SH-1 Covered Conductor* and *001_SH-1 CoveredConductor_Supplemental.xlsx* workbooks.

DATA DRIVEN FORWARD-THINKING INNOVATIVE SAFETY FOCUSED

OFFICE OF ENERGY INFRASTRUCTURE SAFETY

A California Natural Resources Agency

www.energysafety.ca.gov

APPENDIX

List of Public Documents Referenced

In performing this ARC, Energy Safety reviewed the following publicly available records and documents:

1. SCE 2020 WMP: "*Southern California Edison 2020-2022 Wildfire Mitigation Plan, Revision 3, dated March 18, 2020*": https://www.sce.com/safety/wild-fire-mitigation
2. SCE's EC ARC: "*Southern California Edison Company's 2020 Wildfire Mitigation Plan Annual Report on Compliance (EC ARC) Pursuant to PUC Section8386.3(c)(1)":* https://efiling.energysafety.ca.gov/search.aspx?docket=2020-EC_ARC
3. SCE IE ARC: "*Final Independent Evaluator Annual Report on Compliance NV5 & Guidehouse Southern California Edison, Published June 30, 2021*":https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2021-IE
4. SCE Response to IE ARC: "*Southern California Edison Company's Response to the Final Independent Evaluator Annual Report on Compliance with SCE's 2020 Wildfire Mitigation Plan*": https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2021-IE
5. SCE 2020 WMP Tables 1-31: https://www.sce.com/safety/wild-fire-mitigation
6. SCE Utility Wildfire Mitigation Maturity Survey, February 10, 2020: https://www.sce.com/safety/wild-fire-mitigation
7. SCE 2020 Wildfire Mitigation Plan Remedial Compliance Plan Class A conditions, July 27, 2020: https://www.sce.com/safety/wild-fire-mitigation
8. Southern California Edison's Second Quarterly Report on 2020-2022 Wildfire Mitigation Plan for Ongoing Class B Deficiencies, December 9, 2020: https://www.sce.com/safety/wild-fire-mitigation
9. Southern California Edison Company's First Change Order Report dated September 11, 2020: https://www.sce.com/safety/wild-fire-mitigation
10. SCE Q4 QIU: "*2020 Q4 Quarterly Initiative Update dated April 1, 2021*": https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2020-QIU
11. 2020 Substantial Vegetation Management Audit, dated April 13, 2022: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2020-SVM

12. CPUC Resolution WSD-001: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
13. CPUC Resolution WSD-002: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
14. CPUC Resolution WSD-004: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
15. CPUC Resolution WSD-011: https://www.cpu c.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
16. CPUC Resolution WSD-012: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions
17. CPUC Resolution WSD-015: https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions