BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Request For Hearing on Proposed Administrative Enforcement Order.	H 25-07-005

SAFETY AND ENFORCEMENT DIVISION RESPONSE TO PACIFICORP'S MOTION TO COMPEL FURTHER RESPONSES TO DATA REQUEST SETS ONE, TWO, AND THREE

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I. INTRODUCTION

Pursuant to the October 9, 2025, *Administrative Law Judge's (ALJ) Ruling Setting Hearing on the Proposed Administrative Enforcement Order and Other Directives* (Ruling), and Rule 11.3(b) of the California Public Utilities Commission's (Commission) Rules of Practice and Procedure (Rules), the Safety and Enforcement Division (SED) files this Response to PacifiCorp's *Motion to Compel Further Responses to Data Request Sets One, Two, and Three* (Motion). The ALJ's Ruling directed the parties to "meet and confer to determine a mutually agreeable date to exchange any document or exhibit that is not currently part of the official evidentiary record that will be used during the evidentiary hearing."[1] With one exception, SED has provided PacifiCorp with all documents it intends to use at the evidentiary hearing, which has been pre-marked as SED Exhibit 1.[2]

From October 3, 2025 to the date of this Response, PacifiCorp has issued five separate discovery demands on SED, totaling 80 discrete requests. The first demand containing 24 requests was sent on October 3, 2025 at 5:59 PM, with a due date of October 20, 2025. The second demand was sent on October 7, 2025 at 10:48 AM with a due date of October 22, 2025, and requested communications related to all SED investigations into PacifiCorp's compliance on all its wildfire mitigation plans (WMPs). The third demand was sent October 14, 2025 at 5:32 PM with a due date of October 28, and contained 23 requests. The fourth demand was sent October 30, 2025 at 7:52 PM with a due date of November 13, 2025, and contained 15 requests. The fifth demand was sent on December 5, 2025, at 5:05 PM with a due date of December 19, 2025.

From the onset of this proceeding, PacifiCorp has inundated SED with Data Requests. PacifiCorp has issued 80 data requests to SED in two months, over four

[1] SED provided a disc drive to the Commission and PacifiCorp during the Status Conference containing the evidence included as Exhibit 1.

[2] SED may introduce evidence related to the 2022 McKinney fire, a wildfire currently under investigation by SED which may be reasonably related to failures of PacifiCorp's 2020 WMP vegetation management program.

separate requests.[3] Of the 80 total requests made by PacifiCorp, the overwhelming majority are in the form of interrogatories or requests for admission. These requests seek information that SED already provided in the Administrative Enforcement Order (AEO) or attempt to gain information on SED's litigation strategy. PacifiCorp's unwarranted and overlapping requests have imposed an undue burden on SED, requiring SED staff to dedicate time responding to PacifiCorp's oppressive demands instead of working on active wildfire investigations.[4] Comparatively, SED issued four sets of data requests to PacifiCorp, totaling approximately 50 discrete requests over an eight-month, period during its investigation into PacifiCorp's 2020 WMP compliance.[5]

SED provided responses to three of the five demands. The outstanding demand relating to SED's communications with the Governor's Office of Energy Infrastructure Safety (Energy Safety), which SED is continuing to process due to the nature of volume of the request. The fifth demand is being reviewed. The Commission should deny PacifiCorp's motion to compel because (1) PacifiCorp's data requests violate Commission discovery rules, (2) the burden, expense, and intrusiveness of their requests outweigh the likelihood the information sought will lead to discoverable evidence, (3) PacifiCorp seeks information that is privileged under attorney-work product, attorney-client, deliberative process, and official information privileges, and (4) PacifiCorp seeks information that is not relevant to any underlying fact at issue in the proceeding. SED also requests the Commission make an order limiting discovery of PacifiCorp's fifth demand.[6]

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[3] Since filing its Motion, PacifiCorp has already issued a Fifth Data Request seeking more of the same information.

[4] See Declaration of SED Investigator Ed Pike.

[5] See SED Exhibit 1, Data Request SED-01, Data Request SED-02, Data Request SED-03, Data Request SED-04.

[6] PacifiCorp's Data Request 5 to SED, Attachment A.

II. DISCUSSION

A. PacifiCorp's Motion to Compel Relies on a Misleading Interpretation of Commission Discovery Practice.

1. The Commission is not bound by the discovery rules in the Code of Civil Procedure.

Many of the arguments PacifiCorp makes are based on the discovery rules in the Code of Civil Procedure (CCP). It is well held Commission practice that the "Commission is generally not bound by the formal rules for discovery found in the Code of Civil Procedure " and that the "Commission discovery practice generally does not use formal civil discovery tools, such as requests for admission, interrogatories, etc."[7] Yet PacifiCorp relies heavily on civil discovery rules to compel SED to respond to data requests that are overwhelmingly in the form of interrogatories.[8]

2. PacifiCorp conflates the Commission's right to information and its own discovery rights.

The California Constitution authorizes the Commission, subject to statute and due process, to establish its own procedures, including with regards to discovery. (Cal. Const. Article 12 § 2.) Rule 10.1, governed by Public Utilities Code section 1701, determines discovery rights by parties within a proceeding. Rule 10.1 states:

> *Without limitation to the rights of the Commission or its staff under Pub. Util. Code Sections 309.5 and 314*, any party may obtain discovery from any other party regarding any matter, not privileged, that is relevant to the subject matter involved in the pending proceeding, if the matter either is itself admissible in evidence or appears reasonably calculated to lead to the discovery of admissible evidence, unless the burden, expense, or intrusiveness of that discovery clearly outweighs the likelihood that the information sought will lead to the discovery of admissible evidence. (Emphasis added)

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[7] *See* CPUC, General Discovery Custom and Practice, at p. 1.

[8] PacifiCorp conveniently fails to mention California Code of Civil Procedure 2030.030, which limits a party to 35 specially prepared interrogatories.

Rule 10.1 specifically provides that the Commission, or its staff, has extensive authority to conduct discovery on public utilities at any time. "The Pub. Util. Code grants broad authority to Commission staff to inspect the books and records of investor-owned utilities."[9] Public Utilities Code § 314:

> (a) The commission, each commissioner, and each officer and person employed by the commission may, at any time, inspect the accounts, books, papers, and documents of any public utility. The commission, each commissioner, and any officer of the commission or any employee authorized to administer oaths may examine under oath any officer, agent, or employee of a public utility in relation to its business and affairs. Any person, other than a commissioner or an officer of the commission, demanding to make any inspection shall produce, under the hand and seal of the commission, authorization to make the inspection. A written record of the testimony or statement so given under oath shall be made and filed with the commission.[10]

These broad powers apply:

> to inspections of the accounts, books, papers, and documents of any business that is a subsidiary or affiliate of, or a corporation that holds a controlling interest in, an electrical, gas, or telephone corporation, or a water corporation that has 2,000 or more service connections, with respect to any transaction between the water, electrical, gas, or telephone corporation and the subsidiary, affiliate, or holding corporation on any matter that might adversely affect the interests of the ratepayers of the water, electrical, gas, or telephone corporation.[11]

"This authority applies to all Commission staff without limitation . . ."[12]

PacifiCorp's reference to prior Commission decisions to support its motion to compel is misleading. PacifiCorp cites to Decision (D.) 00-11-036 to support their argument that Commission discovery is meant to "narrow disputes."[13] However, PacifiCorp's argument is misguided because the quoted language in D.00-11-036

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[9] CPUC Resolution ALJ-391 at 9 (2020 Cal. PUC Lexis 1033.)

[10] Pub. Util Code § 314(a).

[11] Pub. Util. Code § 314(b).

[12] ALJ-391 at 10.

[13] PacifiCorp Motion to Compel, at 7.

regarding questions that might "narrow disputes" about "specific facts" is in reference to direct questions posed by the Commission in the scoping ruling of a Commission-instituted investigation, *not* data requests issued by the parties.

Furthermore, PacifiCorp's citation to D.24-08-026 is also misleading because the Commission was resolving a discovery dispute under Public Utilities Code § 314, not pursuant to Rule 10.1. In D.24-08-026, the Commission found that the regulated entity violated Section 314 for failing to respond with particularity to questions posed by the Commission's Consumer Enforcement and Protection Division (CPED), instead providing *5 million* pages of documents in response to CPED's data requests.[14]

PacifiCorp conflates their discovery rights with that of the Commission, or its staff, under Section 314. PacifiCorp fails to cite to relevant Commission authority to support its argument that would compel the burdensome, invasive, and expensive discovery requested, and PacifiCorp's requests amount to an abuse of the discovery process.[15]

B. PacifiCorp's Motion Should be Denied Because the Burden, Expense, and Intrusiveness Outweigh the Likelihood that it Will Lead to Admissible Evidence.

PacifiCorp's data requests involving interrogatories and requests for admission are unduly burdensome, overly intrusive, expensive to fulfill, and will not lead to additional admissible evidence that has not already been provided to PacifiCorp. SED has already provided PacifiCorp with the evidence that it will use at evidentiary hearings.[16] SED's evidence was readily available to PacifiCorp prior to the issuance of the AEO. The majority of the 2,300 pages of evidence in Exhibit 1 consist of records that were provided by PacifiCorp to SED during SED's investigation into PacifiCorp's 2020 WMP compliance. SED does not oppose PacifiCorp's request that SED provide any additional

[14] D.24-08-026 at 19.

[15] See Cal. Code of Civ. Proc. § 2023.010.

[16] SED's evidence consists of a total of approximately 2,300 pages.

evidence they intend to use at the evidentiary hearing. That evidence will be provided before the January 30, 2026 deadline.[17]

PacifiCorp's requests require SED staff to reexamine the body of evidence in search of specific pages, passages, and documents that support specific conclusions made in the AEO and investigation report. In the Motion, PacifiCorp requests that "SED must identify the precise factual bases for its assertions about wildfire and ignition risk, with specific citations to the AEO and exhibits, and must state whether it has any evidence beyond what appears in those materials."[18] SED staff would be overly burdened if it was required to fulfill PacifiCorp's requests, especially considering that SED's investigation report already cites to supporting documents when appropriate. This is a waste of limited Commission resources and an abuse of the Commission's discovery process under Rule 10.1.

Furthermore, PacifiCorp's request concerning communications made between SED and Energy Safety is particularly burdensome.[19] PacifiCorp's discovery requests are not limited to requesting communications relating to its 2020 Wildfire Mitigation Plan, which is the subject matter at issue in this proceeding, but rather extend to requesting communications about *all* SED investigations for subsequent years of PacifiCorp's wildfire mitigation plan compliance. This attempt to expose SED's confidential investigations and fish for information about their client's potential future liability for repeatedly failing to comply with its WMPs has no place in this proceeding. Further, SED communications concerning its confidential investigations of subsequent WMPs is not relevant to this case, outside the scope of this proceeding, and is privileged. PacifiCorp's attempt to obtain these communications through discovery should be denied.

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[17] Ruling at 4.

[18] Opp. Mot. To Compel at 11.

[19] SED is not aware of any communications between SED and the independent evaluator, and SED does not have possession of any communications between OEIS and the independent evaluator.

SED's efforts to obtain these communications have been extraordinarily burdensome. SED cannot simply retrieve these communications from the inboxes of its investigators as a full and complete search requires retrieval of communications of both past and present employees of the Commission. This approval process has demanded significant effort, requiring repeated requests submitted to the Commission's IT department, HR department, and advisory attorneys. SED attorneys would then have to sift through a yet unknown number of communications, review each for privilege and relevance, and submit to opposing counsel along with a privilege log for withheld communications.

C. Attorney Work-Product, Attorney-Client, Official Information, and Deliberative Process Privileges Protect the Information Sought.

Opposing counsel's requests are not only burdensome, intrusive, and a waste of the Commission's limited resources, they are unlawful because the information PacifiCorp seeks is protected under attorney-client, attorney work-product, official information, and deliberative process privileges.

PacifiCorp's requests are thinly veiled attempts to breach attorney work-product privilege. The attorney work product privilege is meant to "[p]reserve the rights of attorneys to prepare cases for trial with that degree of privacy necessary to encourage them to prepare their cases thoroughly and to investigate not only the favorable but the unfavorable aspects of those cases"[20] and "prevent attorneys from taking advantage of the industry and creativity of opposing counsel."[21] Attorneys have a "qualified privilege against discovery of general work product and an absolute privilege against disclosure of writings containing the attorney's impressions, conclusions, opinions or legal theories."[22] Work product is defined as:

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[20] Code Civ. Proc. § 2018.020(a),; see also *S. California Edison Co. v. Superior Ct.,* (2024) 102 Cal. App. 5th 573, 584.

[21] *S. California Edison Co. v. Superior Ct.* at 584.

[22] *Id.*

> The product of the attorney's effort, research, and thought in the preparation of his client's case. It includes the results of his own work, and the work of those employed by him or for him by his client, in investigating both the favorable and unfavorable aspects of the case, the information thus assembled, and the legal theories and plan of strategy developed by the attorney—all as reflected in interviews, statements, memoranda, correspondence, briefs, and any other writings reflecting the attorney's impressions, conclusions, opinions, or legal research or theories and in countless other tangible and intangible ways."[23]

PacifiCorp's requests also implicate attorney-client privilege. Attorney-client privilege "confers a privilege on the client to refuse to disclose, and to prevent another from disclosing, a confidential communication between client and lawyer...."[24] Its fundamental purpose is to "is to safeguard the confidential relationship between clients and their attorneys so as to promote full and open discussion of the facts and tactics surrounding individual legal matters. . . [a]lthough exercise of the privilege may occasionally result in the suppression of relevant evidence, the Legislature of this state has determined that these concerns are outweighed by the importance of preserving confidentiality in the attorney-client relationship."[25]

Official information, codified under California Evidence Code section 1040, "means information acquired in confidence by a public employee in the course of his or her duty and not open, or officially disclosed, to the public prior to the time the claim of privilege is made. This privilege is conditional: "If the public entity satisfies the threshold burden of showing that the information was acquired in confidence, the statute requires the court next to *weigh* the interests and to sustain the privilege only if there is a necessity for preserving the confidentiality of the information that outweighs the necessity for disclosure in the interest of justice."[26]

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[23] *Id.* (internal citations omitted).

[24] *Costco Wholesale Corp. v. Superior Ct*., (2009) 47 Cal. 4th 725, 732 (internal citations omitted.); see also Cal. Evid. Code §§ 951, 952, 954.

[25] *Id*. (internal citations omitted.)

[26] *Marylander v. Superior Ct.,* (2000) 81 Cal. App. 4th 1119, 1126.

Deliberative process is codified under California Government Code section 6255 and also involves a balancing of interests:

> The agency shall justify withholding any record by demonstrating that the record in question is exempt under express provisions of this chapter or that on the facts of the particular case the public interest served by not making the record public clearly outweighs the public interest served by disclosure of the record.

"The key question in every case is whether the disclosure of materials would expose an agency's decision making process in such a way as to discourage candid discussion within the agency and thereby undermine the agency's ability to perform its functions."[27] "First, it protects creative debate and candid consideration of alternatives within an agency, and, thereby, improves the quality of agency policy decisions. Second, it protects the public from the confusion that would result from premature discussions occurring before the policies affecting it have actually been settled upon. And third, it protects the integrity of the decision-making process itself by confirming that officials should be judged by what they decided[,] not for matters they considered before making up their minds."[28]

The balancing test should weigh the importance of the information to a fair presentation of litigant's case; the availability of the material to the litigant by other means; and the effect of disclosure on public processes.[29] Denial of disclosure is favored when doing so might "expose an agency's decision making process in such a way as to discourage candid discussion within the agency and thereby undermine the agency's ability to perform its functions."[30]

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[27] *Times Mirror Company v. The Superior Court of Sacramento County* (1991) 53 Cal. 3d 1325, 1342. (internal quotations omitted.)

[28] *California First Amendment Coalition v. Superior Court* (1998) 67 Cal. App. 4th 159, 170 (internal quotations omitted.)

[29] *Marylander v. Superior Court* (2000) 81 Cal. App. 4th 1119, 1129. See also CPUC Application (A.) 99-08-021, *Administrative Law Judge's Ruling Denying Motion to Compel* at 12-15.

[30] *Marylander*, 81 Cal App. 4th at 1129.

D. PacifiCorp's Data Requests Should be Denied in Full.

1. The Request Pertaining to Calculation of the Penalty Amount (DR 1.1, 1.3-1.17.)

PacifiCorp's demand for a per-day penalty assessment of each of its 4,530 violations should be rejected because the request does not seek admissible evidence and fulfilling it would be burdensome, invasive, and expensive. Disclosure would also violate attorney work product, attorney client, official information, and deliberative process privileges.

PacifiCorp does not state how the per-day penalty is relevant to any underlying fact alleged in the proposed AEO or how providing this information will lead to the discovery of admissible evidence. The facts inform the penalty amount, not the other way around. PacifiCorp's primary concern appears to be notice, not discovery of admissible evidence.[31] "A clear record on the penalty amount sought by SED for each alleged violation is important so that PacifiCorp and the Commission have notice of how the recommended penalties would change if SED fails to meet its burden of proving certain violations."[32]

SED's provision of additional penalty information does not constitute a waiver of any privilege or objection related to the per-day penalty. SED provided additional penalty information about 1) the number of offenses, and 2) the date the offenses occurred in recognition of the requirements of Resolution M-4846. "Proposed Administrative Enforcement Orders shall be placed in the regulated entity case file and recorded in the enforcement database and shall include: iii. The number of violations, including the dates on which violations occurred."[33] A per-day assessment is not required. "The penalty amount for each violation may be proposed or assessed at an amount that is within the statutory range authorized by the Public Utilities Act."[34]

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[31] SED has provided PacifiCorp with both the penalty amount and the number of violations.

[32] Opp. Mot. to Compel at 4-5.

[33] Resolution M-4846 Attachment 1 at 12.

[34] M-4846, Attachment 1 Appendix I at 16.

SED was satisfying its own independent obligations under Resolution M-4846 by informing PacifiCorp about the number of offenses and the dates they occurred. Combined with Public Utilities Code section 2107, which sets a per-offense penalty range between $500 and $100,000, the utility was put on notice that it faces a penalty anywhere between $226,500 and $453,000,000. SED's assigned penalty of $27,280,000 is within this range and considers the severity and gravity of the offense, the conduct of the regulated entity, their financial resources, the totality of the circumstances in furtherance of the public interest, and precedent, and is fair, just, and reasonable. SED is not obligated to further provide a per-day breakdown for each of the utility's 4,530 offenses.

The official information and deliberative process balancing test disfavors disclosure. SED's assessment of a per-day penalty is not needed for PacifiCorp to defend their case, PacifiCorp has access to the possible penalties for each violation. This request should be denied.

2. Requests Pertaining to the Factual Basis for SED's Penalty Assessment (DRs 1.19-1.20.)

Similar to the request for a per-day penalty, PacifiCorp's request does not seek additional admissible evidence. SED has already provided the facts on which the AEO is based, and PacifiCorp has notice of the facts SED will rely on to support its contentions. SED is not further obligated to provide information about what topics they will focus on at hearing in an effort to "clarify and narrow the facts in dispute . . ."[35] This request should be denied as the burden, expense, and invasiveness of this response outweighs the non-existent possibility of discovering additional evidence.

Further, requiring SED to provide this information would violate attorney work product, attorney client, official information, and deliberative process privileges. It would reveal SED's confidential case strategy and expose attorney client communications. Balancing of interests under the official information and deliberative

[35] Opp. Mot. to Compel at 7.

process privilege prohibits disclosure because Exhibit 1 already provides evidence about physical harm to people and property and all economic harm caused by PacifiCorp's noncompliance.[36]

To the extent that SED intends to introduce other evidence not already provided, it is not up to PacifiCorp to unilaterally demand when that information will be produced. If SED intends to introduce additional evidence to be used at hearing, that evidence will be provided before the January 30, 2026, discovery deadline.[37]

3. Request for SED's contention regarding PacifiCorp's parent entity (DR 1.23.)

PacifiCorp's request demanding SED clarify whether it is asking the Commission to rely on the financial resources of PacifiCorp's corporate parent entity should be denied because SED's response is not relevant to any fact alleged in the AEO, nor would it lead to the discovery of additional evidence. The relevant underlying facts related to this issue are (1) PacifiCorp's financial resources, (2) whether PacifiCorp has access to financial resources through a corporate parent entity, (3) what the parent entity is, and (4) the financial resources of the parent entity. Allegations related to these facts were properly made in the proposed AEO and PacifiCorp has been properly noticed that SED may explore this topic at hearing. PacifiCorp cannot now take it a step further and demand SED reveal its confidential case strategy. Whether SED will ask the Commission to consider the financial resources of PacifiCorp's parent entity is an argument for briefing after the hearing, not a fact that SED can be forced to reveal during discovery. PacifiCorp has not presented any argument why this information is relevant, only that it needs it to "be on notice that it should be prepared to present evidence of those assets at the hearing."[38] SED has provided PacifiCorp with adequate notice through its compliance filing. This request should be denied.

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[36] See proposed AEO Attachment B, SED Investigation Report at 24, 31, 52.

[37] Ruling at 4.

[38] PacifiCorp's argument appears to be that due process allows them access to all of SED's hearing and briefing strategy. This is plainly incorrect.

4. Request Seeking Communications with Energy Safety and the Independent Evaluator (DRs 2.1-2.3)

Communications between SED and Energy Safety goes to the heart of official information and deliberative process. They are inherently pre-decisional. PacifiCorp claims these communications "go to the factual underpinnings of SED's allegations, whether there have been any disputes between agencies about the extent of PacifiCorp's compliance, and whether exculpatory or contextual information exists." The factual underpinnings of the AEO are the published reports of Energy Safety and the independent evaluator provided in Exhibit 1. Whether SED and Energy Safety communications indicate disagreement on any point is of little relevance as those pre-decisional differences would have been either discarded or incorporated into the final reports. PacifiCorp is free to explore perceived differences in those reports at hearing but they do not articulate a sufficient need for internal communications between SED and Energy Safety, and revealing SED's communications would expose the Commission's decision-making process, discourage internal candid discussions, and undermine staff's ability to perform its functions. This request should be denied.

Lastly, SED's delay in providing these communications does not constitute a waiver of applicable privileges. The Commission is not bound by the civil rules of discovery, and permitting a waiver would reveal the status of pending confidential investigations.

5. Request related to Risk of Ignitions and Wildfires (DRs 1.21 – 3.1-3.2).

PacifiCorp requests SED "provide particularized responses to DR 1.21, DR 3.1, and DR 3.2, to identify with specificity any AEO passages on which it relies, to state whether additional evidence exists beyond the AEO and exhibits, and to produce all responsive documents."[39] SED has provided the entirety of its evidence that supports the

[39] Opp. Mot. to Compel at 10.

allegations in the proposed AEO as Exhibit 1. SED is not in possession of any other documents related to wildfire risk that were relied on when drafting the proposed AEO.

PacifiCorp's request that SED must "identify with specificity any AEO passages on which it relies" should be denied. The burden, expense, and intrusiveness of this response outweigh any possibility of obtaining admissible evidence. SED made numerous references and citations to the report by Energy Safety that discusses PacifiCorp's failure to mitigate wildfire risk and SED provided this report to PacifiCorp in Exhibit 1. Compelling SED to identify specific passages it will rely on at the hearing would violate the attorney-client and attorney-work product privileges because it would require SED attorneys to reveal their case strategy, preparation, and divulge attorney-client information in anticipation of litigation.

6. Request related to Energy Safety's findings (DRs 3.7-3.9).

PacifiCorp again asks SED to respond to a request for the purposes of their own case preparation and not to discover additional admissible evidence. "SED's responses to these requests will clarify whether Energy Safety's findings will be contested at the hearing—narrowing the issues in dispute and enabling PacifiCorp to prepare its case."[40] SED is not obligated to reveal to PacifiCorp its case strategy, and forcing SED to do so would violate attorney client and attorney work product privileges. PacifiCorp has access to SED's investigation report and Energy Safety's report. To the extent that they differ, PacifiCorp is welcome to explore those areas during cross-examination. Granting this request would require SED to review the evidence in its entirety, a burdensome, expensive, and invasive process that does not result in additional admissible evidence. This request should be denied.

[40] Opp. Mot. to Compel at 12.

7. Request Related to Date by Which PacifiCorp was Required to Complete Work (DRs 3.17-3.19).

PacifiCorp fails to explain how SED's response would lead to the discovery of admissible evidence. Instead, PacifiCorp states that SED's answer "would inform the way PacifiCorp prepares its own case . . ."[41] The purpose of discovery is not to reveal SED's confidential case strategy so opposing counsel can formulate a defense. SED has provided the number of offenses and the dates they occurred. PacifiCorp's request should be denied because it seeks information that has already been provided.

Additionally, this request calls for a legal conclusion by SED. It is for the Commission to decide applicability of relevant statutes, not SED. "The opinion of a staffer cannot bind the Commission since the question of what is required by either a Reporting Requirement or an Ordering Paragraph is a discretionary determination that lies within the province of the five Commissioners to decide."[42]

8. Request Related as to Notice of the Compliance Standard (DR 3.21).

PacifiCorp does not explain how its request related to the notice of substantial compliance would lead to additional admissible evidence. PacifiCorp states, "[t]his information is relevant and will enable PacifiCorp to prepare for the hearing."[43] SED is under no obligation to perform legal research on behalf of PacifiCorp, a burdensome, expensive, and intrusive process that violates attorney work product privilege. PacifiCorp even "agreed" with SED that there was no definition of substantial compliance in 2020,[44] so this duplicative demand only serves to harass SED with improper discovery requests.

Further, whether SED is aware of other compliance standards is irrelevant. "Even beyond the context of a complaint proceeding, the Commission has emphatically advised

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[41] *Id*. at 14.

[42] D.16-01-014 at 87-88.

[43] Opp. Mot. to Compel at 15.

[44] *Id*.

that regulated entities must not rely on staff to offer legal opinions or interpretations when there has been an order from the Commission requiring compliance."[45] SED's knowledge and interpretation of a legal concept is not an appropriate area to explore, even in cross-examination. "As substantial compliance is a legal determination for the Commission to make, it did not make sense to permit Rasier-CA to continue questioning SED's witnesses on this point."[46] This request should be denied.

III. CONCLUSION

The Commission should deny PacifiCorp's motion to compel because it is unduly burdensome, invasive, and resource intensive. PacifiCorp's information requests are not likely to lead to the discovery of admissible evidence and only serve to peer into the confidential case strategy of SED. SED has provided all requisite notice to PacifiCorp for PacifiCorp to defend its case.

Respectfully submitted,

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[45] Id. at 89.

[46] D.16-01-014

ATTACHMENT A

PACIFICORP
PacifiCorp's 2020 Wildfire Mitigation Plan Compliance
Docket No. H.25-07-005

PacifiCorp respectfully requests that the Safety and Enforcement Division of the California Public Utilities Commission ("SED") respond to the below request within ten business days. Please advise if SED will not serve responses within the requested time frame.

Please provide electronic responses to the following requests. Paper copies are unnecessary. The responses should be provided to the following people:

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INSTRUCTIONS

The following general instructions apply to all data requests set forth herein.

A. Consider all the Instructions and Definitions herein to be applicable to each item of discovery submitted by the above-referenced parties.

B. These requests for documents and responses are continuing in character so as to require you to file supplemental answers as soon as possible if you obtain further or different information before or after the hearing. Any supplemental answer should refer to the date and use the number of the original request or subpart thereof.

C. Unless otherwise indicated, the documents for which production is sought shall include all documents dated, prepared, sent, or received during the designated period.

D. For each separate discovery item, identify the individual(s) responsible (whether primarily or indirectly) for providing the response. Further, please designate the proper witness, if any, to cross-examine at the hearing concerning the response. If witnesses have not yet been selected at the time a data response is provided, please supplement the response once witnesses have been selected to provide the requested information.

E. In producing documents and written responses pursuant to these discovery requests, designate and restate the request(s) and subpart(s) thereof in response to which each document or response is produced.

F. Whenever these discovery requests specifically request an answer, rather than the identification of documents, an answer is required and the production of documents in lieu thereof will not substitute for an answer.

G. If information requested is not available in the exact form requested, provide such data or documents as are available and responsive to the particular discovery request.

H. If any document, in whole or in part, covered by this request is withheld for whatever reason, please furnish a list identifying all withheld documents in the following manner: (a) a brief description of the document; (b) the date of the document; (c) the name of each author or preparer; (d) the name of each person who received the document; and (e) the reason for withholding it and a statement of facts constituting the justification and basis therefore.

I. If, in answering any of these discovery requests, there is deemed to be any ambiguity in interpreting either the discovery request or a definition or instruction applicable thereto, promptly call counsel to PacifiCorp to obtain a clarification.

J. Each document and individual response of more than one page shall be consecutively numbered.

DEFINITIONS

Unless the request indicates otherwise, the following definitions are applicable in providing the requested information:

1. "2020 WMP" refers to PacifiCorp's 2020 Wildfire Mitigation Plan.

2. “AEO” refers to the June 3, 2025 proposed Administrative Enforcement Order regarding PacifiCorp’s 2020 Wildfire Mitigation Plan Compliance, filed on Docket No. H.25-07-005.

3. “Compliance Operational Protocols” refers to the February 16, 2021 guidance from the California Public Utilities Commission, titled “SUBJECT: Wildfire Safety Division – Compliance Operational Protocols”

4. “Initiative(s)” refer to initiatives in PacifiCorp’s 2020 Wildfire Mitigation Plan.

5. “SED’s Report” refers to SED’s PacifiCorp 2020 Wildfire Mitigation Plan Investigation Report, dated May 27, 2025 and appended to the AEO.

PACIFICORP
PacifiCorp's 2020 Wildfire Mitigation Plan Compliance
Docket No. H.25-07-005

Data Request

To:	Safety and Enforcement Division
Recipient Name:	Nicholas Vangrin, Martha Perez
PacifiCorp Data Request No.:	Data Request 5
Request Date:	December 5, 2025
Due Date:	December 19, 2025

Subject: Data Request Set 5

Q 1: In SED's response to Data Request Set 3, Question 14, SED stated that it did not agree that PacifiCorp had completed 909 line-miles of corrective work in connection with its detailed inspections of distribution lines. Explain the factual basis for SED's assertion that PacifiCorp did not complete 909 line-miles of corrective work, and provide any documents or other evidence supporting, undermining, or otherwise relating to your answer.

Q 2: In SED's response to Data Request Set 3, Question 14, SED stated that it did not agree that PacifiCorp had met the quantitative target for initiative 5.3.5.2. Explain the factual basis for SED's assertion that PacifiCorp did not meet the quantitative target for initiative 5.3.5.2, and provide any documents or other evidence supporting, undermining, or otherwise relating to your answer.

Q 3: In SED's response to Data Request Set 3, Question 14, SED stated that it did not agree that PacifiCorp had complied with initiative 5.3.5.2. Explain the factual basis for SED's assertion that PacifiCorp did not comply with initiative 5.3.5.2, and provide any documents or other evidence supporting, undermining, or otherwise relating to your answer.

Q 4: In SED's response to Data Request Set 3, Question 16, SED stated, "SED confirms that initiatives 5.3.5.2 and 5.3.5.11 were considered together under number 5; and 5.3.5.3 and 5.3.5.11 under number 6 as listed in Table 1: PacifiCorp 2020 WMP Noncompliance of the AEO." In light of that confirmation, do you agree (1) in assessing whether PacifiCorp met the 825-line mile quantitative target for initiative 5.3.5.2, the Commission must consider the line miles for which PacifiCorp completed distribution vegetation patrol inspections, and (2) in assessing whether PacifiCorp met the 345-line mile quantitative target for initiative 5.3.5.3, the Commission must consider the line miles for which PacifiCorp completed transmission vegetation patrol inspections? If not, explain why not.

Q 5: In SED's response to Data Request Set 4, Question 3(b), SED stated, "SED still contends [PacifiCorp's response to Data Request SED-02 Q2] was false or misleading based on failing to properly identify the 2022 McKinney fire, occurring in Siskiyou County California on July 29, 2022, as being potentially caused or partially caused by a failure to complete an initiative in the 2020 WMP."

a. Explain in detail the basis for SED's allegation that PacifiCorp's failure to complete an initiative in the 2020 WMP potentially caused or partially caused the 2022 McKinney fire, including but not limited to (i) the exact location of the ignition of the fire, including longitude and latitude; (ii) the alleged cause of the fire; and (iii) the number for the initiative(s) PacifiCorp allegedly failed to complete that potentially or partially caused the fire and PacifiCorp's alleged level of performance against that initiative.

b. Identify any physical or economic harm that SED alleges resulted from the 2022 McKinney fire.

c. Provide all documents or other evidence relating to the 2022 McKinney fire, including any documents or other evidence supporting, undermining, or otherwise relating to the allegation that the fire was "potentially caused or partially caused by a failure to complete an initiative in the 2020 WMP."

d. Identify, with a specific citation to a page number, any portion of the AEO that discusses the 2022 McKinney fire. If no portion of the AEO discusses the 2022 McKinny fire, explain why the McKinney fire is not addressed in the AEO.

Q 6: SED's Report, page 24, states, "PacifiCorp's failure to implement this covered conductor installation potentially resulted in an ignition at latitude 41.262867 and longitude -122.274 on November 7, 2020, due to a PacifiCorp lightning arrestor." Provide all documents or other evidence relating to the November 7, 2020 ignition, including but not limited to (i) the exact location of the ignition of the fire, including longitude and latitude; (ii) the alleged cause of the fire; and (iii) any documents or other evidence supporting, undermining, or otherwise relating to the allegation that the fire potentially resulted from the alleged failure to install covered conductor.

Q 7: SED's Report, page 31, states, "PacifiCorp's noncompliance with initiatives 5.3.5.2 and 5.3.4.11 may have led to a fire on the 5G41 distribution circuit in a Tier 2 HFTD near Fort James. The fire ignited on September 18, 2020, due to vegetation contact and burned 0.43 acres." Provide all documents or other evidence relating to the September 18, 2020 fire, including but not limited to (i) the exact location of the ignition of the fire, including longitude and latitude; (ii) the alleged cause of the fire; and (iii) any documents or other evidence supporting, undermining, or otherwise relating to the allegation that the fire potentially resulted from PacifiCorp's alleged noncompliance.

Q 8: SED's Report, page 44, states that a fire occurred on June 27, 2021 in Yreka (latitude 41.7325 and longitude -122.621) on circuit 5G149 where "PacifiCorp does not have record of pole clearing taking place in 2020."

a. Does SED contend that the June 27, 2021 fire was caused or potentially caused by PacifiCorp's noncompliance with its 2020 WMP?

b. Provide all documents or other evidence relating to the June 27, 2021 fire, including but not limited to (i) the exact location of the ignition of the fire, including longitude and latitude; (ii) the alleged cause of the fire; and (iii) any documents or other evidence supporting, undermining, or otherwise relating to the allegation that the fire may have resulted from PacifiCorp's alleged noncompliance.

Q 9: Does SED contend that PacifiCorp's alleged noncompliance with its 2020 WMP contributed to any fires or ignitions other than (1) the 2022 McKinney fire, occurring in Siskiyou County, California on July 29, 2022, (2) the ignition at latitude 41.262867 and longitude -122.274 on November 7, 2020, (3) the fire on the 5G41 distribution circuit on September 18, 2020, and (4) the fire at latitude 41.7325 and longitude -122.621 on June 27, 2021 in Yreka, California? If so, identify the fire or ignition, including its precise location in longitude and latitude, identify the initiative SED alleges PacifiCorp failed to complete that contributed to the fire or ignition, and provide all documents or other evidence relating to the fire or ignition, including any documents or other evidence supporting, undermining, or otherwise relating to the allegation that the fire or ignition may have resulted from PacifiCorp's alleged noncompliance.

Q 10: Attachment A to this Data Request includes the Annual Reports on Compliance submitted by PG&E, SDG&E, SCE, Liberty Utilities, Bear Valley, Horizon West, and Trans Bay Cable.

a. Identify which of these annual reports fulfilled the requirements of the Compliance Operational Protocols.

b. Identify which of these annual reports included a proper "assessment of whether the EC met the risk reduction intent by implementing all of their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities," as SED has alleged is required by the Compliance Operational Protocols.

c. Identify which of these annual reports properly acknowledged that a utility's noncompliance with one or more initiatives "led to higher system-wide risk than [the utility] would have achieved through WMP compliance," as SED has alleged is required by the Compliance Operational Protocols.

ATTACHMENT A

Bear Valley Electric Service

Wildfire Mitigation Plan

Annual Report on Compliance

2020 Calendar Year Review

Bear Valley
Electric Service, Inc.
A Subsidiary of American States Water Company

March 31, 2021

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LIST OF FIGURES & TABLES

BACKGROUND

This report serves as the response to Public Utilities Code (PUC) §8386.3(c)(1), where an electrical corporation (EC) must file with the Wildfire Safety Division (WSD) annual reports addressing compliance of approved Wildfire Mitigation Plans (WMP) during the prior calendar year. The report is developed in accordance with the WSD's Compliance Operational Protocols issued in November 2020 and modified in February 2021 under Resolution WSD-012, which among other items directs the development of an Annual Report on Compliance (ARC). Prompts are listed in blue text, signaling WSD required content for this report.

1. RISK REDUCTION INTENT ANALYSIS

1.a) An assessment of whether the EC met the risk reduction intent by implementing all of their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities;[1]

1.a.i) If the EC fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.

Bear Valley Electric Service, Inc. (BVES) focuses on implementing approved WMP initiatives that collectively reduce the probability of utility-caused ignitions, reduce the potential impact of wildfires on the BVES system and mitigate the need for Public Safety Power Shutoff (PSPS) events in the future. BVES is not required by the California Public Utilities Commission (CPUC) to develop either a Multi-Attribute Variable Function or Multi-Attribute Risk Score framework for Risk Assessment Mitigation Phase (RAMP) filings; however, BVES maintains a risk assessment toolkit to identify risk drivers and potential consequences of wildfire threat while gauging the success of mitigation initiatives. In 2021, the utility plans to contract services to enhance current risk maps and expand its capability to better predict fire conditions and behaviors. The modeling will account for initiative execution and climate-driven factors.

Currently, BVES uses both its Fire Safety Circuit Matrix, prioritizing wildfire and PSPS risk, and its Risk Registry model, which evaluates enterprise risk. The purpose of the Fire Safety Circuit Matrix model is to assist in determining a circuit-level risk that accounts for the current and planned mitigation activities that intend to reduce ignition potential. The model informs the planning period of the WMP considering changes to the risk profile as mitigations are executed over time. A detailed overview of the Fire Safety Circuit Matrix is contained within the 2021 BVES Annual WMP filing in Section 4.5.1.

Figure 1 provides an estimation of the degree to which 2020 BVES's mitigation initiatives have reduced wildfire risk. BVES has met its intents to both reduce the number of high-risk circuits and reduce overall wildfire ignition risk.

2020 progress highlights include:

- Two circuits (Boulder, Pioneer) were reduced from high to moderate wildfire risk as a result of progress in grid hardening initiatives.
- The cumulative wildfire risk for all BVES circuits was reduced by 12,030;
- The evaluation indicates that no circuits increased in Wildfire Risk Group designation (high, moderate, low);
- Eight circuits (Shay, Boulder, Northshore, Erwin Lake, Pioneer, Holcomb, Garstin, Interlaken) show a decrease in overall risk due to progress in grid hardening initiatives;
- Three circuits (Baldwin, Clubview, Goldmine) show an increase in overall risk due to changes in worst performing circuit status; and
- The circuit with the highest risk (Radford), shows no change in overall wildfire risk. This circuit risk is being addressed by the Radford Line Covered Conductor Replacement Project which is on track for completion in 2021.

[1] Explanation of how ignition probabilities and estimated wildfire consequences have been reduced during the compliance period as a result of WMP initiative implementation (i.e., for the EC ARC due March 31, 2021, the EC shall report on the prior compliance period, defined as January 1, 2020 to December 31, 2020).

Figure 1: 2020 Estimated Reduction in Wildfire Risk by Circuit

Circuit	Substation	1-1-2020 Wildfire Risk Group	12-31-2020 Wildfire Risk Group
Radford	SCE Feed	30521	30521
Shay	SCE Feed	15518	11585
Baldwin	SCE Feed	7856	8409
Boulder	Village	3351	2951
North Shore (Fawnskin)	Fawnskin	7518	6538
Erwin Lake	Maltby	9039	5053
Pioneer (Palomino)	Palomino	4149	2659
Clubview	Moonridge	3460	3660
Goldmine	Moonridge	4569	5569
Paradise	Maltby	2754	2754
Sunset	Maple	3583	3583
Sunrise (Maple)	Maple	2650	2650
Holcomb (Bear City)	Bear City	5916	4516
Georgia	Pineknot	1594	1594
Eagle	Pineknot	2072	2072
Harnish (Village)	Village	385	385
Garstin	Meadow	2115	1370
Lagonita	Village	2732	2932
Interlaken	Meadow	2791	1891
Castle Glen (Division)	Division	1982	1733
Country Club	Division	745	845
Fox Farm	Meadow	-8	-8
Pump House (Lake)	Lake	178	178
Lift (Summit TOU)	Summit	30	30
Skyline (Summit Res)	Summit	0	0
Geronimo (Bear Mtn.)	Bear Mtn.	0	0
		115500	**103470**

Wildfire Risk Groups
High
Moderate
Low

Overall Decrease in Risk
12030

Over the course of the 2021, the objective of BVES is to continue to reduce wildfire risks through carrying on its grid hardening initiatives. This includes completion of fuse replacement project, improving situational awareness, improving coordination and communication with stakeholders, and continuing aggressive vegetation management and inspection.

2. CHANGE ORDER AND OPERATION CHANGE REVIEW

1.b) A full and complete listing of all change orders 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;

BVES has not needed to issue any change orders and has not implemented any other operational changes, to its WMP initiatives in 2020. There have been some deviations from expected initiative timelines, typically due to permitting and access issues with the United States Forest Service. For example, BVES has not yet begun its covered conductor work on the Radford line because it has not been able to get the necessary permits from the USFS to begin the work. Installation of the covered wire is anticipated to get under way in 2021.

Another delayed initiative example surrounds the installation of the two remaining weather stations to complete the 10 weather station installation projection for 2020. The remaining two have been scheduled for early 2021. These deviations have not, however, required change orders or other operational changes.

A full listing of implementation and changed circumstances to initiative timelines are described in Supporting Table 7.1-1 (page 88) in BVES's 2021 WMP.

3. WMP INITIATIVE SPEND REVIEW

1.c) Descriptions of all planned WMP initiative spend vs actual WMP initiative spend and an explanation of any differentials between the planned and actual spends;

The descriptions of all planned WMP initiative spend vs actual WMP initiative spend along with an explanation of any differentials* between the planned and actual spends is detailed in the attached Excel spreadsheet.

*NOTE: BVES only lists the discrepancies if the difference between the actual and planned spend is greater than 10 percent (in either direction) in accordance with the Quarterly Data Report guidance.

4. INITIATIVE IMPACT ON PSPS THRESHOLDS

1.d) A description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope and duration of PSPS events;

The triggering threshold for a PSPS event in the BVES PSPS Plan has not yet changed based upon the implementation of WMP initiatives. In the future, BVES anticipates continued redesignation of high risk areas to lower risk designations due to implementation activities. As can be seen in the snapshot of the Fire Safety Circuit Matrix that is supplied in Section 1 of this ARC, BVES has already observed the risk level of some circuits lowered through wildfire mitigation efforts. As more of this becomes apparent, and dependent on the risk mapping initiatives planned to begin in 2021, BVES will reevaluate its PSPS trigger threshold.

BVES has not experienced a wildfire or a PSPS event, nor has it had to facilitate an evacuation. Currently, the highest probability for triggering a PSPS event is loss of SCE energy imports to the BVES service area due to a SCE-directed PSPS of the SCE supply lines to BVES. BVES imports from SCE are subject to PSPS and while these lines may be required to be de-energized by SCE, the BVES service area may not require PSPS. To address the probability of this SCE directed PSPS, BVES proposes to construct an energy storage project of approximately 4 MW/16 MWh (four-hour) Lithium-Ion NMC BESS utility-grade battery in the BVES service area. In 2021, BVES will continue with project planning and evaluation of an energy storage facility within the BVES service territory.

Although BVES has never had to implement PSPS, BVES is committed to reducing the scope, frequency, and duration of PSPS events should it be necessary, and will only implement PSPS when the safety risk of imminent fire danger is greater than the impact of de-energization. Currently, BVES does not estimate the reduced frequency, scale, scope, and duration of PSPS events as a result of implementation of wildfire mitigation programs. However, by their very nature, wildfire mitigation programs such as grid design and system hardening and situational awareness and forecasting reduce the frequency, scale, scope, and duration of PSPS events by reducing the probability of utility-caused ignitions and reducing the potential impact of wildfires on the BVES system.

As BVES continues to reduce ignition risk through the deployment of wildfire mitigation programs, BVES anticipates the likelihood to need to use its PSPS to become even more remote, but BVES will continue to evaluate the risk and necessity for its use. During 2021, BVES will engage a consulting firm to begin the development of a series of risk maps that will show the overall ignition probability and estimated wildfire consequence along electric lines and equipment. Risk Maps development will include an estimation of wildfire and PSPS risk-reduction impact. It is expected that the project will be 50% completed by year-end 2021.

5. WSD DEFECT REVIEW

1.e) A summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date[2].

Table 1 below presents the identified defects in 2020 as a result of the WSD-led service area inspection. A list of WMP related deficiencies and their progress updates can be found in Table 4.6-1 (page 50) in BVES's 2021 Annual WMP.

Table 1: WSD 2020 Audit Defects[3]

Defects Identified in 2020 (Finding #)	Associated Circuit Name	Defect Type	Description of Defect	Date Defect Identified	Corrective Action	Date Defect Corrected	Priority Level of Corresponding Corrective Tag	Location of Defect (Lat/Long)
1	North Shore 4kV	General	Hazard pine tree cut because of overhand over primary conductors. Pole #14207BVp HFTD 2	10/27/2020	Tree had already been trimmed. WSD asked to see an example, and this one was provided. There was no defect, and no corrective action was required.	10/27/2020	2	(34.2488752,-116.966872)

[2] 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 for details).

[3] In accordance with Resolution WSD-012, the WMP Compliance Process defines a defect as "any condition noted that is inconsistent with the WMP initiatives or CPUC General Orders."

Defects Identified in 2020 (Finding #)	Associated Circuit Name	Defect Type	Description of Defect	Date Defect Identified	Corrective Action	Date Defect Corrected	Priority Level of Corresponding Corrective Tag	Location of Defect (Lat/Long)
2	North Shore 4kV	General	Vegetation clearance of pine tree next to pole 31476 CIT Pole #31476 CIT HFTD 2	10/27/2020	Response: "Subject tree had been previously limbed to maintain clearance from electric facilities in accordance with GO 95 Rule 35, Exception 4 which allows for clearances greater than 6 inches, but less the Table 1, Case 14E (48 inches). Facilities and vegetation are in compliance with GO 95; no action is required."	10/27/2020	2	(34.2672571,-116.9368127)
3	North Shore 4kV	General	Next to 5150BV	10/27/2020	No action was taken	10/27/2020	3	(34.2721483,-116.9324322)
4	North Shore 4kV	GO95 General Order 95 Defect Code 1109	1109.1 ground wire broken or uncovered I verified the weather station was installed at this location Fawnskin Weather Station BV11050	10/27/2020	Exposed ground wire was repaired on 11/05/20	11/05/2020	3	(34.2618513,-116.9253189)

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Implement Electric Utility Wildfire Mitigation Plans Pursuant to Senate Bill 901 (2018).	Rulemaking 18-10-007 (filed October 25, 2018)

LIBERTY UTILITIES (CALPECO ELECTRIC) LLC'S (U 933-E) 2020 WILDFIRE MITIGATION PLAN ANNUAL REPORT ON COMPLIANCE

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March 31, 2021

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Implement Electric Utility Wildfire Mitigation Plans Pursuant to Senate Bill 901 (2018).	Rulemaking 18-10-007 (filed October 25, 2018)

LIBERTY UTILITIES (CALPECO ELECTRIC) LLC'S (U 933-E) 2020 WILDFIRE MITIGATION PLAN ANNUAL REPORT ON COMPLIANCE

Pursuant to the Wildfire Safety Division ("WSD") Compliance Operational Protocols issued on February 16, 2021, associated with Rulemaking ("R.") 18-10-007, Liberty Utilities ("CalPeco Electric") LLC ("Liberty") hereby files this Annual Report on Compliance ("ARC") regarding Liberty's 2020 Wildfire Mitigation Plan ("2020 WMP"). This ARC follows the guidance in Table 4 (Section 2) of the WSD Compliance Operational Protocols.

I. ASSESSMENT OF LIBERTY'S 2020 WMP INITIATIVES

WSD Guidance: Submit an assessment of whether Liberty met 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 Liberty fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.

A. Overall 2020 WMP

In accordance with Cal. Pub. Util. Code § 8386(a), Liberty constructs, maintains, and operates its electric system in a manner that minimizes the risk of catastrophic wildfire posed by its electric power lines and equipment. Liberty's overarching WMP goal is to prevent and mitigate the risk of wildfires caused by utility equipment. In 2020, Liberty continued to identify ways to enhance its wildfire prevention

and mitigation efforts through enhancing or expanding existing programs and developing and implementing new programs. Liberty's overall progress in 2020 implementing its WMP met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences (with specific consideration to the impact on Access and Functional Needs populations and marginalized communities) of both wildfires and the mitigations employed to reduce them, including Public Safety Power Shutoff ("PSPS") events.

B. Risk Assessment and Mapping

Liberty's progress in 2020 related to the Risk Assessment and Mapping WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

In 2020, Liberty advanced from no risk model or mapping capabilities to a first-generation wildfire risk model and fire risk mapping tools that cover Liberty's entire service area. The establishment of Liberty's risk mapping and wildfire risk models will allow the company to incorporate objective, quantitative analysis into its decision-making regarding all wildfire risk drivers.

C. Situational Awareness and Forecasting

Liberty's progress in 2020 related to the Situational Awareness and Forecasting WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

Specifically, Liberty accomplished the following related to Situational Awareness and Forecasting WMP initiatives in 2020:

- Installed 19 weather stations equipped with fuel moisture sensors in and across High Fire Threat Districts. Prioritization was given to installations based on Reax risk mapping designated high wildfire areas. Liberty's advanced weather monitoring program improves situational awareness by providing weather information to operations and allows for the

safe operation of the electric grid during extreme weather events. Continuation of this program reduces the likelihood of avoidable customer outages and probability of ignitions risk with continuous weather monitoring. Enhanced real-time weather monitoring data provides an important tool to help Liberty plan for operating activities during such extreme events. In 2020, Liberty installed 19 out of 20 targeted weather stations, bringing the total number of weather stations to 29. Fuel moisture sensors were also added to weather stations installed in 2020 and retrofitted to several of the locations installed in 2019. Fuel moisture sensors can help to validate fuel moisture conditions, which is crucial to accurately predict wildfire risk in local areas. The data from these weather stations provides much needed support for Liberty's PSPS and FPI tools.

- Liberty installed SCADA controls to four additional reclosers, deployed Tripsavers to one feeder, and is finalizing the implementation of the ALERTWildfire camera network partnership. The primary benefit of continuous monitoring sensors is to enhance visibility of the system and system reliability. The ability to quickly determine fault and outage locations allows dispatchers to quickly deploy resources to evaluate and resolve system issues. Another benefit of continuous monitoring systems is providing a faster response to an ignition event. Aclara sensors (SCADA controls) record continuous line disturbances, which can be analyzed and repaired before an issue leads to an ignition. Tripsavers are an effective tool during high fire threat days with their one-shot (fire mode) capability. AlertWildfire cameras provide opportunity for early detection of ignitions and provide opportunity to view areas where a fault may have occurred. The AlertWildfire Camera network has grown significantly throughout California and other western states in large part due to partnerships with electric utilities. Over the last few years, these cameras have

proven their value and have become an integral part of fire detection and monitoring during fire season in California. With more cameras, improving technology, and more partnerships, the capabilities of the AlertWildfire network will continue to improve on an already successful platform.

- Liberty developed and implemented its Fire Potential Index ("FPI") assessment tool in late 2020. Liberty's FPI is a comprehensive assessment tool designed to heighten awareness of daily forecast fire conditions to aid in operational decision making. FPI converts environmental, statistical, and scientific data into an easily understood forecast of short-term fire threat for Liberty's service territory. FPI forecasts up to seven days of fire threat potential. Liberty uses FPI for fire threat awareness and operational decision making. The FPI provides a seven-day fire risk condition forecast for 11 geographic zones within the service territory. FPI condition forecasts include five risk conditions (Low, Moderate, High, Very High, and Extreme) that are used as a means to determine operating procedures, by zone, depending on the forecast fire risk. FPI condition forecasts are communicated to field staff on a daily basis to inform operational decisions when work restrictions are in place due to fire risk. Prior to the development of FPI, Liberty did not have any specialized fire risk prediction tools, which meant less overall awareness of day-to-day fire risk. There are 11 FPI zones, covering Liberty's entire service territory, with individual fire risk forecasts for each zone. This forecasting granularity provides a better understanding of the overall fire risk throughout the service area and allows for better decision-making in scheduling work by zone. FPI was developed for Liberty's service territory based on SDG&E and Pacific Gas & Electric Company ("PG&E") methodologies. Factors considered include climatological, geographical, and fuel source

conifer and timber understory fuels in Liberty's service territory. FPI calculations include fuel moisture (both dead and live), "green-up" factor, ambient temperature, relative humidity, Fosberg Fire Weather Index, and Burning Index, among other factors. This work led to the establishment of the number of FPI classes as well as the fuel and weather criteria that delineate FPI classes.

D. Grid Design and System Hardening

Liberty's progress in 2020 related to the Grid Design and System Hardening WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

In 2020, Liberty conducted a system-wide inventory of all overhead assets that included enhanced G.O. 165 inspections. From this survey, Liberty now has a third-party assessment of the entire overhead system that can be used to develop programs to proactively replace its aging infrastructure. This information, although in its early development, will be used to measure future wildfire risk reductions.

Grid hardening efforts also include replacing overhead lines with covered conductor to protect high fire risk areas during volatile weather events and building resiliency corridors. Liberty's overall resiliency program is still in its conceptual phase, but initial plans also include installation of microgrids in targeted high fire risk areas. The combination of covered conductor installations, resiliency corridors, and microgrids will greatly reduce impacts and frequency of PSPS events and service interruptions.

E. Asset Management and Inspections

Liberty's progress in 2020 related to the Asset Management and Inspections WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

As mentioned above related to Grid Design and System Hardening WMP initiatives, in 2020, Liberty utilized a contractor to perform a system-wide survey of overhead system assets to collect a

complete list of equipment attached to poles and to perform detailed visual inspections. Data, including pictures and GPS coordinates, was collected via hand-held devices to be utilized for improving accuracy of the GIS. Liberty purchased licenses for the Fulcrum mobile application to transition from paper-based to electronic inspection records. The system-wide survey data has generated a significant number of G.O. 95-related repairs that Liberty is working to complete. The survey also revealed that not all field changes had been tracked in an accurate or timely manner and that improvements to those processes need to be made so the system maintains a high level of accuracy.

F. Vegetation Management and Inspections

Liberty's progress in 2020 related to the Vegetation Management and Inspections WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

Liberty's vegetation management program made tremendous progress toward achieving program targets in 2020. In addition to maintaining growth in its existing initiatives, Liberty piloted and implemented new vegetation management and inspection initiatives to continue to enhance its contribution to wildfire mitigation efforts. Key achievements include:

- Implementing the first Forest Resilience Corridors project in cooperation with the USFS on parts of the Lake Tahoe Basin Management Unit and Tahoe National Forest;
- Performing supplemental vegetation risk inspection and mitigation of all overhead lines in Liberty's Tier 3 High Fire Threat District;
- Beginning the implementation of fuel management projects and biomass removal; and
- Piloting the use of LiDAR to perform vegetation inspections along approximately half of overhead electric lines.

G. Grid Operations and Operating Protocols

Liberty's progress in 2020 related to the Grid Operations and Operating Protocols WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

In 2020, Liberty developed and implemented PSPS operations and communications protocols. These protocols, in combination with the development of the FPI and PSPS forecasting tools have helped to inform day-to-day operational decision-making. Liberty's newly developed FPI has been incorporated into its Fire Prevention Plan, which details work procedures that must be followed based on fire risk conditions. The plan is utilized daily during fire season to inform operational decisions. Developing PSPS protocols, holding table top exercises, and training for PSPS events helped Liberty prepare for potential future PSPS events.

H. Data Governance

Liberty's progress in 2020 related to the Data Governance WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

The System Survey asset inventory completed in 2020 provides the basis of a fully functioning asset management system that can be used for prioritizing future work based on Reax mapping and level findings. Design and testing of cloud-based forms for data collection was implemented for this purpose in addition to the establishment of the wildfire risk SharePoint dedicated location and utilization of other visual mapping applications. Utilization of digitally distributed field collection forms in 2020 allowed Liberty to collect, store and analyze more System Survey results than in the previous five years combined. This moved Liberty closer to total digital systems adoption for surveys and is providing a means of responding to infractions with increased speed, volume, and improved accuracy. During this process, Liberty recognized that training initiatives, increased integration of data sources, and workflow

advancement would assist Liberty to further leverage data governance upgrades and adoption of new technologies. Furthermore, the ability to maximize high quality business information based on key performance measures at Liberty promotes continual process improvement, change management, and more technology-based awareness/skills programs.

I. Resource Allocation Methodology

Liberty's progress in 2020 related to the Resource Allocation Methodology WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

Liberty has not developed its first generation wildfire risk model in the same framework as the larger IOUs. While Liberty certainly faces limitations in terms of data and resources, the company has spent the past year forming a team of analysts and a consultant to establish risk modeling capabilities. The wildfire risk model finished its development only shortly before Liberty's 2021 WMP Update filing. However, Liberty was able to incorporate its risk mapping information into its G.O.95 inspection targets as well as use information from that initiative to inform decisions at a high-level. The Liberty RBDM modeling team has laid the foundation for quantitative analysis to be used in forward-looking capital and O&M decision-making.

J. Emergency Planning and Preparedness

Liberty's progress in 2020 related to the Emergency Planning and Preparedness WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

In 2020, Liberty achieved the following related to Emergency Planning and Preparedness WMP initiatives:

- Filled the key positions of Emergency Manager and Fire Protection Specialist in early 2020. The Emergency Manager oversees all emergency response-related activities and

public safety partnership engagements. The Fire Protection Specialist oversees fire prevention initiatives, serving as the company liaison for first responders, and public safety partners, and coordinating training for all employees and contractors.

- Liberty developed comprehensive operations and communications PSPS playbooks that detail operational and communications protocols to be undertaken in each of the five stages of response to extreme wildfire threat conditions, including de-energization and re-energization.
- Liberty hosted 29 meetings with public safety partners to provide details on Liberty's wildfire mitigation, PSPS preparedness, and community outreach efforts.
- Liberty held nine regional PSPS workshops and three PSPS tabletop exercises.
- Liberty hosted seven regional virtual town halls to provide a localized update on wildfire safety work happening in respective communities.
- Liberty conducted training and updated personnel work procedures in conditions of elevated fire risk for field personnel.
- Liberty executed comprehensive wildfire safety and PSPS preparedness outreach, using lessons learned and feedback received from other IOUs, customers, the Commission, and other stakeholders. Liberty also conducts community outreach to educate public safety partners, customers, and the general public on aspects of its wildfire mitigation practices, such as vegetation management and system hardening, and the role they play in helping to reduce wildfire risks in their communities.
- Liberty made improvements and conducted training in the office and field related to existing personnel work procedures in conditions of elevated fire risk.

K. Stakeholder Cooperation and Community Engagement

Liberty's progress in 2020 related to the Stakeholder Cooperation and Community Engagement WMP initiatives met the risk reduction intent of its 2020 WMP to reduce ignition probabilities and minimize the societal consequences of both wildfires and mitigations employed to reduce them.

In 2020, Liberty expanded its public education and outreach efforts associated with its WMP. Safety and resiliency communications were part of Liberty's territory-wide public education campaign. These communications focused on personal preparedness and community resiliency. Additionally, Liberty:

- Hosted 29 meetings with public safety partners to share information related to Liberty's wildfire mitigation efforts, PSPS preparedness, and community outreach;
- Held nine regional PSPS workshops and three PSPS tabletop exercises;
- Hosted seven regional virtual town halls to provide a localized update on wildfire safety work happening in respective communities;
- Placed 112 posts on Liberty's social media channels;
- Sent three bill inserts and direct mailers to customers; and
- Conducted three customer e-mail outreach campaigns.

II. 2020 WMP CHANGE ORDERS AND OTHER OPERATIONAL CHANGES

WSD Guidance: Submit a full and complete listing of all change orders 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.

A. Change Orders

Liberty did not file any change orders in 2020 for its 2020 WMP.

B. Operational Changes

In 2020, Liberty contracted with Reax Engineering ("Reax") to conduct a comprehensive fire spread and consequence model. Reax began its fire mapping analysis in May 2020 and the study was completed in September 2020. The study resulted in a fire risk mapping tool to be utilized as the baseline for Liberty's wildfire risk assessment. Reax identified and designated wildfire risk areas in regionalized "polygons" that were mapped with an overlay of Liberty's overhead distribution lines. The designated high Reax wildfire areas are used by operations and engineering for planning of wildfire mitigation work. The Reax mapping will meet the risk reduction intent of Liberty's 2020 WMP because it will inform the work to be performed to reduce wildfire risk and will prioritize efforts within each major category.

III. 2020 WMP INITIATIVE SPEND

WSD Guidance: Submit descriptions of all planned WMP initiative spend vs. actual WMP initiative spend and an explanation of any differentials between the planned and actual spends.

A. Planned 2020 WMP Initiative Spend vs. Actual 2020 WMP Initiative Spend

Table 1: Planned 2020 WMP Initiative Spend vs. Actual 2020 WMP Initiative Spend

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.1.1	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	$0	$67,465	Costs were planned for 7.3.7.1.
7.3.1.2	Climate-driven risk map and modelling based on various relevant weather scenarios	$0	$0	-
7.3.1.3	Ignition probability mapping showing the probability of ignition along the electric lines and equipment	$0	$0	-
7.3.1.4	Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	$0	$0	-
7.3.1.5	Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	$0	$0	-
7.3.2.1	Advanced weather monitoring and weather stations	$300,000	$242,879	One less station installed; contingency not met.
7.3.2.2	Continuous monitoring sensors	$80,000	$158,125	Accelerated DFA timeline.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.2.3	Fault indicators for detecting faults on electric lines and equipment	$0	$0	-
7.3.2.4	Forecast of a fire risk index, fire potential index, or similar	$70,000	$44,313	Actual costs were less than originally anticipated.
7.3.2.5	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	$0	$0	-
7.3.2.6	Weather forecasting and estimating impacts on electric lines and equipment	$0	$0	-
7.3.3.1	Capacitor maintenance and replacement program	$0	$0	-
7.3.3.2	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	$0	$0	-
7.3.3.3	Covered conductor installation	$3,198,000	$7,820,185	More covered conductor completed than originally planned. Design costs and amount of pole replacements were higher than anticipated.
7.3.3.4	Covered conductor maintenance	$0	$0	-
7.3.3.5	Crossarm maintenance, repair, and replacement	$0	$94,572	2020 actual costs were incorrectly categorized here. They should be captured under section 7.3.3.12.
7.3.3.6	Distribution pole replacement and reinforcement, including with composite poles	$0	$3,651,519	Costs were not originally forecast for pole replacement, however, inspection results warranted pole replacements.
7.3.3.7	Expulsion fuse replacement	$1,544,000	$737,939	Cost incurred in late 2020 but not paid until early 2021.
7.3.3.8	Grid topology improvements to mitigate or reduce PSPS events	$616,000	$671,872	Actual costs were slightly higher than originally anticipated.
7.3.3.9	Installation of system automation equipment	$360,000	$453,588	Estimate for four reclosers based on historical spend; actual costs were higher due to factors such as availability of materials.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.3.10	Maintenance, repair, and replacement of connectors, including hotline clamps	$0	$0	-
7.3.3.11	Mitigation of impact on customers and other residents affected during PSPS event	$0	$0	-
7.3.3.12	Other corrective action	$750,000	$1,372,552	More work was performed than originally planned.
7.3.3.13	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	$1,515,000	$0	Projected costs were not incurred.
7.3.3.14	Transformers maintenance and replacement	$0	$0	-
7.3.3.15	Transmission tower maintenance and replacement	$0	$0	-
7.3.3.16	Undergrounding of electric lines and/or equipment	$1,757,500	$522,414	Actual costs were less than originally anticipated; not all project costs were incurred in 2020.
7.3.3.17	Updates to grid topology to minimize risk of ignition in HFTDs	$0	$0	-
7.3.4.1	Detailed inspections of distribution electric lines and equipment	$3,500,000	$837,622	GO 165 repair costs were lower than anticipated and some of the repairs are carrying into 2021.
7.3.4.2	Detailed inspections of transmission electric lines and equipment	$0	$0	-
7.3.4.3	Improvement of inspections	$890,000	$0	Liberty had several software solutions under consideration to improve asset inspections and included the highest figure available at the time of filing. Ultimately, Liberty went with a different solution which meant those dollars were not utilized.
7.3.4.4	Infrared inspections of distribution electric lines and equipment	$0	$0	-
7.3.4.5	Infrared inspections of transmission electric lines and equipment	$0	$0	-

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.4.6	Intrusive pole inspections	$118,554	$10,404	Due to timing difference, some work performed in 2020 was not paid until the first quarter of 2021. The actual spend related to this work is $138,799.14. The $118,554 is only an estimate based on number of structures and cannot account for when poles need remediation which is determined at time of inspection.
7.3.4.7	LiDAR inspections of distribution electric lines and equipment	$250,000	$0	LiDAR was utilized for Vegetation Management but not asset inspections in 2020.
7.3.4.8	LiDAR inspections of transmission electric lines and equipment	$0	$0	-
7.3.4.9	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	$0	$0	-
7.3.4.10	Other discretionary inspection of transmission electric lines and	$6,000,000	$2,994,266	Costs to complete the System Survey were significantly lower than the initial estimate due to competitive bid process.
7.3.4.11	Patrol inspections of distribution electric lines and equipment	$0	$0	-
7.3.4.12	Patrol inspections of transmission electric lines and equipment	$0	$0	-
7.3.4.13	Pole loading assessment program to determine safety factor	$0	$0	-
7.3.4.14	Quality assurance / quality control of inspections	$0	$0	-

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.4.15	Substation inspections	$0	$0	-
7.3.5.1	Additional efforts to manage community and environmental impacts	$660,000	$771,043	More work required than originally anticipated. USFS permitting delays create inefficiencies.
7.3.5.2	Detailed inspections of vegetation around distribution electric lines and equipment	$610,000	$555,763	Actual costs were less than originally anticipated.
7.3.5.3	Detailed inspections of vegetation around transmission electric lines and equipment	$0	$0	-
7.3.5.4	Emergency response vegetation management due to red flag warning or other urgent conditions	$0	$0	-
7.3.5.5	Fuel management and reduction of “slash” from vegetation management activities	$2,000,000	$354,689	Program development took longer than expected and less work was performed than originally anticipated.
7.3.5.6	Improvement of inspections	$0	$0	-
7.3.5.7	LiDAR inspections of vegetation around distribution electric lines and equipment	$0	$369,298	LiDAR inspection was captured under Asset inspections section for 2020. It was more appropriate to capture this project under the vegetation management section.
7.3.5.8	LiDAR inspections of vegetation around transmission electric lines and equipment	$0	$0	-
7.3.5.9	Other discretionary inspections of vegetation around distribution electric lines and equipment	$450,000	$85,139	Work was just performed in the Tier 3 area where inspections took place, therefore costs of inspection and tree work were less.
7.3.5.10	Other discretionary inspections of vegetation around transmission electric lines and equipment	$0	$0	-
7.3.5.11	Patrol inspections of vegetation around distribution electric lines and equipment	$300,000	$420,800	More inspection miles were completed than originally anticipated.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.5.12	Patrol inspections of vegetation around transmission electric lines and equipment	$0	$0	-
7.3.5.13	Quality assurance / quality control of vegetation inspections	$250,000	$67,033	Program development for QA/QC processes was lower cost than originally anticipated.
7.3.5.14	Recruiting and training of vegetation management personnel	$0	$0	-
7.3.5.15	Remediation of at-risk species	$4,500,000	$7,338,323	Primary driver was increase in tree work costs due to Senate Bill 247.
7.3.5.16	Removal and remediation of trees with strike potential to electric lines and equipment	$0	$2,722,530	The planned cost was captured under initiative number 7.3.5.15 for 2020 and was moved to this section of the 2021 plan for better tracking.
7.3.5.17	Substation inspection	$0	$0	-
7.3.5.18	Substation vegetation management	$0	$0	-
7.3.5.19	Vegetation inventory system	$0	$0	-
7.3.5.20	Vegetation management to achieve clearances around electric lines and equipment	$0	$0	-
7.3.6.1	Automatic recloser operations	$0	$0	-
7.3.6.2	Crew-accompanying ignition prevention and suppression resources and services	$0	$0	-
7.3.6.3	Personnel work procedures and training in conditions of elevated fire risk	$0	$278,576	Labor costs were not originally projected in 2020. However, costs dedicated to this initiative were incurred on fire weather monitoring and proactive line patrols.
7.3.6.4	Protocols for PSPS re-energization	$0	$0	-
7.3.6.5	PSPS events and mitigation of PSPS impacts	$0	$0	-
7.3.6.6	Stationed and on-call ignition prevention and suppression resources and services	$0	$92,731	Costs for two vehicles were not projected for 2020.

2021 WMP Initiative #	Initiative Activity	Planned 2020 Spend	Actual 2020 Spend	Explanation of Differential
7.3.7.1	Centralized repository for data	$465,000	$0	Costs are captured in 7.3.1.1; no other costs incurred.
7.3.7.2	Collaborative research on utility ignition and/or wildfire	$200,000	$1,138	DFA costs were initially projected for this initiative but are captured in 7.3.2.2.
7.3.7.3	Documentation and disclosure of wildfire-related data and algorithms	$0	$0	-
7.3.7.4	Tracking and analysis of near miss data	$0	$0	-
7.3.8.1	Allocation methodology development and application	$0	$0	-
7.3.8.2	Risk reduction scenario development and analysis	$0	$0	-
7.3.8.3	Risk spend efficiency analysis	$0	$0	-
7.3.9.1	Adequate and trained workforce for service restoration	$240,000	$502,233	More labor costs than projected.
7.3.9.2	Community outreach, public awareness, and communications efforts	$0	$0	-
7.3.9.3	Customer support in emergencies	$0	$0	-
7.3.9.4	Disaster and emergency preparedness plan	$0	$0	-
7.3.9.5	Preparedness and planning for service restoration	$0	$0	-
7.3.9.6	Protocols in place to learn from wildfire events	$0	$0	-
7.3.10.1	Community engagement	$75,000	$92,084	Actual costs were slightly higher than originally anticipated.
7.3.10.2	Cooperation and best practice sharing with agencies outside CA	$0	$0	-
7.3.10.3	Cooperation with suppression agencies	$0	$0	-
7.3.10.4	Forest service and fuel reduction cooperation and joint roadmap	$0	$0	-
TOTAL		**$30,699,054**	**$33,331,095**	**-**

IV. 2020 WMP INITIATIVE IMPACT ON PSPS

WSD Guidance: Submit a description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope and duration of PSPS events.

A. 2020 WMP Initiative Impact on PSPS Thresholds

Liberty's PSPS thresholds are currently fixed and do not change based on initiative progress. Liberty anticipates that, as these initiatives progress, more data can be used to evaluate wildfire risk reduction impacts. Liberty may find a different way to combine existing fire and weather based threshold modeling with initiative risk reduction.

B. WMP Initiative Impact on Frequency, Scale, Scope and Duration of PSPS Events

Most WMP initiatives generally support Liberty's vision for mitigating PSPS events and customer impacts resulting from PSPS events. Specifically, the combination of covered conductor installations, resiliency corridors, and microgrids will greatly reduce impacts and frequency of PSPS events and service interruptions.

It is important to note that Liberty, in its history, has had only one PSPS event. Since that event, Liberty has taken many steps to establish its PSPS program through the development of protocols, procedures, and the establishment of PSPS thresholds detailed throughout its 2021 WMP Update. The PSPS work over the last two years, in combination with an anticipated increase in fire weather events (i.e. RFW, longer fire season, high winds, etc.), may lead to more frequent use of PSPS in the next 10 years. Therefore, the information presented in Table 2 below evaluates how implementation of Liberty's 2020 WMP initiatives are anticipated to affect a given PSPS characteristic, rather than whether a PSPS characteristic will increase/decrease in the next 10 years when compared to historic use of PSPS.

Table 2: Anticipated Impact of 2020 WMP Initiatives on PSPS Event Characteristics

PSPS characteristic	Anticipated Impact of 2020 WMP Initiatives	Comments
Number of customers affected by PSPS events (total)	Decrease	In time, grid hardening efforts such as covered conductor, microgrids, and the addition of sectionalizing devices will help to reduce the number of customers affected by PSPS.

PSPS characteristic	Anticipated Impact of 2020 WMP Initiatives	Comments
Number of customers affected by PSPS events (normalized by fire weather, *e.g.*, Red Flag Warning line mile days)	Decrease	In time, grid hardening efforts such as covered conductor, microgrids, and the addition of sectionalizing devices will help to reduce the number of customers affected by PSPS.
Frequency of PSPS events in number of instances where utility operating protocol requires de- energization of a circuit or portion thereof to reduce ignition probability (total)	Decrease	Weather is the primary factor that drives PSPS frequency. In time, grid hardening efforts, such as covered wire and microgrids, will eventually lead to higher thresholds for de-energization, which would potentially reduce the frequency of PSPS events.
Frequency of PSPS events in number of instances where utility operating protocol requires de- energization of a circuit or portion thereof to reduce ignition probability (normalized by fire weather, *e.g.*, Red Flag Warning line mile days)	Decrease	Weather is the primary factor that drives PSPS frequency. In time, grid hardening efforts, such as covered wire and microgrids, will eventually lead to higher thresholds for de-energization, which would potentially reduce the frequency of PSPS events.
Scope of PSPS events in circuit- events, measured in number of events multiplied by number of circuits targeted for de-energization (total)	Decrease	The work that results in reducing impact to customers and the frequency of events will also reduce the scope of PSPS events.
Scope of PSPS events in circuit- events, measured in number of events multiplied by number of circuits targeted for de-energization (normalized by fire weather, *e.g.*, Red Flag Warning line mile days)	Decrease	The work that results in reducing impact to customers and the frequency of events will also reduce the scope of PSPS events.
Duration of PSPS events in customer hours (total)	Decrease	Weather events determine the length of time circuits need to be de-energized. If scope and number of customers are being reduced over time, then re-energization time should decrease which is a factor in the duration of PSPS events.
Duration of PSPS events in customer hours (normalized by fire weather, *e.g.*, Red Flag Warning line mile days)	Decrease	Weather events determine the length of time circuits need to be de-energized. If scope and number of customers are being reduced over time, then re-energization time should decrease which is a factor in the duration of PSPS events.

V. 2020 WMP WSD DEFICIENCIES AND LIBERTY CORRECTIVE ACTIONS

WSD Guidance: Submit a summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.

A. 2020 WMP Deficiencies Identified by WSD in 2020

Table 3: 2020 WMP Deficiencies Identified by WSD in 2020

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
Guidance-3, Class A	Lack of Risk Modeling to inform Decision-Making	Liberty established an interim risk modeling approach designed to inform management of various risk factors (tree risk, asset risk, wildfire risk, and performance risk) used to profile risk by circuit and target areas of concern. This modeling approach uses quantitative metrics (asset condition, tracking ignition drivers, and tree hazards) that will also be utilized in the RBDM model. Reax developed a fire consequence model to map Liberty's service territory into 33 sections or polygons that displayed similar wildfire risk profiles. Each polygon was assigned a Reax wildfire risk rating of low, moderate, high, or very high wildfire risk. The Reax model simulated the fire spread impact of hundreds of thousands of ignitions along Liberty's overhead lines using historical weather data, layering terrain and topography maps, fire suppression factors, and population/structure density data to analyze and group areas of concern. Mapped polygons were discussed and evaluated with Liberty's wildfire risk team and the report and maps were completed in October 2020. Liberty utilized Reax maps to compare and present to management the differences between current HFTD ratings with Reax ratings. The Reax wildfire consequence fire model assigned a very high fire risk polygon that completely covered the current HFTD 3 area in South Lake Tahoe. In addition to identifying more areas of concern in South Lake Tahoe, the Reax mapping also identified areas in North Lake Tahoe as high wildfire risk and thus expanded Liberty's area of concern. Management is still processing the effects of this new analysis on current operations and is dedicated to incorporating the expanded regions of increased wildfire risk from the Reax study into work practices. The planned initiatives include and reference the Reax study when applied. Liberty utilized PowerBI to import various data sets including the results of the System Survey and tree inspection and work identified layered with the Reax maps to assess asset risk of failure and tree risk on an interim basis. This analysis visually displays for management areas of highest risk of probability of ignition using asset condition factors and tree risk of falling on power lines until remediation work is complete. Liberty has finished its first generation wildfire risk model as of February 2021.	Mapped polygons and the associated report were completed in October 2020. Liberty finished its first generation wildfire risk model as of February 2021.
Guidance-1, Class B	Lack of risk spend efficiency	Liberty built its wildfire risk model with the support of its wildfire engineering consultant. The wildfire risk model resembles those of the larger IOUs, utilizing methods such as MARS/MAVF and RSE.	

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
	(RSE) information	The following initiatives have RBDM RSEs in place but have not informed decision-making since their completion in February 2021: • Covered conductor • Undergrounding • Targeted G.O.95 intrusive inspection and remediation (replace/repair schedules) • Enhanced vegetation management • Microgrid • Fuse Expulsion Replacement Program • Distribution fault anticipation technology Other initiatives that were evaluated but did not use or have RBDM RSEs include: • Quality assurance/quality control and tree inventory database efforts were considered more foundational to risk reduction and hard to quantify reductions in ignitions. • Asset management and inspection will use RBDM for only the enhanced inspections and remediation work initiative. • Automatic reclosers and weather stations are currently under evaluation but were not modeled. They were evaluated using subject matter expert judgment about the system and budgeting constraints because many of the decisions were made prior to the RBDM wildfire risk model completion.	
Guidance-4, Class B	Lack of discussion on PSPS impacts	Liberty discusses the impact of WMP Initiatives throughout its 2021 WMP Update. Most WMP initiatives generally support Liberty's vision for mitigating PSPS events and customer impacts resulting from PSPS events. Liberty's PSPS thresholds are currently fixed and do not change based on initiative progress. Liberty anticipates that, as these initiatives progress, more data can be used to evaluate wildfire risk reduction impacts. Liberty may find a different way to combine existing fire and weather based threshold modeling with initiative risk reduction.	Liberty filed its 2021 WMP Update on March 5, 2021.
Guidance-6, Class B	Failure to disaggregate WMP initiatives from standard operations	Liberty completed the WSD Performance Metrics Table 12 with the submission of its 2021 WMP Update and Q4 WMP Quarterly Report. Table 12 includes 2020 spend for each WMP initiative and indicates the Memorandum Account used for new WMP initiatives.	Liberty filed its 2021 WMP Update on March 5, 2021.
Guidance-9, Class B	Insufficient discussion of pilot programs	Liberty calculated RSE's related to four of its pilot programs, Distribution Fault Anticipation (DFA), Light Detection and Ranging ("LiDAR") within the Vegetation Management initiative category, the Sagehen Microgrid project within the Grid Topology improvements initiative, and the Covered Wire program. Liberty presents the RSE's in its 2021 WMP Update as Attachment C: WMP	Liberty filed its 2021 WMP Update on March 5, 2021.

Deficiency Number	Deficiency Title	Corrective Actions Taken	Completion and/or Estimated Completion Date
		Risk Spend Efficiency Calculations, as well as in Table 12 of Attachment A. Liberty also discusses its pilot projects within the detailed initiative description section (7.3) of its 2021 WMP Update.	
Guidance-11, Class B	Lack of detail on plans to address personnel shortages	Liberty discusses the workforce requirements for WMP initiative categories in Section 5.4 of its 2021 WMP Update. Liberty provides the metrics it uses to track the effectiveness of its recruiting programs in Section 4.6 of its 2021 WMP Update. Liberty describes the data that is captured as "applicant source information," and provides the percentage of recruits that were working for another California utility immediately prior to being hired in Section 4.6 of its 2021 WMP Update.	Liberty filed its 2021 WMP Update on March 5, 2021.
LIB-1, Class B	Liberty did not describe methods for tracking effectiveness of its covered conductor initiative	Liberty describes its methods for tracking the effectiveness of its covered conductor initiative in its 2021 WMP Update. Liberty is pursuing a targeted approach for its future covered conductor projects that involves the following steps: identify at-risk wildfire areas, gather and organize risk-related data by circuit and analyze data, develop a plan for each circuit, track performance of covered conductor program by circuit or segment using visualization applications. Liberty's project scope and design for all covered conductor projects includes replacing and installing new overhead assets, in addition to new crossarms, lightning arrestors, fuses, and other hardware. The vegetation management group also inspects the proposed line installation route for all capital jobs to evaluate need for additional tree work.	Liberty filed its 2021 WMP Update on March 5, 2021.
LIB-2, Class B	Liberty reports inspection frequencies that raise concerns about effectiveness	Liberty addresses the WSD concern about inspection frequencies in Section 7.3.5 of its 2021 WMP Update.	Liberty filed its 2021 WMP Update on March 5, 2021.

VI. CONCLUSION

Liberty appreciates this opportunity to provide this 2020 WMP Annual Report on Compliance and looks forward to working with the Commission and other stakeholders to advance Liberty's wildfire mitigation planning efforts.

Respectfully submitted,

/s/ Dan Marsh

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March 31, 2021

PACIFIC GAS AND ELECTRIC COMPANY

ANNUAL REPORT ON COMPLIANCE FOR 2020 WILDFIRE MITIGATION PLAN

MARCH 31, 2021

Pacific Gas and Electric Company
Annual Report on Compliance for 2020 Wildfire Mitigation Plan
(March 31, 2021)

I. INTRODUCTION

In compliance with the Wildfire Safety Division's (WSD) *Compliance Operational Protocols* issued on February 16, 2021, (Protocols) and California Public Utilities Code Section 8386.3(c)(1), Pacific Gas and Electric Company (PG&E) respectfully submits its Annual Report on Compliance for its 2020 Wildfire Mitigation Plan (WMP) for the calendar year 2020 (2020 Annual Report). In completing the 2020 Annual Report, PG&E has followed the outline of contents provided by WSD in the Protocols. The specific Protocol requirements are included in italics and bold below in Section II.

The information provided in this 2020 Annual Report is as of March 31, 2021. We are continuing to review and assess our programs and initiatives, including our inspection programs, and, in that process, may identify additional compliance-related information for the 2020 calendar year. To the extent we do identify any compliance-related information, we will notify WSD, the Commission, and parties as soon as possible.

II. RESPONSES TO ANNUAL REPORT ON COMPLIANCE QUESTIONS

a) An assessment of whether the EC met the risk reduction intent by implementing all of their approved WMP initiatives; i.e., the degree to which initiative activities have reduced ignition probabilities;

i. If the EC fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.

PG&E's 2020 risk reduction efforts and intent are linked to our ability to complete our commitments and successfully execute our WMP initiatives. PG&E identified and tracked 38 commitments made in our 2020 WMP that contributed towards our overall 2020 WMP goals to reduce wildfire ignition potential, fire spread, and the impact of Public Safety Power Shutoff (PSPS) events.[1] In summary, we completed or substantially completed 35 of the 38 commitments described in our 2020 WMP and formally revised two more commitments through the WMP Change Order process that are now included in our 2021 WMP. The one commitment that was not completed, substation asset inspections, was recently described in a letter submitted to WSD on March 4, 2021.[2] A summary of the status and performance of all 38 commitments can be found in the Appendix, Table 1, of this 2020 Annual Report. This information is also

[1] *See* 2020 WMP, Executive Summary at pp. 3-18 (describing goals of 2020 WMP). PG&E's 2020 and 2021 WMP are available at: https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc_id=Vanity_wildfiremitigationplan

[2] With a subsequent update letter provided on March 12, 2021.

contained on pages 353 – 363, *Table PG&E-7.2-1: 2020 WMP Commitments and Performance,* of our 2021 WMP, as revised by PG&E's errata submitted on March 17, 2021.[3]

In addition to the details of each of the 38 commitments provided in the Appendix, PG&E is concurrently providing information on all 2020 WMP initiatives in its Quarterly Initiative Update for Q4 2020 (QIU). The QIU contains a quantitative and/or qualitative discussion on the completion of planned work for the more than 130 initiatives included in the 2020 WMP.

The risk reduction anticipated from the 2020 WMP commitments and initiatives was identified in the 2020 WMP through the discussion of initiatives and data provided. The risk reduction targeted and described was achieved through the successful completion of nearly all 2020 WMP commitments and initiatives.

Further, the work completed in 2020 has been incorporated as actual units and dollars into Table 12 of the 2021 WMP. The actual units completed and dollars spent in 2020, shown in Columns S through U of Table 12, are used as inputs into the Risk Spend Efficiencies (RSE) for our activities in Columns I through L. Details can be seen in PG&E's RSE workpapers[4] where PG&E provides details of calculated Risk Reductions achieved in 2020 from each initiative in tab 'RSE Results.'[5] Details of the risk reduction methodology are provided in the RSE Lite Methodology WMP 2021.pdf document that was included as part of the RSE workpaper package with PG&E's 2021 WMP.

b) A full and complete listing of all operational changes made to WMP initiatives, an explanation of why the changes were necessary, and an assessment of whether the changes achieved the same risk reduction intent;

PG&E's 2020 work on wildfire mitigation and risk reduction are best documented by a review of our tracking of the 38 commitments from the 2020 WMP and our QIU, which is being provided concurrent with this 2020 Annual Report. With regard to the 38 commitments, 33 were completed as originally planned. The remaining 5 commitments were either formally changed through the WMP Change Order process, substantially completed, or missed. We address each of these 5 commitments in more detail below.

PG&E's QIU provides an overview of our annual targets and progress on initiatives described in our 2020 WMP, including any changes to the initiatives that occurred in 2020. The QIU also describes a 2020 delay associated with performing pole loading assessments at a rate of approximately 230,000 poles per year in High Fire Threat District (HFTD) Tier 2 and Tier 3 locations through 2024. While the Pole Loading Assessment program fell behind the annual forecasted rate of completion in 2020, the program is still on-track to finish assessments on all

[3] PG&E's 2019, 2020 and 2021 WMPs and related documents, including the 2021 WMP Errata, are available at www.pge.com/wildfiremitigationplan

[4] *See* 2021 WMP, 2021WMP_Section7.3_Atch01 workpapers.

[5] Please note that for certain initiatives, risk reduction benefits extend through multiple years and are discounted and aggregated together as a net present value.

poles in Tier 2 and Tier 3 HFTD areas by the end of 2024 as originally forecasted. The QIU also describes some of the 2020 WMP initiatives that are still in progress.

1. Commitments Missed

Substation Asset Inspections: On March 4, 2021, PG&E submitted an update to WSD on our 2019 and 2020 WMPs where we self-identified an error discovered in the course of our asset management improvement processes. In 2020, we missed enhanced inspections on 24 hydroelectric substations in Tier 3 HFTD areas, as well as enhanced inspections on a portion of the 39 hydroelectric substations in Tier 2. As a result, the status of the substation asset inspection commitment has been revised from "completed" (in prior reporting on the 2020 WMP commitments including our January 29, 2021 Quarterly Advice Letter[6]) to "missed." Since our self-identified errors, we have completed remedial inspections on all the hydroelectric substations (24 Tier 3 and 16 Tier 2)[7] and all generated A tags associated with the remedial inspections were repaired as of March 19.[8] We are also completing a root cause evaluation to assess how these assets were missed and to prevent a recurrence of similar issues in the future.

Pole Inspections: In addition to substation inspections, PG&E is currently investigating pole inspections which occurred during calendar year 2020 to determine whether these inspections were performed consistent with the 2020 WMP commitments and initiatives. Once that investigation is complete, to the extent necessary, we will update the 2020 Annual Report to reflect additional information learned during the investigation.

2. Commitments Subject to Change Orders

PG&E made two changes to 2020 WMP Commitments through the WMP Change Order process, both of which involved new technology implementation efforts that ran into software/firmware challenges.

Sensor IQ: The Change Order submitted on September 11, 2020, revising the implementation timeline for the Sensor IQ project (referenced in Section 5.3.2.2.6 of our 2020 WMP[9]) was approved by WSD on January 5, 2021. As was described in our Change Order, the Sensor IQ Pilot was originally expected to utilize Sensor IQ data deployed on 500K Smart Meters™ in Tier 2 and 3 HFTD areas before the start of wildfire season to explore the development of improved preventative maintenance analytics to detect system anomalies, potential equipment failure, and ignition sources by December 31, 2020. Due to incompatibility issues identified between the firmware version currently installed on the Smart Meters™ and the Sensor IQ software, PG&E

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[6] *See* Advice Letter 6068-E dated January 29, 2021 at p. 12.

[7] PG&E updated WSD on progress via a letter on March 12 that notified WSD of the completion of the Tier 3 inspections and repair tags, as well as the fact that we had found the records that confirmed that inspections had been performed on five distribution poles originally included in the March 4 letter.

[8] We targeted inspections on 16 hydroelectric substations located in Tier 2 HFTD areas to ensure alignment with the Tier 2 inspection frequency requirement of once every three years or approximately 33%.

[9] 2020 WMP at p. 5-94.

determined that it was technically infeasible to deploy the originally planned version of the Sensor IQ tool to PG&E's Smart Meters™.

With the delay in the Sensor IQ deployments described above, there will be an associated delay in conducting a strategic assessment to understand what operational value can be derived using granular load, voltage, and outage data collected by the Sensor IQ technology to improve preventative maintenance analytics to detect system anomalies, potential equipment failure, and ignition sources. Since the use cases for this data are unknown until a strategic assessment is conducted, the potential impact of the revised timeline for this initiative is also unknown, including any impacts on ignition probability or PSPS risk reduction outcomes.

Partial Voltage Detection: The Change Order submitted on December 11, 2020, for the Partial Voltage Detection project (referenced in Section 5.3.2.2.3 of our 2020 WMP[10]) was approved on January 28, 2021. As was described in our Partial Voltage Detection Change Order, PG&E planned to deploy Partial Voltage Detection software to an additional 365,000 Three-Phase SmartMeters™ (in addition to the 4.5 million single-phase SmartMeters™ where it has already been deployed) before the 2021 WMP Annual Update. However, during the initial deployment of Partial Voltage Detection firmware to 1,000 in-service meters a technical, product issue arose that impacted the reliability of billing reads coming from the SmartMeters where this firmware was been deployed. This issue did not present itself during extensive testing of firmware in PG&E's test environments, but prevented further, large-scale deployment of the firmware as doing so may impact PG&E's ability to provide timely billing information to impacted customers. As discussed in the 2021 WMP, this technology is now anticipated to be installed on all targeted meters by the end of June 2021.[11] This delay in the Partial Voltage Detection firmware deployment may drive an associated delay in the ability to detect and locate downed distribution lines more quickly to enable faster response to wire down situations or potential wire down-related ignitions if they occur. However, PG&E anticipates that the delay will have minimal impact on the overall wildfire risk mitigation objectives because we still expect to have the capability in place before the majority of the 2021 Wildfire Season.

3. Commitments Substantially Completed

Commitments that were substantially completed include the Remote Grid new technology deployment effort (referenced in Section 5.1.D.3.8 of our 2020 WMP[12]) and the PSPS restoration initiative (referenced in Section 4.1 of our 2020 WMP[13]). These commitments are described in more detail below.

Remote Grid: This new technology deployment commitment was substantially completed in 2020. The primary objectives of learning through the development of actual projects were accomplished and are outlined below. One program component experienced delays: "Deploying the 4-8 initial sites." At the end of 2020, PG&E had five (5) Remote Grid sites in the advanced

[10] 2020 WMP at p. 5-91.

[11] 2021 WMP at pp. 440-441.

[12] 2020 WMP at p. 5-19

[13] 2020 WMP at p. 4-1.

stages of deployment, with the first project forecasted to begin operations in 2021. These projects were primarily delayed by permitting constraints associated with sensitive species. This initiative has been identified as Substantially Completed given the successful completion of the primary goal of learning about remote grid applications given the focus of this initiative as a new technology deployment effort.

From the work completed on this initiative in 2020 PG&E learned:

- That the technology combination of Solar Photovoltaic Generation and Battery Energy Storage with supplemental Propane Generators is the most cost-effective, reliable, and cleanest solution for initial Remote Grid sites.

- There was sufficient initial vendor interest and availability to engage in contracting to deploy systems with specifications and terms responsive to PG&E's requirements.

- That Remote Grids are a viable solution that can contribute to our wildfire risk mitigation efforts by allowing us to completely eliminate miles of overhead powerlines in HFTD areas by deploying Standalone Power Systems (SPSs) to serve customer meters.

- A number of site-specific conditions can reduce individual project feasibility or delay implementation. Examples include customer acceptance, physical space constraints, shading, and other constructability-related considerations such as grading and geological conditions, permitting challenges such as the presence of threatened species, cultural heritage, or adjacency to a scenic highway.

- The parameters of an appropriate "Terms of Service" which have been drafted into a form of Supplemental Provisions to the Electric Rules, as a tariffed form agreement. The proposed form of Supplemental Provisions Agreement was filed with the Commission in Advice Letter 6017-E on December 15, 2020. Commission approval of this Advice Letter will be a key enabler of scaling up this wildfire risk reduction approach.

- The terms and elements that were developed into reusable contract templates for (1) the SPS Purchase and Sale Agreement and (2) the Maintenance Agreement. These documents can standardize and streamline Remote Grid engagements going forward.

- The technical specifications that have been iteratively refined through the detailed design of the in-flight projects. These specifications can be used to standardize and streamline the Remote Grid design process going forward.

Leveraging the learnings from the 2020 Remote Grid initiative, PG&E has been developing additional projects which will follow in 2021 and 2022. These projects will draw on the lessons learned referenced above to enable the scale-up of this new solution for reducing wildfire risk in

applicable locations. A more detailed discussion of how these lessons learned are being reflected in PG&E's remote grid efforts going forward is included in our 2021 WMP.[14]

PSPS Restoration: In preparation for 2020 PSPS events, PG&E increased its exclusive use helicopter fleet from 35 to 65 helicopters and prepared two fixed-wing aircraft to support PSPS restoration inspections. In 2020, PG&E executed a total of six PSPS events (in September, October, and December). Our restoration improvement efforts made events significantly shorter in duration in 2020 with an average restoration time after the weather "all-clear" of approximately 10 hours, which represented a more than 40% improvement over the 2019 performance of approximately 17 hours. So while we achieved our overall goal of improving PSPS Service Restoration and making PSPS events shorter, we did not achieve one target within this initiative of restoring 98% of customers within 12 daylight hours of the weather "all-clear", our performance on this measure in 2020 was 96%.

The primary factor that impaired our ability to attain the 98% restoration target was the heavy smoke created by on-going fires during the first PSPS event of 2020 (the September 7th event) which prevented PG&E from safely flying helicopters to perform restoration inspections as planned. The limited visibility made it such that only 28 of the 60 ready helicopters were able to fly. This forced a shift of planned aerial inspections to instead be executed by slower, ground-based inspections. This ultimately drove 91% performance for that one event, impacting overall performance for the year. A secondary factor was the large geographic breadth of the October 25th PSPS event which stretched restoration teams and resulted in 96% restoration with 12 daylight hours of the weather "all-clear" for that event. In total, 2020 performance fell short of this target by about 2%, with 96% restored within 12 daylight hours, or by about one hour, with 98% of customers across all 2020 events having been restored within 13 daylight hours.

This initiative has been identified as Substantially Completed given the successful completion of our overall initiative goal of making PSPS events shorter for impacted customers, with an over 40% faster average restoration time, despite the disruption described above that, prevented full completion of one portion of this commitment.

c) Descriptions of all planned WMP initiative spend vs actual WMP initiative spend and an explanation of any differentials between the planned and actual spends;

PG&E is providing as an attachment to this 2020 Annual Report the details of all 2020 forecast WMP initiative spend versus actual 2020 WMP initiative spend.[15] The primary variance drivers (such as Volume, Unit Cost, Initiative Realignment, or MAT Code Realignment) are identified and explained in Columns L-R (for expense) and Z-AF (for capital) of the attachment.

Maintenance Activity Type (MAT) codes identify and capture a single category of work as PG&E budgets, tracks, and manages our various utility operations programs. WSD-defined initiatives generally do not line up exactly with the MAT code structure PG&E uses to track our work, therefore there are a number of MAT code to initiative relationships incorporated into our

[14] 2021 WMP at pp. 573-577.

[15] *See* PGE_2020 ARC_20210331__2020 Variance Explanations.xlsx.

WMP financial data. There are situations where one MAT code is broken into multiple WMP initiatives or where multiple MAT codes combine into one WMP initiative. Due to these relationships, MAT code to WMP initiative realignment can occur based upon changes to the WMP Initiative structure and/or PG&E subject matter expert feedback. As a result, PG&E realigned certain programs from the 2020 WMP to the 2021 WMP to tie back to the described work and outcomes of the initiatives. The impact of these changes on the financial results is identified in the "MAT code or Initiative Realignment" column of the attachment.

d) A description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope, and duration of PSPS events.

PG&E worked to make PSPS events smaller, shorter, and smarter for our customers and communities in 2020. Those efforts were largely successful as the six PSPS events in 2020 were, in aggregate, 55 percent smaller than those PSPS events would have been in 2019 had the same weather patterns occurred. PG&E also succeeded in making PSPS events shorter as we reduced the average time to restore power once the severe weather cleared by more than 40 percent.

Changes in threshold(s) for triggering PSPS events and reduced frequency:

- Improvements to our PSPS criteria and meteorology tools in advance of the 2020 PSPS season contributed to reducing PSPS event frequency. PG&E executed nine PSPS events in 2019, but the historical analysis of events incorporating the improvements made in 2020 shows that potentially only four of these events would have been executed using PG&E's improved situational awareness, meteorology tools, and 2020 threshold values and tools.

- A key improvement involved moving from a 3 kilometer (km) by 3 km to 2 km by 2 km granularity on our meteorology model. The magnitude of these improvements translated into a reduction in the number of PSPS events.

Reduced scale and scope:

- The deployment of over 600 automated sectionalizing devices (on both the distribution and transmission system) allowed PG&E to more narrowly target PSPS events to the areas where severe weather occurred in 2020. In conjunction with the additional devices, the PG&E Distribution Circuit Segmenting guides utilized for "segmenting" circuits during PSPS events were updated to a more-targeted, individual, circuit-based approach. This effort also supported the more detailed meteorology event boundaries which reduced the number of customers impacted and sped up restoration times.

- The additional devices and above mentioned segmenting guides allowed distribution field personnel to streamline the PSPS event execution process by having the ability to more readily obtain both the segmentation guides and maps on circuits deemed

within scope rather than the lesser level of detail used previously (often at the Fire Index Area level).

- The deployment of temporary microgrids at the local and substation levels, with the use of Temporary Generation resources, also allowed PG&E to keep "safe to energize" customers in power while nearby locations were impacted by PSPS events.

- Overall, through the meteorology and situational awareness improvements and the implementation of these event execution improvements, PG&E targeted making 2020 PSPS events impact 33% fewer customers than would have impacted by the same weather patterns in 2019. Instead, the multiple actions we took were successful in reducing customers impacted by 55%, meaning that over 800,000 customers did not experience a 2020 PSPS event that would have been impacted in 2019.

Duration:

- The above activities to reduce the scope and more specifically target PSPS events also contribute to being able to restore power more quickly once the severe weather event passes.

- Based on the improved PSPS event targeting, and through the acquisition of additional aerial assets (helicopters and fixed-wing aircraft), PG&E restored power more than 40% faster in 2020 after the severe weather passed, as compared to 2019. On average post-PSPS inspections were completed and power was restored for customers 10 hours after the weather "all clear" in 2020, as compared to 17 hours in 2019.

e) A summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.[16]

1. Inspection Reports

The WSD began inspections in May of 2020. During the 2020 compliance period, the WSD provided a total of 108 inspection reports for inspections on 558 PG&E assets, both in HFTD and non-HFTD areas. From the 558 asset inspections, WSD reported a total of 149 defects. A monthly breakdown of defect findings is shown below in Table 1.

Table 1: Total of Monthly Defects Identified by WSD

May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
15	22	22	19	33	21	6	11	149

In response to each defect finding, PG&E took the following actions:

[16] For purposes of this portion of the 2020 Annual Report, PG&E understands a "defect" to be a defect identified in an Inspection Report or Audit Report. *See* Protocols at pp. 11-12.

1. Sent a crew to assess the field condition and remediate findings as warranted.

2. Reported the field conditions and any remaining conditions requiring follow-up to a central compliance team.

3. The compliance team prepared and submitted a response to WSD.

Responses explaining PG&E's disposition of defect findings and relevant corrective actions were provided back to WSD generally within ten (10) business days. PG&E utilizes our Corrective Action Program (CAP) database to track corrective actions and commitments made in the inspection responses to the WSD. The corrective action resolution timeline for the defects identified during WSD inspections is based on the severity of each defect finding. For defect findings identified in the reporting period (May – December 2020), WSD did not identify the severity of the defects.[17] Therefore, in the response to WSD findings, we provided estimated completion dates in alignment with our existing electric corrective tag prioritization approach.

a. Summary of findings

The corrective action status of the 149 defects is summarized below. Please see attachment PGE_2020 ARC_20210331_WSD ARC Tracker.xlsx for further details on the defects identified in 2020, the corrective actions taken, and the completion or estimated completion dates.

At a high level, the 149 defect findings from WSD resulted in the following actions[18]:

- 63 defect findings have been remediated in the field. PG&E has confirmed the remediation through the creation and closure of a work order or electric corrective (EC) notification, and/or capturing photos validating that the asset is compliant.

- 36 defect findings did not require any corrective action by PG&E

    - 6 defects resulted in Third-Party Notifications (TPN) where the asset in question is actually owned and operated by a third party (often a telecommunications or cable company). PG&E has notified the third party of the concern. An example would be a defect regarding a down guy (vegetation contact) where, upon inspection, it was determined that the down guy is owned by a third party. PG&E completes a TPN and sends it to the third party to inform the third party of the non-conformance.

    - 30 defects were reviewed by PG&E and determined the conditions identified did not meet the WSD's definition of a defect and therefore no action is required. PG&E leveraged the following processes to arrive at this determination:

[17] WSD started providing "defect severity" classifications in its inspection reports starting in February 2021.

[18] This data on the 2020 defect findings is accurate as of March 24, 2021 and is continuously updated.

i. Field site visits (9) – PG&E subject matter experts performed a follow-up inspection and found no defect. For example, Inspection Report AS-PGE-022 identified a tree that appeared hazardous due to the color of the subject tree and the surrounding trees being green. PG&E performed a site visit and determined that the subject tree is a Madrone species that sheds during the summer and had no signs of disease/dying. PG&E also noted that there appeared to be significant summer leaves on the ground in the vicinity of the subject tree due to a customer in the area performing tree clearing. Due to the reasons presented above, PG&E identified that the tree does not present a hazard at this time.

ii. Clarifying rule interpretations (13) – WSD identified a General Order (GO) 95 defect, but PG&E clarified with a subject matter expert that the rule does not apply in this case. For example, Inspection Report AS-PGE-015 involved an alleged defect regarding missing visibility strips. GO 95, Rule 56.9 requires installation of "substantial markers of suitable material…. To all anchor guys" but contains no requirements for visibility strips. As noted in the inspection report, this location does have a guy marker. Regarding visibility strips, PG&E's Overhead Inspection job aid TD-2305M-JA02, expands upon requirements for guy markers by specifying that visibility strips shall be installed on guy markers located within 15 feet of the paved surface or 15 feet from the edge of the traveled, unpaved portion of the city or county roads were not protected by curbs. Since the closest roadway to this pole is more than 15 feet away, visibility strips are not required on this guy marker.

iii. Scheduling of Enhanced Vegetation Management (EVM) work in progress (8) – WSD identified defect findings for locations where PG&E had not yet planned and completed EVM work. For example, Inspection Report MJ-PGE-026 identified trees that had not been worked per the EVM program. However, the EVM-related findings identified by the WSD consist of vegetation work that was not included in the 2020 EVM plan, and thus did not meet the definition of a defect.

- 50 defect findings are pending and awaiting remediation:
    - 31 defects had been previously identified as requiring work and had existing EC notifications that were created as part of PG&E's inspection and maintenance program. The defects will be worked in accordance with GO 95 timeline requirements and PG&E's prioritization of identified corrective action tags.

- 11 defects resulted in the creation of a priority "E" or "F" EC notification and will be worked in accordance with GO 95 timeline requirements and PG&E's prioritization of identified corrective action tags.[19]

- The remaining 8 defects involve the following:

  - Remediation of communication wires that do not meet the minimum clearance requirements. PG&E will be sending out a contracting crew to adjust the clearances to align with GO 95, Rule 54.4 G.

  - PG&E identified a design flaw regarding covers that were improperly installed on conductors and taps. PG&E is evaluating the engineering of the cover to determine if changes need to be made to the construction process.

PG&E is prioritizing these 50 defects in its work plan for 2021 and anticipates completing all open defect findings by August 31, 2021.

b. Implementation of the WSD Compliance Operating Protocols and Guidance

In February 2021, WSD issued the Compliance Operating Protocols and Guidance. The Compliance Operating Protocol established severity and resolution timelines. PG&E is aligning its process, much of which is described above, to adhere to these resolution timelines based on severity. PG&E is also preparing closure packages to provide documented evidence of remediation to WSD including work completion documentation, pictures, and other documentation. PG&E will continue to work with WSD to address their findings in accordance with their established timelines and reach a consensus on the closure of the defects. PG&E recognizes that the WSD inspection process is new, and we are committed to working collaboratively with WSD to comply with the operating protocols and to satisfactorily resolve each defect.

2. Audit Reports

PG&E received one Audit Report from WSD related to the implementation of the 2020 WMP: the *Audit of PG&E's Implementation of their Enhanced Vegetation Management Program in 2020* (EVM Audit Report). PG&E provided a response to the EVM Audit Report on February 23, 2021, and an update on March 2, 2021. PG&E's responses describe the defects identified in the EVM Audit Report, the corrective actions taken, and the completion or estimated completion of those actions.

3. 2020 WMP Deficiencies and Action Items

[19] With WSD-provided defect severity classifications being issued beginning in February 2021, the 2020 defect findings that are the subject of this report were scheduled and prioritized based on existing prioritization guidelines. Examples of E and F notifications include the replacement of a high voltage sign and the adjustment of a slack guy wire.

In response to our 2020 WMP, WSD identified a number of "deficiencies" identified as Class A, Class B, and Class C deficiencies that we addressed in a Remedial Compliance Plan submitted on July 27, 2020, our Quarterly Reports which were submitted on September 9, 2020, December 9, 2020, and February 5, 2021 and our 2021 WMP filed on February 5, 2021.

After evaluating our Remedial Compliance Plan and First Quarterly Report, on December 30, 2020, and January 8, 2021, respectively, WSD identified a total of 123 Action Items for follow-up. This additional feedback has been helpful in shaping our 2021 WMP. The 2021 WMP addresses 38 of the 39 Actions Items that WSD identified after reviewing our Remedial Compliance Plan. Our 2021 WMP also responds to the majority of the 84 Actions Items identified by WSD that related to the First Quarterly Report. Section 4.6 of PG&E's 2021 WMP[20] lists all of the 2020 WMP deficiencies as well as the Action Items and explains the resolution of each and/or a reference to where the resolution is described.

Finally, on February 26, 2021, PG&E provided a supplemental filing that responded to all of the remaining Action Items identified from the WSD's review of the Remedial Compliance Plan and First Quarterly Report.

III. CONCLUSION

PG&E appreciates the opportunity to submit this 2020 Annual Report to provide a summary of its compliance with the 2020 WMP. As outlined above and described in PG&E's 2021 WMP, much progress has been made but much more work remains to be done. Through the implementation of our 2019 and 2020 WMPs lessons have been learned, improvements have been identified and we continue to refine and grow our wildfire risk mitigation efforts. PG&E looks forward to continuing to work with the Commission, WSD, communities, customers, and other stakeholders on developing, implementing, and improving programs and initiatives that reduce the risk of catastrophic wildfire throughout our service territory.

[20] *See* 2021 WMP at p. 156.

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
	deploy 0.67 km forecasts on demand, and deploy a high-resolution model ensemble package with 8 model members at 2 km	PG&E's 2KM model is run 4 times per day. On-demand simulations and vendor-hosted training have been completed. The 8-member model
		PG&E has incorporated NOAA-20 data into the existing fire detection workflow
	Develop and deploy a (2 to 4 week) Diablo wind event forecasting system based on statistical, machine learning and/or artificial	An internal long-range diablo wind forecast was created internally by Meteorology. This was done after analysis of teleconnections against Diablo the potential for an increased or decreased risk of diablo winds. This forecast

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/"At Risk" or "Substantially Complete, if after due date"; Red = >one month behind plan / "High Risk" or "Commitment Missed, if after due date."

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[a]	WMP Commitment	Summary of 2020 Performance
B.4 Wildfire Spread Model – Operational Impacts	PG&E will evaluate incorporating the fire spread model consequence into decision support frameworks including PSPS	Phase 2: Implementation of territory-wide fire risk, probabilistic fire spread modeling, improved urban encroachment into WUI areas and improved fire spotting algorithm was all completed in May 2020. Phase 3: CalFire validated this technology in 2019 with a pilot project and is likely to move forward with state-wide fire spread solution; improvements with Technosylva scoped for 2020. PG&E has evaluated and sees value in incorporating fire spread outputs directly into PSPS decision making going forward
B.5 Live Fuel Moisture (LFM) Sampling	Conduct LFM sampling utilizing Safety and Infrastructure Protection Team (SIPT) resources. Targeting samples from 10 locations by 06/01, and 15 additional sites by 9/01 for a 2020 total of 25	As of the end of September 25 sites (not counting two sites that were established but lost due to wildfire damage) are actively being sampled by SIPT crews. Sampling will be done on the 1st and 15th of each month going forward.
B.6 Re-calibrate the OPW and FPI models	Reproduce 30-year weather and fuel moisture climatology at the same 2 km resolution and model configuration as the enhanced operational POMMS model. Re-calibrate the OPW and FPI models using the new 2 km historical dataset	The 30-year climatology production of weather, DFM and LFM was entirely completed by 10/1.

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/"At Risk" or "Substantially Complete, if after due date"; Red = >one month behind plan / "High Risk" or "Commitment Missed, if after due date."

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[a]	WMP Commitment	Summary of 2020 Performance
B.7 SmartMeters™ - Partial Voltage Detection	Deploy 365,000 Three-Phase Smart Meters™ and extend the partial voltage detection enhancement to 3-phase Smart Meters™ and 4-Wire Distribution systems	Technical issues identified in November drove delays in product deployment. A Change Order was submitted on 12/11/20 informing CPUC change in deployment timing and was approved on 1/28/21. PG&E received a proposed firmware fix at the beginning of February 2021, we will test the new firmware and deploy firmware to field meters upon successful certification. PG&E expects to have Partial Voltage Implementation in place on Three Phase meters in June 2021.
B.8 Smart Meters™ – Sensor IQ Pilot Deployment	Deploy Sensor IQ pilot to 500K Smart Meters™ covering ~25,597 distribution line miles in HFTD and customize reads and alarms to identify service transformer failures	A vendor product issue and technology constraints in the current datacenter necessitated change in deployment timing. A Change Order submitted to WSD on 9/11 was approved 1/5/21. Deployment of Sensor IQ profiles to field meters began in January 2021. PG&E plans to complete the full program scope of 500K meters in 2021.

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/"At Risk" or "Substantially Complete, if after due date"; Red = >one month behind plan / "High Risk" or "Commitment Missed, if after due date."

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
B.9 High-Definition Cameras Deployment	Deploy an additional 200 cameras by December 31, 2020	216 cameras were installed, 16 units ahead of the target.
B.10 Weather Stations	Install 400 weather stations in 2020	404 stations were installed, 4 units ahead of the target
C.1 SCADA Transmission Switching (switches)	Install 23 SCADA transmission switches to provide switching flexibility and sectionalizing for PSPS events	54 SCADA Switches installed in 2020; 39 by 9/1 exceeding the 9/1 target of 23 to support 2020 PSPS events
C.2 Distribution Segmentation **(automated devices)**	Enhance distribution segmentation by adding 592 automated sectionalizing devices by 9/1/20	603 devices commissioned by 9/1, exceeding the target
	Deploy 4-8 initial sites to validate use cases, design standards, deployment processes and commercial arrangements and deliver	Commitment substantially complete. The primary objectives of learning through the deployment of actual projects have been completed. Five Remote Grid sites are currently in the advanced stages of deployment, with the first forecast to be operationalized in 2021, primarily delayed by challenging permitting constraints associated with sensitive species.

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/"At Risk" or "Substantially Complete, if after due date"; Red = >one month behind plan / "High Risk" or "Commitment Missed, if after due date."

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
C.6 System Protection (surge arresters)	Replace 8,850 non-exempt surge arresters with exempt surge arresters in Tier 2 and Tier 3 HFTD areas in 2020	10,263 non-exempt surge arresters were replaced (Installed and QA verified) in Tier 2 and Tier 3 HFTD areas in 2020.
C.7 System Protection deploy DCD (reclosers)	Based on High Impedance Fault Detection pilot results, deploy newer protection capabilities Downed Conductor Detection (DCD) to 100 reclosers in Tier 2 & 3 HFTD	PG&E had 126 reclosers within Tier 2 & 3 fire areas with DCD enabled to alarm for a wire down condition by the end of June, exceeding the target of 100.
C.8 Rapid Earth Fault Current Limiter (REFCL) Pilot	REFCL demonstrations are planned to begin in 2020 on operational assets to test its capabilities.	All pieces of the REFCL system have been installed (construction completed for both all substation and distribution line equipment) to support in-field testing and evaluation of the REFCL Technology.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[a]	WMP Commitment	Summary of 2020 Performance
	Refining Criteria for Hardened Distribution Includes, simulate OH performance using	Calibration of the criteria with PSPS tools is complete. The criteria were applied during the 10/25 PSPS event, to simulate the application of the
		342 miles completed
C.11 Butte County Rebuild **(UG de-energized miles**	Butte County Rebuild; 20 miles in 2020 (noted as tracking separately from other 221 miles)	Completed 21.3 WMP miles, exceeding the 20-mile target
C.12 Expulsion Fuse Replacement (non-exempt equipment)	Continue implementing the non-exempt fuse replacement program at a forecast rate of 625 fuses/cutouts per year.	643 Non-Exempt Fuses replaced in 2020
Pilot	both transmission and distribution	PG&E's ATS Team completed the pilot, produced summary conclusions, and received and reviewed a 3rd party vendor validation report

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
D.2 Distribution HFTD Inspections (poles)	Perform detailed overhead inspections on 100 percent of HFTD Tier 3, and 33 percent of HFTD Tier 2 Distribution assets	Completed all targeted inspections, 100 percent of Tier 3 and 33 percent of Tier 2, with 339,728 distribution structures inspected in 2020.
D.3 Transmission HFTD Inspections (structures)	Perform detailed overhead inspections on 100 percent of HFTD Tier 3, and 33 percent of HFTD Tier 2 Transmission assets	Completed all targeted inspections, 100 percent of Tier 3 and 33 percent of Tier 2, with 26,282 transmission structures inspected in 2020.
D.4 Substation HFTD Inspections (substations)	Inspections once annually for all HFTD Tier 3 stations, on a three-year cycle for stations in HFTD Tier 2	Completed inspections on electric transmission and distribution substations: 100% of Tier 3 and ~33% of Tier 2; As reflected in the March 4, 2021 letter entitled "PG&E 2019 and 2020 Wildfire Mitigation Plan Update", PG&E did not complete full detailed inspections on 100% of Tier 3 and ~33% of Tier 2 power generation switchyards.
E.1 EVM (line miles)	In 2020, complete and validate an additional 1,800 EVM circuit miles on distribution lines in HFTD areas	1,878-line miles completed and validated
F.1 SIPT Crews and Engines Resourcing	Increase staffing to budgeted level of 98 STIP crew members and place 40 Engines, and maintain SIPT Viewer daily usage rate of 90 percent	Target exceeded with 42 engine trucks operational, 102 STIP crew members staffed and a SIPT Viewer daily usage rate at the end of May of 91 percent.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
F.2 Protocols for PSPS Re-Energization[1]	Update standard (TD-1464B-002) to include latest meteorology inputs, update the existing DCC Operator training materials to incorporate revisions to the standard, and confirm that required PG&E personnel	Completed all phases: (1) standard updated, (2) DCC operator training materials finalized and released in June, (3) all DCC operators completed training, and (4) all needed employees (over 10,000) completed TD-1464S
F.3 Removal of TripSaver Auto-Reclosing Functionality		All 273 devices in scope were either replaced or had auto-reclosing functionality removed prior to June 1, 2020
	Finalize TD-1464B-002, perform field and / web-based training to prepare utility personnel to restore services after	Completed all phases: (1) standard updated, (2) performed field and

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[a]	WMP Commitment	Summary of 2020 Performance
I.2 PSPS - Service Restoration	PG&E has adopted a new goal of conducting safety patrols and restoring service to 98 percent of PSPS-affected customers within 12 daylight hours of the weather "all-clear" declaration.	Commitment substantially completed for the year. Aerial assets acquired as planned. Total average restoration time after the "all-clear" reduced by more than 40% from 2019. Goal of 98 percent restoration within 12 daylight hours nearly achieved with 96% performance. Driver of performance was (1) heavy smoke during the first PSPS event of 2020 (9/7) such that only 28 of 60 helicopters were able to fly, driving ~91 percent performance for that event; and (2) the 10/25 PSPS event taxed restoration teams due to its geographic breadth, driving 96 percent performance for that event.
I.3 PSPS Customer Impact Mitigation	Mitigate PSPS customer impacts by using 1) advanced meteorology tools to forecast wildfire risk conditions, 2) apply improved analysis on system facing high fire risk, and 3) improving switching / sectionalizing, to affect smaller portions of the grid.	All three phases completed: (1) completed in alignment with commitments B.1 "Upgraded POMMS Model" and B.2 "NOAA-20 Satellite Data" advancing meteorology forecasting tools. (2) Completed and improved analysis was utilized in the approved 2020 guidance for T&D PSPS decision making. (3) Switching / sectionalizing goals completed as of 9/1/20 with 603 distribution sectionalizing devices and 36 transmission switches completed, exceeding targets.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
	Community Based Organizations (CBOs) and multi-cultural media partners that have existing relationships and serve disadvantaged and/or hard to reach communities to provide in-language /	organizations that serve various groups within the AFN community to share information about PSPS preparedness. Overall a total of 250 CBOs and 36 multicultural media organizations agreed to share PG&E awareness & preparedness messages with their consumers / network before and / or
I.5 CERP (Update and Publish)		2020 CERP updated and published with final 2020 revisions completed and published in October.
I.6 Microgrids for PSPS Mitigation **(operationalized units)**	Mitigate the customer impacts of PSPS through permanent and temporary front-of-the-meter microgrid solutions	Target achieved through multiple microgrid tools available to support PSPS event mitigation: 1) 392 MWs of temporary generation reserved and available to be deployed to mid-feeder microgrids or substations that are safe to energize during 2020 PSPS events 2) 6 temporary microgrids operational for 2020 PSPS events 3) 60 substation sites made Operationally Ready or ready to receive temporary generation and energize safely within 48 hours of need to deploy prior to a PSPS event

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments[(a)]	WMP Commitment	Summary of 2020 Performance
	Mitigating Impacts on De-energized Customers during PSPS through 24/7 Information Updates. PG&E's website and	De-energized Customers during PSPS received 24/7 Information Updates
		PG&E had 362 event-ready outdoor and indoor CRC sites available to support PSPS events as needed in 2020.

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San Diego Gas & Electric Company
2020 Wildfire Mitigation Plan
Compliance Report

March 31, 2021

A Sempra Energy utility®

Table of Contents

I. Introduction

Wildfire safety, prevention, mitigation, and recovery are central priorities for SDG&E. On February 6, 2019, in accordance with the January 17, 2019 Ruling of Administrative Law Judge Thomas[1] and California Senate Bill 901,[2] San Diego Gas & Electric Company (SDG&E) filed its first Wildfire Mitigation Plan (WMP or Plan). Consistent with state law and objectives, SDG&E's WMP was founded upon the goal of minimizing the probability that various components of SDG&E's electric system might become the original or contributing source of ignition for a wildfire. On February 7, 2020, SDG&E submitted its 2020 Wildfire Mitigation Plan, in accordance with updated guidance from the California Public Utilities Commission (CPUC) and the Wildfire Safety Division (WSD).[3] The programs, initiatives, and plans described in SDG&E's 2020 WMP highlight many of the efforts SDG&E has made and will continue to make to mitigate the risk of catastrophic wildfire and the customer impacts of Public Safety Power Shutoff (PSPS) events.

In 2020, SDG&E implemented and tracked progress of 81 different mitigations outlined in its 2020 WMP. Progress on these mitigations is reported through 43 quantitative and 51 qualitative metrics. SDG&E's mitigations involve a wide-array of topic areas such as inspection and maintenance programs, infrastructure replacement programs, and vegetation management programs, all aimed at mitigating the risk of ignitions due to a fault on the electric system. Additional topic areas include situational awareness, which informs SDG&E's risk models and helps prioritize infrastructure replacement, and strategies and tools for real time decision making during emergency response or PSPS events. SDG&E also has mitigations that reduce the impact of a wildfire once an ignition has occurred, including high-definition cameras, ground and aerial fire suppression resources, and a fuels management program. In addition, SDG&E has implemented mitigations to the customer impacts associated with PSPS events, including the installation of sectionalizing devices to limit the customer impact, additional weather stations, generator grant programs, microgrids, Community Resource Centers (CRC) during PSPS events, and SDG&E's customer outreach programs.

Pursuant to Public Utilities Code Section 8386.3(c)(1), SDG&E submits this report addressing its WMP compliance for 2020. This report provides a breakdown of each 2020 mitigation with a quantitative or qualitative metric to show risk reduction. As discussed in SDG&E's 2021 WMP Update, the risk reduction calculations performed for the WMP programs rely on the quantitative targets to calculate the overall risk reduction for the program. This report also provides a description of operational changes and their potential impact on risk reduction, planned and actual spend with variance

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[1] *Administrative Law Judge's ruling on Wildfire Mitigation Plan template, and adding additional parties as respondents*, dated January 17, 2019.

[2] California Senate Bill 901 (SB 901), enacted in 2018, adopted new provisions of Public Utilities Code Section 8386 requiring all California electric utilities to prepare, submit and implement annual wildfire mitigation plans that describe the utilities' plans to construct, operate and maintain their electrical lines and equipment in a manner that will help minimize the risk of catastrophic wildfires caused by those electrical lines and equipment

[3] WSD-002, *See also* Rulemaking (R.) 18-10-007, Administrative Law Judge's Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment, Attachment 1 – WMP Guidelines (December 16, 2019), as clarified by the Wildfire Safety Division (WSD) on January 15, 2020 and January 27, 2020.

explanations for costs +/-10% of planned costs, and a description of the PSPS customer impact reduction provided by the mitigation. It is important to note that many of the program-level variances reported are due to differences in WMP reporting requirements between the 2020 WMP filing and the 2021 WMP Update.

The following are some activities that are summarized this report:

- SDG&E has fire hardened 236 miles of its electric system and replaced over 2,517 structures within the high fire threat district from January 1, 2020 through December 31, 2020.
- The appropriate operational measures were taken for the Elevated, Extreme, and Red Flag Warning days.
- Annual routine and high fire threat district (HFTD) focused distribution, substation, and transmission inspections were completed including timely remediation per general order requirements.
- Vegetation management annual inspections and trimming were completed in accordance with SDG&E's 2020 WMP, including the trim or removal of over 17,000 targeted species trees in HFTD to enhanced clearances levels.
- Situational awareness capabilities were enhanced by adding 30 weather stations and updating additional weather stations to provide 30 second reads.

Overall, SDG&E met 24 and exceeded 11 quantitative targets of the 2020 WMP. SDG&E did not meet 8 the stated targets of its 2020 WMP for various reasons detailed in this report. Generally, however, of those 8 targets, four will be completed in 2021, three had a modified scope, and one target was impacted by external factors outside of SDG&E's control. Additionally, despite a 2020 wildfire season during which SDG&E experienced its largest PSPS event, SDG&E's PSPS mitigation programs were able to reduce PSPS impacts to approximately 9,000 customers during a PSPS event in early December. By meeting or exceeding 35 of 43 quantitative targets and reducing PSPS impacts to 9,000 customers, SDG&E has met its risk reduction intent as set forth in the 2020 WMP.

II. Risk Assessment and Mapping (2020 WMP Section 5.3.1)

SDG&E remains committed to the ongoing development and implementation of its Wildfire Risk Reduction Model (WRRM) and continues to refine a primarily automated risk assessment and mapping methodology. SDG&E's engineers and emergency operations personnel continue to analytically evaluate and prioritize proposed grid hardening projects and emergency actions from the standpoint of minimizing fire risk potential from overhead electric facilities.

SDG&E stands at the forefront of the development of this important risk related model and leads the industry in the creation of such a model. SDG&E continues to work with Technosylva and others to implement innovative approaches to enhance and leverage this modeling and these efforts are being duplicated across the state. WRRM represents SDG&E's continued commitment to the ongoing development and further refinement of risk related models for the evaluation of hardening projects and the safe operation of the SDG&E system. SDG&E subject matter experts, including fire coordinators and fire scientists analyze the model's performance for all wildfires on the landscape, identifying deviations from the risk and propagation modeling. These findings help drive the future development of the model. and The ongoing refinements should result in improved and more specific quantifiable outcomes allowing for better decision making in the overall hardening effort.

Below is a financial summary for the programs within the Risk Assessment and Mapping category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 1,400	$ 1,191	$ (209)
O&M	$ -	$ -	$ -

A. Summarized Risk Map: Operational Wildfire Risk Reduction Model (2020 WMP Section 5.3.1.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to use WRRM to simulate virtual wildfires to assess, quantify and prioritize risk mitigation efforts. Additionally, SDG&E plans to use the WRRM-OPS model to evaluate wildfire risk within SDG&E's service territory and provide significant enhancements for WRRM Ops.	In 2020, SDG&E subject matter experts used the operational WRRM (WRRM-Ops) to assess and quantify the potential risk of all ignitions in the service territory that had the potential to grow into wildfires. In addition to the simulation of ignitions in real-time as they occurred, SDG&E simulated millions of virtual ignitions daily to evaluate, anticipate and prepare for wildfire risk.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 1,400	$ 1,191	$ (209)
O&M	$ -	$ -	$ -

The spend is slightly below what was expected in 2020 and is related to the software vendor that builds and maintains WRRM-Ops. This variance is related to a difficulty with exact projections for these costs year over year.

PSPS Impact Reduction: N/A

B. Climate-driven Risk Map and Modelling (2020 WMP Section 5.3.1.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to provide the 10-hour fuel moisture levels that are incorporated into all its risk calculations for 2020 PSPS events to quantify the risk associated with different weather conditions.	The state of the 10-hour fuel moisture level is an important measure when determining the wildfire risk across the southern California Chaparral Ecosystem. SDG&E generated 10-hour fuel projections from its modeling system twice daily and shared this information directly with the USFS, the National Weather Service, and academia.

Operational Changes: N/A

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

C. Ignition Probability Mapping (2020 WMP Section 5.3.1.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to use SDG&E's WRRM-Ops Model showing the probability of ignition along SDG&E's electric lines and equipment to determine the wildfire risk throughout the year.	In 2020, SDG&E subject matter experts used the operational WRRM-Ops to assess and quantify the potential risk of all ignitions in the service territory that had the potential to grow into wildfires. In addition to the simulation of ignitions in real-time as they occurred, SDG&E simulated millions of virtual ignitions daily to evaluate, anticipate and prepare for wildfire risk.

Operational Changes: N/A

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

D. Initiative Mapping and Estimation of Wildfire and PSPS Risk-reduction Impact (2020 WMP Section 5.3.1.4)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E's plans to use the WRRM Model to provide initiative mapping and estimation of wildfire and PSPS risk-reduction impact.	In 2020, the WRRM-Ops model was leveraged to provide and integrate consequence modeling into the Wildfire Next Generation Model (WiNGS). WiNGS provides initiative mapping to help drive wildfire hardening efforts.

Operational Changes: In 2020, SDG&E began the development of WiNGS to help drive wildfire mitigation efforts moving forward. These efforts will continue through 2021.

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

E. Match Drop Simulations (2020 WMP Section 5.3.1.5)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to use the WRRM Model depicting a match drop simulation showing the potential wildfire consequence of ignitions that occur along the electric lines.	SDG&E subject matter experts used the operational WRRM (WRRM-Ops) to assess and quantify the potential risk of all ignitions in the service territory that had the potential to grow into wildfires. In addition to the simulation of ignitions in real-time as they occurred, SDG&E simulated millions of virtual ignitions daily to evaluate, anticipate and prepare for wildfire risk.

Operational Changes: N/A

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

F. Weather-driven Risk Map and Modelling (2020 WMP Section 5.3.1.6)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to use the WRRM Model to provide weather-driven risk map and modelling based on various relevant weather scenarios to bring situational awareness to areas that have an increased potential of being impacted by strong winds. This information can then be incorporated into SDG&E's risk modeling during an event.	SDG&E has installed software which automatically downloads output from weather models that are run by National Oceanic and Atmospheric Administration (NOAA). This data is then used in an automated process to run detailed weather forecasts and automatically send fire weather conditions to our fire behavior modeling system (WRRM-Ops).

Operational Changes: As planned, SDG&E has begun automatically downloading NOAA data to run detailed weather forecasts and send fire weather conditions to WRRM-Ops.

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

G. High Performance Computing Infrastructure (2020 WMP Section 5.3.1.7)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to utilize three high-performance computing clusters to generate high quality weather data that is incorporated directly into operations. Additionally, SDG&E plans to use its computing clusters to integrate the new methodologies in order to maintain forecast reliability and situational awareness.	In 2020, SDG&E successfully leveraged three high-performance computing clusters to generate high quality weather data that is incorporated directly into operations in an automated process.

Operational Changes: N/A

Spend: The costs for this program are embedded within Summarized Risk Map: Operational Wildfire Risk Reduction Model program.

PSPS Impact Reduction: See Summarized Risk Map: Operational Wildfire Risk Reduction Model.

III. Situational Awareness and Forecasting (2020 WMP Section 5.3.2)

Weather continues to have a significant impact on utility operations. SDG&E is an industry leader in the development and implementation of utility-specific meteorological technology to anticipate, prepare for, respond to, and recover from severe weather and wildfire events. Utilization of situational awareness tools such as weather stations, cameras, wireless fault indicators, and the Fire Potential Index have proven successful historically and continue to be beneficial to system planning, emergency operations, and the safe implementation of PSPS. Based on these successes, SDG&E situational awareness networks will be expanded into areas where they can be used to minimize the impacts of PSPS and make communities safer.

Below is a financial summary for the programs within the Situational Awareness and Forecasting category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 8,530	$ 2,527	$ (6,003)
O&M	$ 2,815	$ 3,363	$ 548

A. Camera Networks and Advanced Weather Station Integration (2020 WMP Section 5.3.2.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
20	30	150%	Weather stations
4	4	100%	Cameras

SDG&E determined that extra weather stations were required to fill in data gaps, especially in the Rancho Santa Fe and Valley Center areas of the service territory. These specific areas required additional data to assist with PSPS decision making.

Operational Changes: As stated above, additional weather stations were targeted in specific areas to fill in data gaps.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 775	$ 1,083	$ 308
O&M	$ -	$ -	$ -

The additional spend in 2020 was related to the additional weather stations completed.

PSPS Impact Reduction: During the Red Flag Warning events in early December 2020, SDG&E estimates that 30-second reads from weather stations reduced the number of customers impacted by PSPS by 2,593 customers.

B. Wireless Fault Indicators (2020 WMP Section 5.3.2.3)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
500	502	100%	Wireless fault indicators

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 630	$ 835	$ 205
O&M	$ -	$ -	$ -

Additional costs were driven by higher rates associated with the installation costs from contractors performing the work.

PSPS Impact Reduction: N/A

C. Fire Science and Climate Adaptation Department (2020 WMP Section 5.3.2.4.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
1	1	100%	Fire Science & Innovation Lab

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 4,500	$ 608	$ (3,892)
O&M	$ 2,500	$ 3,363	$ 863

The variance in forecasted capital spend in 2020 is primarily due to unforeseen delays in the planned Emergency Operation Center re-build caused by the COVID-19 pandemic. Costs associated with the rebuild are shared with the Emergency Management Operations program. The additional O&M costs associated with Fire Science and Climate Adaptation were due to a change in how the costs are allocated. Costs from the PSPS Situational Awareness Dashboard are reflected in this line item.

PSPS Impact Reduction: N/A

D. Fire Potential Index (2020 WMP Section 5.3.2.4.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans on generating the daily FPI and prioritizing the integration of the FPI into its operational decision making to mitigate wildfire potential.	SDG&E generated the FPI daily and leveraged this information to operate with a high level of wildfire situational awareness. In addition to being a factor when considering PSPS, this information was used by field personnel and operation centers daily to minimize the potential for wildfire ignitions.

Operational Changes: N/A

Spend: The costs for this program are embedded within Fire Science and Climate Adaptation.

PSPS Impact Reduction: N/A

E. Santa Ana Wildfire Threat Index (2020 WMP Section 5.3.2.4.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E's meteorology team plans to conduct verification of the SAWTI by tracking daily SAWTI values and the occurrence of large wildfire activity, and then share the information daily with the fire agencies for public dissemination.	In 2020, the SDG&E meteorology team conducted a SAWTI training with the new fire potential forecasting team with the United States Forecasting System. Additionally, the SDG&E Meteorology team archived the SAWTI data daily and validated the SAWTI by comparing the output to large wildfire activity.

Operational Changes: N/A

Spend: The costs for this program are embedded within Fire Science and Climate Adaptation.

PSPS Impact Reduction: N/A

F. PSPS Situational Awareness Dashboard (2020 WMP Section 5.3.2.4.4)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to enhance and expand its current operational awareness by building visual dashboards that integrate the vegetation risk index (VRI), historical wind conditions, 95th and 99th percentile wind gusts, and the ability to identify areas that contain vulnerable electric infrastructure.	As planned, SDG&E enhanced and expanded the capabilities of the PSPS situational awareness dashboard by updating the VRI, historical wind conditions, 95th and 99th percentile wind gusts. Additionally, SDG&E worked with human-interface engineering specialists to help optimize the dashboard design.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 2,100	$ -	$ (2,100)
O&M	$ 315	$ -	$ (315)

The O&M costs associated with the PSPS Situational Awareness Dashboard are in Fire Science and Climate Adaptation.

PSPS Impact Reduction: While this program cannot be directly tied to a decrease in PSPS impacts, it does improve the situational awareness within the EOC during PSPS events.

G. Operating Conditions (2020 WMP Section 5.3.2.5)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue the use of the established Operating Conditions (i.e., Normal, Elevated, Extreme, and Red Flag Warning) to monitor wildfire potential throughout its service territory and, among other things, inform decisions regarding recloser settings, sensitive relay settings, testing procedures, and work restrictions throughout the year.	SDG&E published daily operating conditions and operated in accordance with the restrictions set by those conditions.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

H. Network Management Situational Awareness Upgrades (2020 WMP Section 5.3.2.7)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E continues to plan building key weather integrations into the NMS system to enable more accurate and real-time operational decision-making to implement reclosing policies, sensitive relay settings policies, and work cancellation decisions during extreme weather events.	NMS provided enhanced visibility for work being done or planned in HFTD areas. Additional job attributes were added to support job cancellation decisions during weather events. Additionally, groundwork started for the future FPI integration through the development of detailed requirements.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 525	$ -	$ (525)
O&M	$ -	$ -	$ -

The NMS Situational Awareness Upgrades costs were completed as part of base business costs.

PSPS Impact Reduction: N/A

IV. Grid Design and System Hardening (2020 WMP Section 5.3.3)

SDG&E's grid hardening programs are a set of controls and mitigations that directly address the goals of the wildfire mitigations plans, in the form of reducing wildfires caused by utility equipment and minimizing the societal impacts to customers from mitigations such as PSPS. SDG&E has a number of controls and mitigations including overhead hardening and strategic undergrounding that have demonstrated a measured reduction in risk events on utility equipment, reducing the opportunities for ignitions. Some of SDG&E's protection and equipment programs include advanced protection, expulsion fuse replacement program, and the lightning arrestor program. While these programs do not prevent the risk event from occurring, they reduce the chance that a risk event results in an ignition by utilizing protection settings and/or equipment that addresses a specific failure mode known to lead to potential ignition. These result in measured reductions in ignition percentage from risk events. And finally, SDG&E has a number of programs intended to reduce PSPS impacts to customers, including the PSPS sectionalizing program, microgrid and generator programs, as well as strategic undergrounding. The impacts of these programs are measured in the number of customers who will no longer be impacted by a future PSPS event assuming weather conditions similar to previous events.

Below is a financial summary for the programs within the Grid Design and System Hardening category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 243,944	$ 329,740*	$ 85,796
O&M	$ 11,460	$ 15,999	$ 4,539

*This report only includes programs with quantitative and qualitative metrics, however, there are two programs with costs that did not have metrics within the 2020 WMP which are included in the grid design and system hardening capital summary costs.

A. SCADA Capacitors (2020 WMP Section 5.3.3.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
30	30	100%	SCADA capacitors

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 1,575	$ 992	$ (583)

The underspend for SCADA Capacitors is related to timing of the work in 2020. There were some material ordering delays that pushed the installations late into 2020 and delayed some of the associated QC and commissioning costs into 2021.

PSPS Impact Reduction: N/A

B. Advanced Protection (2020 WMP Section 5.3.3.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
8	6	75%	Circuits
6	8	133%	Substations

Substation deployments at two locations involved were accelerated from 2021 into 2020. Two circuits were under construction, but not completed in 2020 due to red flag events, weather, and resource availability. These circuits will be completed next year in 2021, and the program's risk reduction benefits are still on target to complete all Tier 3 circuits by 2026.

Operational Changes: Several substation hardening projects were integrated into Advanced Protection to combine future planned advanced protection work into the existing projects. This will accelerate the deployment in Tier 3 of the HFTD. Advanced Protection also began trials with some emerging technologies such as Rapid Earth Fault Current Limiting (REFCL) and Early Fault Detection (EFD) to study feasibility and benefits.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 5,300	$ 9,119	$ 3,819

The additional spend in 2020 is attributed to the integration of five substation hardening projects into the Advanced Protection scope..

PSPS Impact Reduction: N/A

C. Distribution Overhead System Hardening (2020 WMP Section 5.3.3.3)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
1	1.9	190%	Miles covered conductor
102	99.5	98%	Miles bare wire

Operational Changes: The change in miles of covered conductor actual completed compared to SDG&E's target was due to the fact one project completed construction in November of 2020 that was nearly two miles in total length. The change in miles of bare wire was approximately 2% less (~2.5miles) than planned for 2020. The difference was due to the fact that not all projects that went into construction in 2020 were able to fully complete construction. SDG&E had over 35 miles of projects in construction but not complete at the end of 2020.

Spend:

Covered conductor	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 1,071	$ 1,798	$ 727

The variance in covered conductor actual cost compared to the target was due to the fact the program is a new initiative and SDG&E is still refining our estimates for the costs to design and construct covered conductor and the associated hardware. SDG&E also increased the targets for covered conductor installation in 2021 and 2022 in the 2021 WMP filing as compared with our 2020 WMP filing. The mile target increased by 10 miles in 2021 and 50 miles in 2022. By increasing the target miles of hardening in 2021 and 2022 SDG&E began the engineering and design process on more projects in 2020 so they could be ready for construction in 2021 and 2022.

Bare wire	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 87,000	$ 138,378	$ 51,378
O&M	$ -	$ 3,446	$ 3,446

The variance in actual compared to target Capital costs are most attributable to the increase in SDG&E's mile target for 2021 in our 2021 WMP filing as compared with our 2020 WMP filing. The mile target increased by 86 miles in 2021. By increasing the target miles of hardening in 2021 the engineering and design process was accelerated on additional projects in 2020 so they could be ready for construction in 2021. The variance in actual compared to target O&M costs is most attributed to an oversight. SDG&E has historically seen approximately 2-3% O&M associated with our Capital work, which should have been included in the original estimate.

PSPS Impact Reduction: While this program cannot be tied to a direct decrease in PSPS impacts, when an entire circuit segment is hardened it can increase the threshold for which the line would experience a PSPS.

D. Expulsion Fuse Replacement (2020 WMP Section 5.3.3.7)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
3000	3179	106%	Fuses

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 3,737	$ 6,521	$ 2,784

The cost per fuse replacement increased due to the amount of work that was completed using overtime labor rates and an increase in locations that required traffic control.

PSPS Impact Reduction: N/A

E. PSPS Sectionalizing Enhancements (2020 WMP Section 5.3.3.8.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
7	23	329%	Switches

In order to minimize the impacts to customers involved in PSPS events, SDG&E maximized the number of switches that could be installed prior to the 2020 fire season. These switch locations were strategically evaluated to consider access requirements, weather station coverage, and minimization of customers impacted by PSPS events.

Operational Changes: As stated above, this program was accelerated to minimize the impacts to customers involved in PSPS events.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 550	$ 5,111	$ 4,561

The extra spend associated with this program is attributed to the extra switches that were prioritized for 2020, and the additional costs per switch that increased due to two switch installation jobs that required undergrounding of 0.34 miles of cable, and SCADA base station installations in Cleveland National Forest to provide new SCADA coverage.

PSPS Impact Reduction: PSPS sectionalizing enhancements enables SDG&E the ability to divide the distribution system into smaller segments. This allows for more targeted application of PSPS to the areas of greatest risk and minimizes the impacts to adjacent customers. During the 2020 Red Flag Warning event from December 2nd to December 4th, SDG&E estimates that PSPS sectionalizing enhancements reduced the number of customers impacted by PSPS by 5,773 customers.

F. Microgrids (2020 WMP Section 5.3.3.8.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
3	4	133%	Microgrids

Operational Changes: SDG&E's original plan for microgrids included two locations (Butterfield and Shelter Valley) as a single microgrid. Upon further evaluation, SDG&E determined that it would be more beneficial to separate the two communities into separate microgrid locations.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 11,340	$ 3,542	$ (7,798)
O&M	$ -	$ 371	$ 371

COVID-19 led to delays in obtaining the required permits and delays in obtaining energy storage equipment to get to the final renewable solution. Anticipated 2020 spend was delayed into 2021.

PSPS Impact Reduction: By the end of 2020, SDG&E had five microgrids to keep communities energized during PSPS events. This included sites at Ramona Air-Attack Base, Cameron Corners, Butterfield Ranch, Shelter Valley, and Julian Town Center. During the 2020 Red Flag Warning event from December 2nd to December 4th, SDG&E estimates that microgrids reduced the number of customers impacted by PSPS by 569 customers.

G. Hotline Clamps (2020 WMP Section 5.3.3.10)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
1650	2061	125%	Hotline clamps

Operational Changes: Although the scope of the project did not change, the number of hot line clamps per structure was higher than anticipated. This was the primary driver for the 25% increase from actual to plan.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 3,000	$ 3,299	$ 299

PSPS Impact Reduction: N/A

H. Customer Resiliency Programs (2020 WMP Section 5.3.3.11.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
1250	1334	107%	Generators
8	8	100%	CRC's
4	4	100%	Generators Leased

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 3,340	$ 6,370	$ 3,030

The cost variance included in this initiative is due to the way SDG&E categorized and implemented the three customer programs: Customer Resiliency Programs, Expanded Generator Grant Program, and Whole House Generator Program. When combining these three programs, the 2020 Target spend was $8,460k and 2020 Actual spending was $8,885k or a difference of five percent.

PSPS Impact Reduction: In 2020, the Customer Resiliency Program provided portable battery-powered generators to 1,334 medical baseline customers.

I. Expanded Generator Grant Program (2020 WMP Section 5.3.3.11.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
130	1274	980%	Generators

Operational Changes: In the 2020 WMP, SDG&E planned to introduce an Expanded Generator Grant program, targeting 130 customers in addition to the 1,250 participants in the Generator Grant program (GGP). These 130 customers would have received the same generator as the medical baseline and access and functional needs customers who participated in the GGP.

Based on customer feedback, it was determined a more cost-effective approach to expand the market focus beyond vulnerable customers and broaden SDG&E's program reach was to shift focus to a point-of-sale rebate program, which became the Generator Assistance Program.

With the new point of sale rebate program, SDG&E created an internal goal of having 1,000 generators purchased by customers using the instant rebate coupon. This goal was exceeded by roughly 300. The overshoot of the target can be explained by a dramatic increase in interest in the program following a large PSPS event that occurred from December 2 through December 5, 2020.

The shift to a more cost-effective approach enabled SDG&E to provide more generators to customers within the HFTD that were previously impacted by PSPS than the initial program target thereby exceeding the previous risk reduction.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 4,870	$ 761	$ (4,109)

The cost variance included in this initiative is due to the way SDG&E categorized and implemented the three customer programs: Customer Resiliency Programs, Expanded Generator Grant Program, and Whole House Generator Program. When combining these three programs, the 2020 Target spend was $8,460k and 2020 Actual spending was $8,885k or a difference of five percent.

PSPS Impact Reduction: In 2020, the Expanded Generator Grant Program provided 2,284 generator purchase rebates to customers within the HFTD. This resulted in 1,274 customers purchasing a generator.

J. Whole House Generator Program (2020 WMP Section 5.3.3.11.3)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
300	75	25%	Generators

Program delays resulted in reaching one quarter of year-end goal. SDG&E has established a streamlined process and plans to maintain and improve it going forward. Specifically, SDG&E has collaborated with the County of San Diego (and the third-party contracting company involved with these programs) to streamline residential permitting—a process that used to take anywhere from four to eight weeks, reducing it down to a two- to three-week process. Also, in discovering the extended permitting and installation processes involved with specific commercial/community buildings (like schools and mobile home parks), SDG&E intends to start these projects earlier in the year in preparation for timelier site assessments, permitting, and installations. SDG&E will continue to explore enhancements to this category of customer initiatives through evaluation of customer feedback and lessons learned.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 250	$ 1,754	$ 1,504

The cost variance included in this initiative is due to the way SDG&E categorized and implemented the three customer programs: Customer Resiliency Programs, Expanded Generator Grant Program, and Whole House Generator Program. When combining these three programs, the 2020 Target spend was $8,460k and 2020 Actual spending was $8,885k or a difference of five percent.

PSPS Impact Reduction: In 2020, the Whole House Generator Program provided whole home generators to 75 customers. During the 2020 Red Flag Warning events in early December 2020, SDG&E estimates that whole house generators reduced the number of customers impacted by PSPS by 32 customers per event.

K. Strategic Undergrounding (2020 WMP Section 5.3.3.16)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
10	15.6	156%	Miles

The additional miles performed in 2020 were due to modifications required to the design after job walks were performed. Additional jobs were scoped and completed in 2020 that were not in the original plan.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 31,000	$ 38,850	$ 7,850

The additional spend in 2020 is directly tied to the additional mileage of undergrounding performed.

PSPS Impact Reduction: During the 2020 Red Flag Warning events in early December 2020, SDG&E estimates that strategic undergrounding reduced the number of customers impacted by PSPS by 119 customers.

L. Overhead Transmission Fire Hardening (2020 WMP Section 5.3.3.17.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
21.5	19.7	92%	Miles transmission OH
0	0	100%	Miles transmission UG
10	9.4	94%	Miles distribution underbuilt

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 5,871	$ 5,030	$ (841)

The cost underrun is tied to the reduction in miles hardened in 2020.

PSPS Impact Reduction: While this program cannot be tied to a direct decrease in PSPS impacts, when an entire circuit segment is hardened it can increase the threshold for which the line would experience a PSPS.

M. Cleveland National Forest Fire Hardening (2020 WMP Section 5.3.3.17.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
29	29.1	100%	Miles transmission OH
50	46.8	94%	Miles distribution OH
14	14.4	103%	Miles distribution UG

Operational Changes: N/A

Spend:

Distribution OH	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 35,000	$ 46,271	$ 11,271

The increased costs are due to invoice timing and construction scheduling. There was work performed in 2020 that was initially scheduled in 2019, and the contractor invoice timing for the work fell into 2020.

Distribution UG	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 30,000	$ 37,973	$ 7,973

The increased costs are due to invoice timing and construction scheduling. There was work performed in 2020 that was initially scheduled in 2019, and the contractor invoice timing for the work fell into 2020.

PSPS Impact Reduction: While this program cannot be tied to a direct decrease in PSPS impacts, when an entire circuit segment is hardened it can increase the threshold for which the line would experience a PSPS.

N. Distribution Communications Reliability Improvements (2020 WMP Section 5.3.3.18.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
25	15	60%	Stations

The DCRI program purchased a spectrum license and installed 15 base stations in 2020. The active development of distribution standards and the associated integrated LTE/Distribution build process has delayed the installation of additional base stations last year. The integrated LTE/Distribution build process is a new unique process that integrates numerous departments and various safety and regulatory requirements into new distribution standards that drive design. Site specific designs must be fully completed prior to initiating procurement of the engineered steel poles used in the designs. The procurement process for an engineered steel pole is estimated at one year, delaying mass deployment. Once the process has been standardized, the program will be able to generate a predictable build-out schedule to meet forecasted goals. In addition, the number of total base stations required is expected to be reduced with the purchase of an additional spectrum in 2021.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 31,500	$ 35,473	$ 3,973

The DCRI program purchased a spectrum license and installed 15 base stations in 2020. The additional costs are related to the spectrum license purchase and the design and procurement costs associated with the engineered steel poles.

PSPS Impact Reduction: N/A

V. Asset Management and Inspections (2020 WMP Section 5.3.4)

The purpose of SDG&E's asset management and inspection programs are to promote safety for the general public, SDG&E personnel, and contractors by providing a safe operating and construction environment, while maintaining system reliability. SDG&E's established inspection and maintenance programs enable SDG&E to identify and repair conditions and components to reduce potentially defective equipment on SDG&E's electric system to minimize hazards and maintain system reliability. To accomplish this, SDG&E meets or exceeds the requirements of the inspections mandated by Public Resource Code Sections 4292 and 4293 as well as GO 95, GO 128, GO 165, and GO 174.

SDG&E is continually working to find ways to improve the safety of its system through its asset management and inspection programs. This includes development of new programs such as the distribution and transmission drone programs with a continued focus on existing programs such as the routine and detailed inspections performed for substation, distribution, and transmission assets.

Below is a financial summary for the programs within the Asset Management and Inspections category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 14,168	$ 27,706	$ 13,538
O&M	$ 53,190	$ 53,885	$ 695

A. Pole Replacement and Reinforcement (2020 WMP Section 5.3.3.6)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
670	598	89%	Poles

SDG&E only replaces and reinforces poles that are identified through our inspections. Poles identified to be replaced in 2020 decreased from both compliance maintenance program inspections and wood pole intrusive inspections.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 10,568	$ 10,925	$ 357

PSPS Impact Reduction: N/A

B. Detailed Corrective Maintenance Program Inspections (2020 WMP Section 5.3.4.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
17500	17977	103%	Inspections

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 1,257	$ 1,062	$ (195)

There was an upward pressure of internal and external non-routine inspection requests. A portion of our routine inspections were moved into 2021 to accommodate the unplanned increased workload.

PSPS Impact Reduction: N/A

C. Transmission System Inspections (2020 WMP Section 5.3.4.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
117	114	97%	Inspections (Visual)
113	110	97%	Inspections (Infrared)
41	41	100%	Inspections (Detailed)
27*	21	78%	Inspections (Aerial 69kV)

* This target was overstated in the 2020 WMP as 27 tie lines which included five 230kV or 500kV tie lines, and one additional 69kV tie line (TL626) that was removed from service in 2020.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ 838	$ 838

In 2020, SDG&E replaced a total of 72 Transmission Poles in the HFTD of which 34 of them had distribution underbuilt. SDG&E also completed the design of seven more transmission poles with distribution underbuilt that have not yet been constructed.

PSPS Impact Reduction: N/A

D. Infrared Inspections of Distribution Infrastructure (2020 WMP Section 5.3.4.4)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
8500	13077	154%	Inspections

Operational Changes: As the wildfire season developed, SDG&E saw windspeeds exceeding 99th percentile speeds throughout the HFTD. SDG&E performed infrared inspections between red flag warning events to further analyze the impacts of the events on Tier 3 circuits and further analyze timing as part of development of the pilot program. Between August and October, approximately 5,600 patrols were performed to verify structures between events. In addition, when conditions were identified via infrared on a circuit, larger segments of that circuit were inspected to assess whether similar conditions were present on the same circuit. These two items were what prompted SDG&E to perform additional infrared inspection on Tier 3 HFTD distribution lines.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 245	$ 175	$ (70)

For the 2020 WMP, SDG&E provided a conservative range for distribution infrared inspections with the center of the target range at 8,500 structures and the higher target at 10,000 inspections. This target range was conservatively set due to the projected start date but with efficiencies achieved throughout the development of the pilot, SDG&E was able to perform approximately 7,000 distribution infrared inspections prior to the start of August in anticipation of wildfire season.

PSPS Impact Reduction: N/A

E. Intrusive Pole Inspections - Distribution (2020 WMP Section 5.3.4.6)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
18000	14450	80%	Inspections

There was an upward pressure of internal and external non-routine inspection requests. A portion of our routine inspections were moved into 2021 to accommodate the unplanned increased workload.

Operational Changes: N/A

Spend: Costs for this program are tracked within the Pole Replacement and Reinforcement program.

PSPS Impact Reduction: N/A

F. HFTD Tier 3 Inspections (2020 WMP Section 5.3.4.9.1)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
11500	11864	103%	Inspections

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 368	$ 400	$ 32

PSPS Impact Reduction: N/A

G. Drone Assessments of Distribution Infrastructure (2020 WMP Section 5.3.4.9.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
33000	37310	113%	Inspections

When SDG&E set targets for this pilot program in early 2020, the number of facilities in the Tier 3 HFTD SDG&E would be able to assess was estimated in light of potential agency restrictions, access, etc. SDG&E was able to complete flights for the majority of facilities in the Tier 3 HFTD.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 3,600	$ 15,901	$ 12,301
O&M	$ 50,500	$ 51,953	$ 1,453

The issue rate for findings on distribution facilities was much higher than anticipated, resulting in more repairs. The variance in costs for capital and O&M was related to costs for implementing repairs of issues found during flights and inspections.

PSPS Impact Reduction: N/A

H. Circuit Ownership (2020 WMP Section 5.3.4.9.3)

Risk Reduction:

2020 Plan	2020 Actual
The Circuit Ownership program provides the opportunity for SDG&E's field employees and management of field employees to submit circuit vulnerabilities via a Mobile Data Terminal (MDT) program or mobile application (both iOS and Android). Since it is a new program, SDG&E will continue to evaluate this program for improvements, encourage participation, and seek feedback from both front-end and back-end users.	In Q4 2020, SDG&E completed a renewed roadshow on the Circuit Ownership business process to all business groups, receiving buy-in on how the process works and how submissions are handled. However, SDG&E did not receive any new submissions in Q4 2020 that were applicable to the program. There were two submissions, but both were deemed "de-scoped" and not applicable.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ 41	$ 41
O&M	$ 525	$ -	$ (525)

There were far fewer submissions from this program in 2020 than SDG&E anticipated. We completed a roadshow to garner more interest in the program and will continue to monitor and report progress specific to this initiative.

PSPS Impact Reduction: N/A

I. Drone Assessments of Transmission Infrastructure (2020 WMP Section 5.3.4.10)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E will continue to develop the program to enhance its existing inspection efforts of transmission structures in HFTD areas starting in 2020. SDG&E plans to focus on inspecting all its transmission structures in Tier 3 areas in 2020, along with four select circuits in the Tier 2 HFTD.	SDG&E inspected ~85% of its transmission structures in Tier 3 and selected circuits in Tier 2 HFTD.

Operational Changes: N/A

Spend: Transmission inspection costs are subject to FERC jurisdiction and are not included within the WMP.

PSPS Impact Reduction: N/A

J. Patrol Inspections of Distribution Poles - CMP (2020 WMP Section 5.3.4.11)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
86000	86075	100%	Inspections

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 295	$ 295	$ -

PSPS Impact Reduction: N/A

K. Monitoring and Auditing of Inspections (2020 WMP Section 5.3.4.14)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E continues to utilize various reports to monitor its CMP progress, for both inspections and repairs. Additionally, SDG&E plans to select 1.5% of the combined inspections and assess their conditions to see if the appropriate improvements have been properly carried out.	SDG&E completed all of the audits of our GO165 overhead detailed inspections for 2020. Overall result was positive, with very few additional findings discovered. Out of 981 structures audited, only 35 additional findings were found.

Operational Changes: N/A

Spend: The costs for monitoring and auditing inspections are embedded within operational costs and are not split by HFTD and Non-HFTD.

PSPS Impact Reduction: N/A

L. Substation System Inspections (2020 WMP Section 5.3.4.15)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
330	405	123%	Inspections

The WMP (and SDG&E's maintenance practice) has a minimum acceptable frequency as well as a planned frequency. For example, the minimum acceptable frequency is 5 inspections every 12 months for priority 2 substations. In general, SDG&E exceeded the minimum acceptable frequency of inspections. Additionally, due to the COVID-19 pandemic, SDG&E scheduled extra inspections on substations that feed COVID critical facilities (Hospitals, vaccine centers, etc), which resulted in additional inspections.

Operational Changes: N/A

Spend: Substation inspection costs are tracked as FERC dollars and are not included within the WMP.

PSPS Impact Reduction: N/A

VI. Vegetation Management Inspections (2020 WMP Section 5.3.5)

As part of its efforts to make its electric system more resistant to wildfires, and to comply with relevant Commission rules and state law, SDG&E's vegetation management program was designed with the goal of keeping trees and brush clear of electric infrastructure. SDG&E's vegetation management program involves several components including but not limited to: tracking and maintaining a database of inventory trees and poles, routine and enhanced patrolling, pruning and removing hazardous trees, replacing unsafe trees with more situationally compatible species, pole brushing, and training first responders in electrical and fire awareness.

SDG&E's strategy for conducting its vegetation management program focuses on annual routine and enhanced inspections. Routine operations are driven by regulatory requirements by following an annual, master schedule that includes pre-inspection activities, trimming, auditing, and pole brushing. During routine and off-cycle inspections in the HFTD, SDG&E pursues enhanced clearances on its targeted species. The off-cycle inspections provide a second assessment of all trees within the HFTD during the annual cycle. The criteria for determining target species include factors such as growth rate and characteristics, failure potential, outage frequency history, and other environmental factors. Targeted species include eucalyptus, palm, oak, pine, and sycamore. Species alone does not necessarily trigger the need for enhanced trimming; SDG&E also considers the risk based on multiple site-specific conditions. Many of these trees, such as eucalyptus and sycamore, are fast-growing and have the propensity to shed branches during wind conditions.

Below is a financial summary for the programs within the Vegetation Management Inspections category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ -	$ -
O&M	$ 62,322	$ 79,264	$ 16,942

A. Vegetation Management - Community Engagement (2020 WMP Section 5.3.5.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to participate in several community town hall meetings centered in communities in its service territory that are subject to enhanced vegetation management operations. Additionally, SDG&E will continue to create content for its public education campaign, outreach activities and broadcast and social media outreach.	In 2020 Vegetation Management participated in three Wildfire Preparation Webinars and four Wildfire Safety Fairs. These venues afforded the opportunity to engage with the public regarding Vegetation Management activities, fire safety practices, and tree giveaways. COVID-19 restrictions precluded many of the scheduled activities. SDG&E has developed door hanger messaging catered to specific activities to inform customers of routine and enhanced tree operations. SDG&E is also working on targeted messaging including Vegetation Management operations to residential customers in the HFTD via surveys. These surveys will help identify customers' resiliency while helping them plan for PSPS events.

Operational Changes: N/A

Spend: The costs for this program are embedded within routine operations as well as Community Outreach/Engagement programs due to Vegetation Management's involvement in the 2020 SDG&E Wildfire Safety Fairs.

PSPS Impact Reduction: N/A

B. Detailed Inspections of Vegetation Around Distribution Infrastructure – Inventory Tree Inspections (2020 WMP Section 5.3.5.2)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
455,000	451,207	99%	Inspections

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 27,776	$ 57,791	$ 30,015

SDG&E tracked higher than forecasted O&M costs primarily due to the increased contract rate as a result of Senate Bill 247 and a higher volume of work than in previous years. The 2020 forecasted spend for tree inspection included the fuels management and enhanced trim programs. For the purposes of this report, SDG&E has split the 2020 actual costs out by program.

PSPS Impact Reduction: N/A

C. Fuels Management (2020 WMP Section 5.3.5.5)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
500	324*	123%	500

*Fuels management 2020 progress was under reported in the 2021 WMP Update. Table 5-2 should have read 614 poles completed in 2020. The actual numbers include 314 poles that were re-cleared as maintenance in 2020, and an additional 300 new poles that were cleared in 2020. The Fuels Management program is unique in that SDG&E does not have land rights for many of the work areas, meaning SDG&E is subject to individual landowner approval(s) for every work area. If SDG&E does not receive approval, it is unable to complete the planned work. The targeted 500 work areas included in the 2020 WMP were SDG&E's best estimate prior to receiving landowner approvals.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 5,000	$ 5,805	$ 805

SDG&E conducted a fire retardant test in October 2020 which exceeded initial cost forecasts.

PSPS Impact Reduction: N/A

D. LiDAR Inspections of Vegetation Around Distribution Infrastructure and Vegetation Management Technology (2020 WMP Section 5.3.5.7)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to utilize LiDAR as a tool in its vegetation management operations. This technology augments and enhances the inspection activity by determining the empirical spatial relationship between trees and power lines. In addition, SDG&E plans to research future use of LiDAR to identify change detection on trees, to serve as an audit tool, and to identify pole movement and equipment condition.	Vegetation Management continued its LiDAR pilot on a priority risk circuit that includes a mix of tree density and species for a use case to determine the data accuracy and potential integration of the technology into routine inspection activities. Because of the relative long turnaround time between flight and data delivery, LiDAR's incremental value is still being assessed as an augmentation to ground inspection activities.

Operational Changes: N/A

Spend: The costs for this program are generally embedded within the Distribution Overhead System Hardening program; some specific vegetation management clearance analysis was tracked in SDG&E's Tree Trim Balancing Account (TTBA). The majority of LiDAR costs are tracked within the Overhead System Hardening program to support engineering as-builts. The costs for the recent pilot on circuit 214 around Palomar Mountain were tracked to the TTBA because the data was captured specifically for vegetation management clearance analysis.

PSPS Impact Reduction: N/A

E. Other Discretionary Inspections of Vegetation Around Distribution Infrastructure – Enhanced Inspections, Patrols, and Trims (2020 WMP Section 5.3.5.9)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
17,000	17,075	100%	Trim/Remove

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 23,603	$ 10,235	$ (13,368)

The 2020 forecasted spend for routine operations included the Fuels Management and Enhanced Trim programs. For the purposes of this report, we have split the 2020 actual costs out by program.

PSPS Impact Reduction: N/A

F. Quality Assurance/Quality Control of Inspections (2020 WMP Section 5.3.5.13)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to utilize a third-party contractor to perform quality assurance audits of all its vegetation management activities. Additionally, SDG&E's audit contractor plans to hire additional personnel to perform an anticipated increase in audit scope and activities. Furthermore, SDG&E anticipates completion of 100% audit on all its enhanced HFTD trim and removal activities.	Vegetation Management increased the number of contracted auditors performing QA/QC activities in 2020 to support Level 2 hazard tree inspection activities within the HFTD. One audit lead and five audit personnel were added to the QA/QC workforce. A QA/QC audit was performed on a 12-15% representative sample of all completed vegetation management activities in 2020. The scope of the post-trim QA/QC activity was increased to include 100% audit on all completed reliability (hazard) trimming and removals in HFTD.

Operational Changes: N/A

Spend: The costs for this program are embedded within the Tree Trim Balancing Account (TTBA).

PSPS Impact Reduction: N/A

G. Recruiting and Training of Vegetation Management Personnel (2020 WMP Section 5.3.5.14)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E Vegetation Management contractors are responsible for developing and conducting training of its personnel. SDG&E continues to require all its contractors to perform annual training to include hazard tree assessments, customer engagement, fire preparedness and environmental regulations.	Vegetation Management contractors performed all targeted, annual training. Contractors were challenged to perform training in a virtual environment or smaller venues to meet CDC requirements. SDG&E participated in the statewide initiative to develop college-level curriculum for new qualified line-clearance tree trimmers. This program will produce highly trained personnel versed in safety and utility tree operations.

Operational Changes: N/A

Spend: The costs for this program are embedded within the Tree Trim Balancing Account (TTBA).

PSPS Impact Reduction: N/A

H. Removal and Remediation of Trees with Strike Potential to Electric Infrastructure - Hazard Tree Removal and Right Tree-Right Place (2020 WMP Section 5.3.5.16)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue the effort of hazard tree evaluation throughout the year, as is a critical component of SDG&E's vegetation management program operations to reduce tree-related outages and fire ignitions.	As part of its routine and off-cycle activities, SDG&E continued its targeted Level-2 hazard tree inspections in the HFTD using ISA-Certified Arborists. The scope of the off-cycle hazard tree patrols was increased to occur throughout the entire HFTD following the annual vegetation management master schedule of activities. All vegetation management contractors receive annual hazard tree evaluation training.

Operational Changes: N/A

Spend: The costs for this program are embedded within the Tree Trim Balancing Account (TTBA).

PSPS Impact Reduction: N/A

I. Vegetation Inventory System - Tree Database (2020 WMP Section 5.3.5.19)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue with their inventory database and work management systems that are collectively referred to as PowerWorkz. However, SDG&E plans to work with a vendor on the next generation of its electronic work management system to provide greater efficiency and functionality.	SDG&E made significant progress in the development of its new work management system (EPOCH) which is the mobile, mapping and work order application to manage the VM tree database. The majority of the design and build out of the new system was completed in 2020. Training and go-live activities are beginning in Q1 2021. Improvements with the new system will include better mapping navigability, GPS tree-locating, record attachment functionality, enhanced software performance.

Operational Changes: N/A

Spend: The costs for this program are embedded within the Tree Trim Balancing Account (TTBA).

PSPS Impact Reduction: N/A

J. Vegetation Management to Achieve Clearances Around Electric Infrastructure – Pole Brushing (2020 WMP Section 5.3.5.20)

Risk Reduction:

2020 Plan	2020 Actual	% of Target	Units
35500	35563	100%	Poles brushed

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 5,943	$ 5,433	$ (510)

PSPS Impact Reduction: N/A

VII. Grid Operations and Protocols (2020 WMP Section 5.3.6)

SDG&E's grid operations and protocols consist of mitigations that reduce risk through changing the way SDG&E operates during periods of elevated and extreme wildfire risk. This includes the disabling of reclosing in the HFTD, the enabling of fast recloser settings, restricting work in the HFTD during extreme fire potential and Red Flag Warnings, and sending contract fire resources with crews during elevated days in the HFTD. These operational decisions have led to reduced ignitions on the electric system, and just as importantly reduced ignitions during operational periods where an ignition is more likely to lead to a catastrophic fire.

Below is a financial summary for the programs within the Grid Operations and Protocols category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 10,200	$ 11,566	$ 1,366
O&M	$ 9,967	$ 8,060	$ (1,906)

A. Recloser Protocols (2020 WMP Section 5.3.6.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue the use of overhead distribution reclosers to allow SDG&E to operate its system in a variety of configurations depending on input from its meteorologists, known localized conditions, and its declared Operating Condition.	SDG&E continues to leave reclosing disabled in the HFTD. During extreme operating conditions, SDG&E disabled reclosing in the Wildland Urban Interface.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

B. Wildfire Infrastructure Protection Teams - Contract Fire Resources (2020 WMP Section 5.3.6.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to contract for wildfire prevention and ignition mitigation services, Contract Fire Resources, which are paired with SDG&E personnel during times of elevated wildfire potential. SDG&E is prepared to expand the program to support the increased need to ensure the wildfire mitigation efforts taking place are being done to the highest wildfire safety standards to prevent potential ignitions.	SDG&E continued to pair Contract Fire Resources with field personnel during times of elevated wildfire potential in 2020. SDG&E was able to increase the number of resources to meet the needs during periods of extreme conditions.

Operational Changes: SDG&E increased the number of resources to meet the needs during periods of extreme conditions.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 1,668	$ 1,294	$ (374)

During Red Flag Warnings, the costs for the wildfire protection teams is tracked separately as part of the emergency response. Due to the high number of Red Flag Warnings in 2020, increased costs were tracked separately leading to the variance.

PSPS Impact Reduction: N/A

C. Other Special Work Procedures (2020 WMP Section 5.3.6.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to use the operating conditions (Normal, Elevated, Extreme) to dictate the types of work that we perform under normal, elevated, extreme or RFW conditions today. Additionally, SDG&E will continue to review the procedures that govern these operations.	Leveraging the daily Fire Potential Index issued by Meteorology in 2020, daily work was adjusted according to the wildfire risk. Additionally, SDG&E reviewed and updated the procedural document that governs this work.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

D. Protocols for PSPS Re-energization (2020 WMP Section 5.3.6.4)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to follow the protocols for PSPS Re-energization, which takes place after the SDG&E weather network shows that wind speeds have decreased, and SDG&E weather forecasts indicate that winds will not re-accelerate at or above dangerous levels.	In the 4th quarter of 2020, SDG&E executed multiple PSPS events where these protocols were successfully implemented. Once local winds have died down and are forecasted to stay down at safe levels, the officer in charge provides the okay to patrol. Once a full patrol of a segment is complete, if no damage to the circuit is found, the segment is re-energized.

Operational Changes: N/A

Spend: The costs for this program are embedded within Emergency Management Operations.

PSPS Impact Reduction: This program does enable a reduction of the duration of a PSPS event.

E. PSPS Protocols (2020 WMP Section 5.3.6.5.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to regularly evaluate its PSPS protocols before, during, and after wildfire season to identify areas for improvement and incorporate lessons learned.	SDG&E implemented PSPS as a last resort mitigation due to extreme conditions and high winds across the service territory as described in SDG&E's WMP.

Operational Changes: There were no operational changes made to the PSPS Protocols as SDG&E continues to closely align with the decisions in the De-energization OIR.

Spend: The costs for this program are embedded within Emergency Management Operations.

PSPS Impact Reduction: N/A

F. Mitigating the Public Safety Impact of PSPS Protocols (2020 WMP Section 5.3.6.5.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to manage and mitigate the impacts of a PSPS event through collaboration with key stakeholders in the wildfire response community. SDG&E plans to continue and strengthen the relationship with the partners over the course of the year to address a range of fire prevention and emergency activities.	In 2020, SDG&E customers experienced five PSPS de-energization events. Following all required notification requirements, public safety partners were informed up to 72-hours prior to any de-energization and given access to a GIS information portal. Similarly, impacted customers were notified 24 to 48 hours prior. All stakeholders continue to receive notifications throughout the PSPS event. SDG&E continues to actively engage with the CAISO and other IOUs within California to identify and mitigate the impact of transmission PSPS. SDG&E also engages with fire agencies during fire emergencies in real time to deenergize or otherwise make safe transmission facilities to enable firefighting efforts to continue in a safe manner.

Operational Changes: N/A

Spend: The costs for this program are embedded within Cooperation and Best practice Sharing with Outside Agencies.

PSPS Impact Reduction: N/A

G. PSPS Communication Practices (2020 WMP Section 5.3.6.5.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to utilize its wildfire communications framework, which consists of a multi-pronged approach and is divided into three phases – prior to, during, and following the extreme weather event. The purpose of the communications program is to educate and help the public prepare for, respond to, and recover from a PSPS or wildfire event. Additionally, SDG&E plans to adjust and refine communications tactics in real time based on customer and stakeholder feedback to ensure ongoing relevancy and effectiveness.	SDG&E augmented and utilized diverse communication tools to meet customer communications needs through a year-round wildfire/PSPS safety education and communication campaign which consisted of customer communication prior to, during and following wildfire/PSPS season. The campaign promoted signing up for notifications, preparedness messaging, and customer updates during events. More than twenty communication platforms were leveraged including communications through regional community and emergency partners and community based organizations, outbound dialer system for customer notifications during events, a new PSPS mobile app, dedicated and enhanced PSPS website, community events and online webinars, extensive social media toolkits for community partners and social media on multiple platforms, including community, zip code specific platforms, broadcast media including TV, radio and local publications, digital in- community signage providing event real time updates and safety messaging, and AFN/Medical Baseline outreach and tribal outreach.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 3,000	$ 4,474	$ 1,474

PSPS Impact Reduction: N/A

H. Aviation Firefighting Program (2020 WMP Section 5.3.6.6.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E has developed and implemented an effective, year-round aerial firefighting program to support the fire agencies in its service territory. SDG&E will continue to assess the effectiveness of its Aviation Firefighting program and will work with CAL FIRE on any changes for improved firefighting effectiveness.	With the establishment of an Aviation firefighting program, SDG&E has an MOU with San Diego County and Orange County Fire Authority to have two aerial firefighting assets available seven days a week, 365 days per year. Availability is measured in days and any days that an asset is not available for immediate dispatch degrades the availability. Additionally, the number of dispatches is equal to a response to need. For 2020, SDG&E provided the following availability and dispatches: • Air Crane - zero days unavailable • Blackhawk - zero days unavailable • 35 dispatches, 19 with fire attack

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 7,200	$ 7,092	$ (108)
O&M	$ 7,961	$ 6,766	$ (1,194)

SDG&E was able to gain efficiencies in the contract costs related to the Air Crane helicopter. Monthly costs were lower than forecast.

PSPS Impact Reduction: N/A

I. Industrial Fire Brigade (2020 WMP Section 5.3.6.6.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue the contract with Industrial Fire Brigade (IFB), which is available 24 hours a day, 365 days a year. The IFP is trained to fight fires involving electrical equipment as well as flammable liquids and are focused on site specific fire prevention and ignition mitigation.	In 2020, the Industrial Fire Brigade (IFB) remained available 24 hours a day, 365 days a year to train and fight fires involving electrical equipment.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 338	$ -	$ (338)

The costs for the Industrial Fire Brigade are primarily Electric Transmission (FERC) related and not tracked within the WMPMA.

PSPS Impact Reduction: N/A

VIII. Data Governance (2020 WMP Section 5.3.7)

In 2020, SDG&E began centralizing its WMP-related measures and metrics in a central repository to gain insights and assess progress on WMP programs and initiatives.

During the establishment of the centralized measures and metrics reporting process, SDG&E inventoried required data metrics and identified data owners and data sources. Through subsequent interviews of data owners, SDG&E determined that each specific data metric would need to be clearly defined and a repeatable and verifiable processes established to accumulate and track the data to ensure its integrity and auditability.

Initially, SDG&E almost exclusively collected data metrics and measures manually. In addition, data definitions were inconsistent, some data was untimely, and preliminary and final data metrics could vary. To enhance data quality and improve the efficiency of the data gathering process, SDG&E began developing a WMP Data Governance Framework (DGF) and an automated Central Data Repository (CDR) for wildfire-related data, which can be used by multiple internal and external stakeholders in the future. These changes will improve data collection by moving away from manual collection to a more uniform, electronic format that will provide data metrics in a searchable format, similar to a GIS data structure.

The DGF will define a set of repeatable standards, policies, processes and controls for wildfire- related data. Similar to the WSD's GIS Data Standards, the vision of SDG&E's DGF is to make its wildfire-related data actionable, accessible, aligned, and auditable.

In response to the WSD GIS Data Standards and other related regulatory initiatives, SDG&E is making significant enhancements to the CDR that will make it scalable and sustainable to accommodate future regulatory requirements. SDG&E will pursue technology solutions to automate these data requests where possible.

To date, SDG&E has completed approximately 25% of the effort needed to implement the DGF and CDR and anticipates the completion of data related to the all the metrics tables contained in the WMP by the end of 2021. SDG&E expects that the repository along with the supporting documentation will be completed near the end of 2022.

Below is a financial summary for the programs within the Data Governance category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ 7,480	$ 7,480
O&M	$ 315	$ -	$ (315)

A. Centralized Repository for Data (2020 WMP Section 5.3.7.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E continues to develop an Enterprise Asset Management Platform (EAMP), which is a centralized repository for asset data. This will provide means to optimize its risk, performance, and investments, while meeting or exceeding safety and regulatory objectives.	For 2020, SDG&E implemented consolidated data views pulling asset attributes of different categories including nameplate data, inspection and maintenance data, outage history, and weather data for distribution poles, cables, tees, and wires. Additionally, asset health and risk indices were completed for distribution wood poles, cables, wires, and tees utilizing machine learning, AI, and statistical analysis. The EAMP can perform granular analysis to understand the quality of asset data in scope.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ 5,272	$ 5,272

The additional capital expenditure in 2020 was related to implementation and software license costs for the EAMP project related to WMP. The variance is attributable to funds re-allocated to Data Governance programs from Asset Management as a result of difference in reporting structure between the 2020 WMP and the 2021 WMP Update.

PSPS Impact Reduction: N/A

B. Geographic Information System Data (2020 WMP Section 5.3.7.1.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to use the automated sharing of PSPS event data with many different entities utilizing ESRI's ArcGIS Online (AGOL) application to provide Cal OES and other public safety partners to consume the requested data in a timely and secure fashion. In addition, SDG&E will continue to manually send the data to other Public Safety Partners that can't access the data in an automated fashion.	In 2020, SDG&E continued to share PSPS and/or potential PSPS data via the automated process with Cal OES and public safety partners for all activations. Once meteorology publishes the data for a particular event the data is sent to a cloud-based platform (ArcGIS Online or AGOL) for Cal OES and public safety partners to consume. Additionally, SDG&E manually sends the PSPS data via the SDGE Electronic Data Transfer (EDT) site to the partners who do not have access to the cloud-based app AGOL. Data was shared via the automated process or manually to ~ 70 agencies.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

C. Collaborative Research on Utility Ignition and/or Wildfire - Innovation Lab and Other Collaboration (2020 WMP Section 5.3.7.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to establish a Fire Science and Innovation Lab in 2020. The lab will bring together leading thinkers and problem solvers in academia, government, and the community to create forward-looking solutions to help prevent ignitions, mitigate the impacts of fires, and ultimately help build a more resilient region.	SDG&E has established the Fire Science and Innovation Lab in 2020, though initial implementation was completely on a remote basis due to the COVID-19 pandemic. As part of the establishment of the lab, new partnerships were established with San Jose State University, Scripps Institution of Oceanography, and the San Diego Supercomputer Center.

Operational Changes: N/A

Spend: The costs for this program were embedded within the Fire Science and Climate Adaptation Department.

PSPS Impact Reduction: N/A

D. Wildfire-related Data and Algorithms (2020 WMP Section 5.3.7.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue the partnership with academia, government, and other professionals to undertake unprecedented initiatives over the last decade to innovate, implement, and share advanced technologies to improve wildfire safety in the region.	SDG&E has continued its partnerships with academia, government, and other professionals through 2020. To help facilitate these partnerships, SDG&E worked with the San Diego Supercomputing Center to make all weather model information generated by SDG&E available publicly.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ 2,208	$ 2,208

The variance is attributable to funds re-allocated to Data Governance programs from Asset Management as a result of difference in reporting structure between the 2020 WMP and the 2021 WMP Update.

PSPS Impact Reduction: N/A

E. Ignition Management Program (2020 WMP Section 5.3.7.4.1)

Risk Reduction:

2020 Plan	2020 Actual
In 2019, SDG&E established a pilot Ignition Management Program (IMP). SDG&E intends to continue to develop the IMP in 2020. This work is closely aligned with priorities in the 2020 WMP and is intended to enhance SDG&E's ignition data and analytics.	Throughout 2020, SDG&E continued the development of the Ignition Management Program (IMP) with the goal of creating a "No ignition ignored" culture, heightening awareness using technology to identify areas of improvement to reduce the risk and occurrence of ignitions.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 315	$ -	$ (315)

The costs for this program were embedded within the Fire Science and Climate Adaptation Department.

PSPS Impact Reduction: N/A

F. Reliability Database (2020 WMP Section 5.3.7.4.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E continues to track and maintain customer outage impact data for CPUC annual reporting, other internal and external reporting, and to analyze causes of electric system outages in order to use that information to optimize electric system reliability investments.	The Reliability database continued to successfully track and maintain customer outage impact data for CPUC annual reporting, other internal and external reporting, and to analyze causes of electric system outages in order to use that information to optimize electric system reliability investments.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

IX. Resource Allocation Methodology (2020 WMP Section 5.3.8)

SDG&E's enterprise risk management process includes a step focused on risk-informed investment decision-making. As addressed in SDG&E's 2019 RAMP, the capital planning process is the Company's current annual process for prioritizing funding based on risk-informed priorities and input from operations. The capital allocation planning sessions begin with input from functional capital committees that comprise subject matter experts who perform high level assessments of the capital requirements based on achieving the highest risk mitigation at the lowest attainable costs. These requirements are presented to a cross-functional team representing each functional area with capital requests.

This committee reviews the resource requirement submissions from all functional areas, and projects are evaluated against priority by assessing a variety of metrics including safety, cost effectiveness, reliability, security, environmental, strategic, and customer experience. Recommendations for capital spending are then presented to an executive committee for approval. Once the capital allocations are approved, each individual operating organization is chartered to manage their respective capital needs within the capital allotted by the plan. This includes re-prioritizations as necessary to address imminent safety concerns as they arise. As with the Company's risk evaluation processes, the capital planning process is continuing to evolve as the Company endeavors to achieve the goal of more quantitatively determining the risk reduction per dollar invested, also referred to as risk spend efficiency or RSE.

Below is a financial summary for the programs within the Resource Allocation Methodology category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 9,697	$ 1,623	$ (8,074)
O&M	$ 2,288	$ 3,719	$ 1,431

A. Asset Management (2020 WMP Section 5.3.8.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continues to develop and build a comprehensive asset management system, which includes process improvements, data analytics and system solutions, will provide the access to and integration of data throughout the asset life cycle to develop analysis and a health index for critical assets.	With the SDG&E asset management system being built in phases by asset class or business unit groups, Asset management system phase 1 with electric transmission and distribution operating group is currently in-progress with milestone accomplishments. An Operating Model, which is a process flow designed for electric system projects that outlines the different capabilities to lead and facilitate development of the strategic documents that define the program governance, overarching policy and strategy for a sustainable asset management system and integrated asset management plan implementation in alignment with ISO 55000 standards, has been developed and being refined. • A set of system solutions around data consolidation for decision support of capital and O&M maintenance and replacement strategies, including health scores, criticality, probability of failure, risk, and visualization, and risk-informed investment prioritization for evaluating the risk reduction benefits of projects while optimizing cost are currently in-progress for implementation. • In addition, a Data Analytics and Quantification team has been formed to perform asset and risk analytical capabilities to develop predictive machine learning models and asset health and risk scores.

Operational Changes:

SDG&E's Asset Management team, in 2020, began critical work on the creation of a centralized data foundation and repository for wildfire work and metrics. The centralized data foundation is intended to aid in the reporting process.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 9,697	$ 1,623	$ (8,074)
O&M	$ 450	$ 329	$ (121)

The variance seen above is attributable to funds re-allocated to Data Governance related to costs for a centralized data repository and data foundation for reporting.

PSPS Impact Reduction: N/A

B. Risk Spend Efficiency Analysis (2020 WMP Section 5.3.8.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to review and refine RSEs (Risk Spend Efficiency) and plans to further expand the activities for which an RSE is calculated in future WMP and RAMP filings.	SDG&E expanded the activities for which an RSE is calculated as shown in the 2021 WMP update. Additionally, more updates were made to the Risk Quantification Framework (RQF) in 2020 that were reflected in the 2021 WMP update.

Operational Changes: SDG&E recognized the need to disaggregate some of its initiatives that were previously grouped together for purposes of calculating RSEs, and in 2021 evolved the categorization of initiatives to allow for more RSEs to be represented where appropriate and to distinguish between activities that directly mitigate risk and ones that do not. Additionally, SDG&E developed a preliminary framework to allow for more granular RSEs to inform project prioritization efforts at a sub-circuit level using its new WiNGS model.

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

C. Wildfire Mitigation Personnel (2020 WMP Section 5.3.8.4.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E established the Wildfire Mitigation and Vegetation Management department with existing management personnel already deeply familiar with the WMP. In 2020, this team plans to continue to collaborate, gather information and the ability to inform, plan, act and improve with a compressed timeline, when needed through periodic meetings internally, with other SDG&E business units and externally.	In 2020 the Wildfire Mitigation and Vegetation Management department was able to track and report on all current wildfire mitigation operational targets. This reporting came in the form of internal dashboards as well as the various quarterly reports and data requests submitted to the Wildfire Safety Division. The team also continues to leverage the data from across the company to measure the effectiveness of mitigations and refine SDG&E's risk models that inform future mitigations.

Operational Changes: Wildfire Mitigation increased workforce in 2020, through the onboarding of additional full-time employees and contractors to help meet the growing operational, reporting and data analytic demands of the department.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 1,838	$ 3,389	$ 1,551

Increased spend for the Wildfire Mitigation Personnel is primarily attributable to costs associated with the PSPS Mitigation Engineering Team. Also contributing to the increased spend are incremental FTEs and strategic consulting.

PSPS Impact Reduction: N/A

D. PSPS Mitigation Engineering Team (2020 WMP Section 5.3.8.4.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E formed a dedicated team of experts bringing in a diverse set of skillsets from engineering to meteorology and risk management to look at the Company's infrastructure in the areas of highest wildfire risk with the objective of identifying short and long-term strategies to not only minimize wildfire risk, but also to reduce or minimize the customer impacts of PSPS. The team's effort will include a segment-by-segment analysis of circuits prone to PSPS to identify highest risk areas within the circuit to target various mitigation efforts that can either eliminate the need for shutoffs or reduce impacts of the shutoffs.	SDG&E's PSPS mitigation engineering team was able to identify short-term mitigations that were implemented ahead of the 2020 Wildfire season to reduce PSPS impacts. Furthermore, the team worked on developing the WiNGS tool which is being utilized to scope long-term mitigations to further reduce the impacts of PSPS in the future.

Operational Changes: The formation of this team provided detailed analysis necessary for SDG&E to make educated decisions regarding certain wildfire mitigation initiatives. Using RSE values and performing a circuit-by-circuit analysis, the PSPS Mitigation Engineering Team identified ways to lower PSPS risk in many areas, thus reducing overall risk.

Spend: Costs for this team were tracked within the Wildfire Mitigation Personnel program.

PSPS Impact Reduction: The efforts of this specialized team helped identify new solutions and prioritized programs to reduce the scope and duration of PSPS events. By taking a comprehensive and holistic look at regularly de-energized circuits, strategic undergrounding points were identified, as well as cost-effective candidates for the whole-home generator program. These decisions, along with identifying new sectionalizing device locations, were made with consideration to the respective RSEs.

X. Emergency Planning and Preparedness (2020 WMP Section 5.3.9)

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

Below is a financial summary for the programs within the Emergency Planning and Preparedness category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 4,500	$ 2,140	$ (2,360)
O&M	$ 4,821	$ 12,214	$ 7,393

A. Overview of Emergency Preparedness Plan (2020 WMP Section 5.3.9.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E continues to refine the emergency preparedness plan that is developed in collaboration with key internal and external stakeholders and lessons learned from past incidents, trainings, and exercises are incorporated as appropriate. Additionally, SDG&E Emergency Management and Regional Government Liaisons plan to meet with local city, and county public safety partners to ensure effective communications between SDG&E and the partners.	Emergency planning activities are contained with the Company Emergency Response Plan (CERP) and corresponding hazard specific annexes. All trainings and exercises are developed in accordance with the plans and are in coordination with local public safety partners.

Operational Changes: N/A

Spend: Costs for this program are tracked within Emergency Management Operations.

PSPS Impact Reduction: N/A

B. Overview of Customer Support in Emergencies (2020 WMP Section 5.3.9.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to provide emergency residential and non-residential customer protections and availability communications for wildfire victims, consistent with CPUC direction provided in R.18-03-011.	In 2020, SDG&E focused on outreach to its most vulnerable customers. This included outreach to Medical Baseline customers, such as efforts to update contact records for wildfire event communications. Additionally, SDG&E finalized agreements with 2-1-1 San Diego and 2-1-1 Orange County to provide support for AFN customers impacted by PSPS events.

Operational Changes: N/A

Spend: Costs for this program are tracked within Emergency Management Operations.

PSPS Impact Reduction: This mitigation does not have a measurable impact on reducing PSPS impacts, but does help customers access information to assist them during PSPS events.

C. Coordination with Public Safety Partners (2020 WMP Section 5.3.9.3)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to work and strengthen its relationships with its Public Safety Partners, including local jurisdictions, to ensure coordination exists during Public Safety Power Shutoff events. SDG&E plans to accomplish this coordination via the following activities: conducting tours of its Emergency Operations Center for its Public Safety Partners in advance of events; and providing 24/7 contacts to its Public Safety Partners based on Public Safety Partner customer segment (e.g., a dedicated contact for emergency services, jurisdictional and utility partners and fire services).	SDG&E continues to work and strengthen the relationships with its Public Safety Partners, including local jurisdictions, to ensure coordination exists during Public Safety Power Shutoff events. SDG&E provides 24/7 contacts to its Public Safety Partners based on Public Safety Partner customer segment (e.g., a dedicated contact for emergency services, jurisdictional and utility partners and fire services). Additionally, SDG&E presents at, and regularly attends, the Regional Fire Chiefs Association, Regional Emergency Managers, Regional AFN Workgroup, and Unified Disaster Council meetings to expand our partnership.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

D. Adequate and Trained Workforce for Service Restoration (2020 WMP Section 5.3.9.4.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to strengthen its Incident Command System (ICS) framework, which uses a three-pronged approach with respect to its trained workforce for service restoration.	SDG&E strengthened its ICS framework and completed workforce training. The EPOCH field patrol tool and training was provided to our workforce in early 2020. Due to the timing of training however the tool wasn't used in actual events. SDG&E's Skills Training will be partnering with that team to provide better support in 2021. Skills Training also delivered PSPS pre- and post-patrol and ICS principles training to all of our contractors (QEW) in partnership with the Design and Construction Management department in 2020. PSPS pre- and post-patrol and ICS principles training was provided to district personnel. SDG&E's workforce was provided ESP 113.1 annual training, and Wildfire mitigation practices, PSPS processes, and ICS principles are being integrated into New Hire Lineman, Line Assistant and First Responder classes for 2021. Conducted PSPS tabletop exercise with ERO. ARCOS Crew Manager training was conducted in 2020 to support the management of resources in support of PSPS and ICS-Resource Coordination.

Operational Changes: SDG&E provided new trainees information on PSPS process and ICS to better prepare for real-world situations.

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

E. Company Emergency Response Plan Overview (2020 WMP Section 5.3.9.4.4.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E's Emergency Response Plan (CERP) and its risk specific response plans provide a framework by which it can effectively coordinate its pre-incident and response and recovery activities to a given threat or hazard. In addition to the CERP, SDG&E works collaboratively with the local jurisdictions to ensure integration into regional plans. SDG&E representatives are members of the Southern California Catastrophic Earthquake planning committee, Co-chair of the Southern California Lifelines training and exercise committee and are part of a three-year Department of Homeland Security Regional Resiliency Assessment Program sponsored by Cal OES.	SDG&E is in the process of updating the Company Emergency Response Plan (CERP) and several of the hazard specific annexes. All planning efforts are conducted in coordination with our public safety partners and presented annually to satisfy the AB1650 requirement of sharing emergency plans with local jurisdictions.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

F. Preparedness and Planning for Service Restoration - Mutual Assistance and Contractors (2020 WMP Section 5.3.9.4.5)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E is a member of multiple emergency associations to facilitate mutual assistance and maintains active mutual assistance agreements with the following organizations: California Utilities Emergency Association (CUEA); Western Regional Mutual Assistance Group; Western Energy Institute; Edison Electric Institute; and the American Gas Association.	SDG&E continues to be a member of multiple emergency associations to facilitate mutual assistance and maintains active mutual assistance agreements with the following organizations: California Utilities Emergency Association (CUEA); Western Regional Mutual Assistance Group; Western Energy Institute; Edison Electric Institute; and the American Gas Association. In 2020 the Mutual Assistance Plan was expanded to include COVID-19 protocols for both inbound and outbound assistance to ensure the safety of our crews.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: Mutual assistance potentially helps to reduce the potential for prolonged PSPS events.

G. Protocols in Place to Learn from Wildfire Events - After Action Reports (2020 WMP Section 5.3.9.4.6)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E reviews all significant incidents and activations to identify potential improvements and establish a comprehensive and measurable After Action Report.	In 2020, SDG&E documented After Action Reports for six PSPS events and two exercises, one with external stakeholders.

Operational Changes: N/A

Spend: Costs for this program are embedded within normal operations.

PSPS Impact Reduction: N/A

H. Other - Emergency Management Operations (2020 WMP Section 5.3.9.4.7)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to manage emergencies in alignment with the state Standardized Emergency Management System (SEMS) and federal National Incident Management System (NIMS), to coordinate across all levels of utility, government, and agency activity.	SDG&E is enhancing the Training & Exercise program by creating a division within the Emergency Management Department to oversee the expanding training requirements. Additionally, the new division will focus on expanding the ICS implementation to promote efficient and effective responses that coordinate and collaborate with first responders on scene.

Operational Changes: Creating a new division to oversee training requirements will increase general ICS awareness and efficiencies, thus creating smoother operations within the EOC during PSPS events. Another reason to create the new division is due to increased CalOES requirements, oversight, and reporting around PSPS training and exercises.

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ 4,500	$ 2,140	$ (2,360)
O&M	$ 4,821	$ 12,214	$ 7,393

The variance in forecasted capital spend in 2020 is primarily due to unforeseen delays in the planned Emergency Operation Center re-build caused by the COVID-19 pandemic. As noted previously, these costs are shared with the Fire Science and Climate adaptation program The O&M budget includes Emergency Management operations, Disaster and Emergency Preparedness plan, and customer support in emergencies. The overspend is primarily attributable to higher than forecasted PSPS-related spend.

PSPS Impact Reduction: Emergency Management operations do not directly impact PSPS thresholds, or reduce the scope, scale, or duration of PSPS events. Instead, the department contributes to efficient operations during PSPS events.

XI. Stakeholder Cooperation and Community Engagement (2020 WMP Section 5.3.10)

A first-class level of engagement and cooperation amongst all wildfire stakeholders is extremely important to SDG&E, as it endeavors to fulfill its commitment to mitigate the risk of wildfires and adverse impacts of PSPS events. SDG&E remains dedicated to partnering with utility customers, elected officials, nonprofit support organizations, first responders and all other public safety and community partners, understanding they all play a unique and important role in achieving wildfire prevention and mitigation in SDG&E's service territory. SDG&E provides an essential service, and it takes its role within the communities it serves very seriously. This is especially true during PSPS events, when communities – neighborhoods in which SDG&E's employees, families and friends live – depend on complete, accurate, and timely information for their well-being.

SDG&E will continue to strive to provide all stakeholders up-front awareness and information, using available channels to educate the public on wildfire preparedness and PSPS events. It is SDG&E's goal to equip those it serves with the information and resources to navigate the adversity of an emergency, wildfire, or PSPS event. Through thoughtful education campaigns and strategic partnerships, SDG&E has implemented a robust, external communication strategy, which is continuously analyzed to identify areas of improvement. SDG&E also leverages its broadened and increased relationships with CBOs and stakeholders to amplify and disseminate critical, sometimes life-saving information.

One of the pillars of SDG&E's wildfire and PSPS awareness lies within its Energy Solutions Partner network, which consists of nearly 200 CBOs. In addition, key to SDG&E's stakeholder engagement are its relationships with emergency response agencies, both locally and at the state-level. SDG&E is widely recognized as a world-class innovator with its Fire Science and Climate Adaptation department. This team is routinely asked – and happily provides – best practices to other national utilities, as well as internationally. This cooperation, in addition to communication practices lays the foundation for SDG&E's success in stakeholder cooperation and community engagement.

SDG&E remains committed to fostering productive collaboration and engaging the communities it serves.

Below is a financial summary for the programs within the Stakeholder Cooperation and Community Engagement category of SDG&E's 2020 Wildfire Mitigation Plan:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
Capital	$ -	$ -	$ -
O&M	$ 4,928	$ 8,761	$ 3,833

A. Community Engagement - Community Outreach and Public Awareness (2020 WMP Section 5.3.10.1)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to utilize its multi-pronged approach to community education, outreach and engagement related to public awareness of fire risk, fire prevention, and emergency preparedness.	• SDG&E delivered more than 1.3 million customer notifications to channels preferred by customers/stakeholders - cell phone, email, land line and text messages. • Approximately 22,000 public safety partner notifications were delivered, more than 12,000 SDG&E PSPS app downloads occurred and over 31 in-community locations were leveraged for event roadside signage in the HFTD. • Partnered with more than 400 community-based organizations, hosted virtual wildfire/PSPS safety webinars and drive thru safety fairs and collaborated with local school districts for outreach and provided communication tools for local school districts. • Communicated in the 21 prevalent languages in the service territory, provided year-round enhanced public safety partner outreach and coordination and expanded the AFN/vulnerable community outreach campaign. • Achieved nearly 275 million touchpoints with more than 148,000 engaged users related to wildfire and PSPS safety. • Customer surveys indicate more than 50% highly favorable towards SDG&E overall and 80% of HFTD and non-HFTD customers having updated their contact information to receive PSPS/wildfire notifications.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ -	$ 448	$ 448

The variance in unplanned spend for Community Outreach and Public Awareness is due to the inclusion of SDG&E's Customer Programs Outreach team and includes newly added Customer Resiliency Program resources.

PSPS Impact Reduction: N/A

B. Cooperation and Best Practice Sharing with Agencies Outside California (2020 WMP Section 5.3.10.2)

Risk Reduction:

2020 Plan	2020 Actual
SDG&E plans to continue to prioritize cooperation and sharing of best practices as an important component of our fire mitigation activities. Sharing best practices has been effective and a contributor to SDG&E's success in wildfire mitigation activities over the last decade.	In 2020, SDG&E continued to prioritize cooperation and sharing of best practices as an important component of our fire mitigation activities through participation in the International Wildfire Risk Mitigation Consortium. This consortium consists of utilities from across the world and was established to share best practices.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ 4,928	$ 8,227	$ 3,300

This O&M budget consisted to funds allocated for PSPS and wildfire communication practices. After filing the 2020 WMP, the budget was increased due to higher than planned costs. Budget consists of funds allocated for Mitigating the Public Safety Impact of PSPS Protocols and PSPS Communication Practices.

PSPS Impact Reduction: N/A

C. Cooperation with Suppression Agencies (2020 WMP Section 5.3.10.3)

Risk Reduction:

2020 Plan	2020 Actual
The Fire Coordinators plan to continue to stay active in professional forums, seminars, and training throughout the service territory to ensure state-of-the-art fire practices are incorporated into SDG&E operations and practices. Additionally, they will continue to share information with the firefighting agencies within the SDG&E service territory and on a rotating basis, provide those agencies with electrical and gas safety training.	SDG&E's Fire Science & Coordination team remained active in professional forums and trained over 2000 fire professionals across the region.

Operational Changes: N/A

Spend:

	2020 Target ($000)	2020 Actual ($000)	$ Change ($000)
O&M	$ -	$ 86	$ 86

The O&M 2020 Target for this line item is embedded within the Fire Science & Climate Adaptation (FSCA) program.

PSPS Impact Reduction: N/A

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Carla Peterman
Senior VP of Strategy
and Regulatory Affairs

03/31/2021

Caroline Thomas Jacobs, Director
Wildfire Safety Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

SUBJECT: Southern California Edison Company's 2020 Wildfire Mitigation Plan Annual Report on Compliance (EC ARC) Pursuant to PUC Section8386.3(c)(1)

Director Thomas Jacobs,

Pursuant to California Public Utilities Code (PU Code) §8386.3(c)(1) and the Wildfire Safety Division's (WSD) Final Guidance on Compliance Operational Protocols issued on February 16, 2021, Southern California Edison Company (SCE) submits this annual report addressing compliance with its Wildfire Mitigation Plan (WMP) during calendar year 2020.

If you have any questions, or require additional information, please contact me at carla.peterman@sce.com.

Sincerely,

//s//
Carla Peterman
Senior Vice President, Regulatory Affairs
Southern California Edison

cc: Service List for R.18-10-007
wildfiresafetydivision@cpuc.ca.gov

Southern California Edison Company's 2020 WMP Annual Report on Compliance

I. INTRODUCTION

Pursuant to Section 8386.3(c)(1) of the PU Code and the WSD's Final Guidance on Compliance Operational Protocols issued on February 16, 2021, SCE submits is Annual Report on Compliance (EC ARC) addressing compliance with its WMP during calendar year 2020. SCE substantially complied with its Commission-approved 2020-2022 WMP for wildfire mitigation work in 2020, as set forth in detail below.

On February 7, 2020, SCE submitted its second comprehensive WMP covering the years 2020 through 2022 and building on its 2019 WMP, including successes and lessons learned. After an extensive review process that included discovery, workshops and comments, the Commission approved SCE's 2020-2022 WMP on June 11, 2020.[1]

In 2020, and since approval of its 2020-2022 WMP, SCE has complied with the follow-up requirements in Resolution WSD-004 and ordered in D.19-05-036:

- As required by D.19-05-036, SCE submitted Advice 4222-E on June 1, 2020 describing its proposals to modify, reduce, increase, suspend or end wildfire mitigation measures in SCE's 2020 WMP that are not working, or that otherwise require modification.

- As required by Resolution WSD-004, SCE filed a Remedial Compliance Plan on July 27, 2020 to resolve identified deficiencies and has filed three Quarterly Reports on 2020-2022 WMP Class B Deficiencies.

In 2020, SCE tracked 69 specific wildfire-related programs and activities included in its 2020-2022 WMP spanning areas including infrastructure hardening, vegetation management, detailed inspections and remediations, and situational awareness in SCE's High Fire Risk Areas (HFRA). SCE's WMP also emphasizes Public Safety Power Shutoff (PSPS) resilience and community engagement, particularly for under-represented groups and access and functional needs customers. SCE's 2020-2022 WMP also increases the use of advanced risk analytics and innovative technologies to help the company prioritize the activities with the greatest potential to mitigate wildfire risks and improve public safety.

Despite the challenges posed by the COVID-19 pandemic, in 2020, SCE concluded or operationalized the vast majority of its 2020 WMP goals and substantially completed the

[1] CPUC WMP approval statement available at:

https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M340/K129/340129782.PDF

remaining activities. In addition, SCE is aggressively pursuing advancements in its risk-informed decision-making, data management, grid hardening, and community/stakeholder engagement before, during, and after wildfire-related events. As reported in Advice 4437-E,[2] COVID-19-related restrictions and, during the second half of the year, fires and the associated diversion of crews, poor air quality, and US Forest Service work stoppages as well as heat waves impacted implementation plans for four of the 69 WMP activities (distribution and transmission inspection-driven remediations, aerial inspections and unmanned aerial operations training). Nevertheless, these activities were substantially completed by the end of 2020. Further details on SCE's progress in executing 2020 WMP activities under SCE's 2020-2022 WMP can be found in Advice 4437-E, also appended to this ARC as Attachment A.[3]

Below, SCE addresses the five requirements set forth in WSD's Compliance Operational Protocols regarding EC ARC.

II. SCE RESPONSES TO ANNUAL COMPLIANCE REPORT REQUIREMENTS

a) *An assessment of whether the EC met the risk reduction intent by implementing all of their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities;*[4]

   i. *If the EC fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.*

SCE met the risk reduction intent by completing the vast majority of its approved WMP initiatives and substantially completing remaining activities in 2020.

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[2] Southern California Edison Company's Quarterly Advice Letter Pursuant to PU Code Section 8389(e)(7) Regarding the Implementation of Its Approved Wildfire Mitigation Plan and Its Safety Culture Assessment and Safety Recommendations, March 8, 2021 (SCE Q4 2020 QAL).

[3] SCE is completing its data validation of 2020 WMP activities and as a result, some figures reported in SCE's AB 1054 Q4 2020 Advice Letter (Advice 4437-E), submitted March 8, 2021, have been slightly revised. These revisions have been noted in Attachment A to this EC ARC and do not impact the status of activities. SCE further notes that reported 2020 figures are subject to further revision as it completes its data validation process.

[4] WSD's guidance describes this section as providing an "(e)xplanation of how ignition probabilities and estimated wildfire consequences have been reduced during the compliance period as a result of WMP initiative implementation (i.e., for the EC ARC due March 31, 2021, the EC shall report on the prior compliance period, defined as January 1, 2020 to December 31, 2020)."

SCE proposed several key effectiveness metrics to evaluate risk reduction and has shared how each WMP activity relates to these metrics in detail in its 2021 WMP Update Supplemental filing on February 26, 2021.[5] The relevant portions are attached to this EC ARC as Attachment B. This table details the WMP activities in the 2021 WMP update, but it also covers the primary activities in the 2020 WMP. The key effectiveness metrics SCE proposed are CPUC reportable ignitions in HFRA (total and by key drivers), faults in HFRA (total and by key drivers), wire down incidents in HFRA, number of customers and average duration of PSPS events, and timeliness and accuracy of PSPS notifications. SCE notes as it has done previously in the 2021 WMP Update and other responses, that since most of the mitigations were implemented less than a year ago, and at most approximately two years ago, there has been insufficient time to observe improvements in these key metrics. In addition, given the variability of exogenous factors such as climate/weather conditions, fuel/drought conditions, size of the infrastructure, etc., additional years of data are required to comprehensively assess the impact of mitigations and analyze trends.

Though effectiveness metrics improvement validation will take more time, SCE ascertains it has met its risk reduction intent as it has substantially met or exceeded the vast majority of its 2020 WMP activity targets. For example, SCE installed 960 circuit miles of covered conductor compared to a target of 700 circuit miles, completed all inspections in HFRA per plan and completed the vast majority of remediations on time,[6] remediated more than 12,000 hazard trees (double the number from 2019), and upgraded more than 6,000 poles to fire-resistant versions compared to a target of 5,200. SCE also undertook additional activities that were not in the original 2020 WMP such as supporting fire agencies' fire suppression efforts and additional inspections during the fire season based on emergent dry fuel accumulation and high wind conditions. SCE also used risk as an important input to help prioritize work within activities (supplemented with operational factors such as resource availability, permit requirements, environmental constraints, and bundling work by location for efficiency in scheduling), further increasing SCE's ability to meet its risk reduction intent.

SCE is at the initial stages of analyzing effectiveness metrics, but 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. This data is currently for a relatively small portion of SCE's HFRA where covered conductor has been installed over a limited timeframe since installation,

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[5] Southern California Edison 2021 Wildfire Mitigation Plan Update Supplemental Filing Corrected, filed February 26, 2021, available at: https://www.sce.com/sites/default/files/AEM/Wildfire%20Mitigation%20Plan/2021/2021%20Wildfire%20Mitigation%20Plan%20Update%20Supplemental%20Filing%20Corrected.pdf, pp. 228-230 and pp. A1-A8.

[6] SCE completed 97% of Distribution Remediations (SH-12.1) and 95% of Transmission Remediations (SH-12.2), noting delays due to resource diversion to restoration efforts from fires, other precautions taken due to record dry fuel conditions, and COVID-related restrictions.

but the results are encouraging and can be validated only after more data has been collected over time. 2020 was a severe fire activity year, and SCE needed to de-energize more circuits and customers for PSPS, of the circuits and customers de-energized in 2019, 46% and 35% fewer respectively were de-energized in 2020. Though this data has not been normalized for weather and other factors, they indicate improvements derived from the WMP activities undertaken by SCE.

SCE also notes that we continue to enhance our risk analysis capabilities as described in detail in Chapter 4 of SCE's 2021 WMP Update and will use these results to further refine deployment prioritization. The impact of mitigation activities already undertaken and the updated risk analysis for the planned activities are summarized in the ignition reduction forecasts in Table SCE 4.3 in SCE's 2021 WMP Update.

b) *A full and complete listing of all change orders 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;*

Please see Tables 1, 2, and 3 below for a listing of all proposed changes to WMP initiatives in 2020, as reported either in Off-Ramp or Change Order filings throughout 2020. The table also includes the purpose, expected outcomes and whether risk reduction intent was met from the proposed changes. In some cases, the proposed changes are for enabling activities, which do not directly reduce wildfire or PSPS risk or consequence. Please also refer to SCE's response to Part A for further discussion on how SCE met the risk reduction intent of its 2020 WMP.

Table 1
June 1, 2020 – SCE's Off Ramp Report Advice Letter[7]

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
Section 5.3.9.2: DEP-3 **IOU Customer Engagement[8]** **(Activity Suspended)**	SCE ended its partnership with the statewide customer engagement campaign and proposes to redeploy the funds to local marketing campaign.	Focusing on community campaigns will help customers and communities better understand and prepare for wildfires and PSPS events. Correspondingly, the proposed adjustment is aligned with the original objective of a statewide campaign to educate customers about PSPS events and reduce the impacts of PSPS events through customer preparedness. To evaluate the effectiveness of local campaigns, measures customer awareness and customer attitude,[9] with the results aggregated quarterly and annually. SCE also clarified in subsequent communications with WSD that terminating its participation in the statewide program will	**Approved**[10] - The WSD found that SCE had sufficiently accounted for impacts resulting from ending the statewide initiative and redeploying the funds to local community initiatives.[11]	**N/A - Enabling activity**: change is to leverage other engagement methods (in place of the state-wide campaign) to better prepare customers for wildfire and PSPS events. Those methods do not necessarily lead to reduction in impact and it is not feasible to reasonably measure the impact of those activities on reducing PSPS impacts.

[7] June 1, 2020 Tier 3 Advice Letter, Subject: Southern California Edison Company's Reports on Possible Off Ramps Pursuant to the Guidance Decision on 2019 Wildfire Mitigation Plans

[8] SCE's proposal to remove IOU Customer Engagement as a WMP Activity was also discussed in SCE's 2020 WMP First Change Orders Report Filed September 11, 2020

[9] SCE uses the Customer Attitude Tracking (CAT) survey to measure customer awareness and expects to meet the local marketing awareness campaign goal of 40%.

[10] WSD approval received on February 26, 2021 WSD Action Statement, Subject: SCE September 11, 2020 Change Order Report.

[11] Approval of a WMP or Change Order Report does not equate to approval of costs. See Resolution WSD-002, Ordering Paragraph 2, and Resolution WSD-004, Ordering Paragraph 5.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
		not affect other state programs.		
Section 5.3.3.8.2: PSPS-8 **Microgrid Assessment** **(Modify - Increase in Scale)**	Microgrid Assessment – Activity PSPS-8 to now include PSPS Resiliency Zones	SCE determined that customer impacts could be further reduced in rural communities previously impacted by PSPS events by keeping essential services electrified. As such, SCE initiated a pilot program in 2020 to provide a mobile generator backup to electrify certain essential services in rural areas previously impacted by PSPS events. SCE targeted seven rural communities in support of this pilot effort including up to three essential sites (e.g., gas stations, grocery stores, pharmacy, fire station, and police station) per community in the HFRA. The Resiliency Zones pilot will enable SCE to evaluate the benefit derived to the community with respect to energizing essential services.	**Pending response**[12] - As reported in the SCE's 2021 WMP Update (Section 7.3.5.5.2.2), the Resiliency Zones pilot has reached agreements with four customer sites and has contracted with three electrical suppliers to prepare these sites for installation of backup generators. SCE will continue to work with County and Community leaders to identify additional sites.	**Under Evaluation** - SCE will assess the installations and the benefits derived by the community with respect to energizing essential services during PSPS.
Section 5.3.6.5.2: PSPS-3 **Customer Resiliency Equipment Incentives** **(Modify - Increase in Scale)**	Customer Resiliency Equipment Incentives – Activity PSPS-3 to now include PSPS Well Water Resiliency Generator Incentive	The Well Water and Water Pumping Backup Generation program was developed to assist customers who have a dependency on electricity to pump water for basic use in their home or business, with the purchase of a portable backup	**Pending response**[13] - Well Water and Water Pumping Backup Generation is discussed in more detail in SCE's 2021 WMP Update in Section 7.3.6.5.2.3	**Under Evaluation** - Well Water and Water Pumping Backup Generation is a pilot, and SCE is currently analyzing results from survey feedback which will help inform enhancements to the program. Recommendations are expected early Q2 2021.

[12] Advice 4222-E submitted June 1, 2020 is pending approval by the Commission.

[13] Advice 4222-E submitted June 1, 2020 is pending approval by the Commission.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
		generator. Providing equipment incentives for certain residential, small commercial, and schools in the Acton and Agua Dulce communities dependent on well water will help reduce impacts of PSPS events.		

Table 2
Proposed Activity Changes in SCE's 2020 WMP First Change Orders Report
Filed September 11, 2020[14]

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
Section 5.3.10.3: **Cooperation with Suppression Agencies** **(Change in Scope of Work)**	Given the intensity of the 2020 fire season and potential strain on fire-fighting resources, SCE wants to pilot the use of a Helitanker and determine appropriate SOPs/metrics going forward.	Access to the helitanker will improve fire suppression capability in SCE's service area, thus reducing the potential consequence of fires including safety incidents, property damage (including damage to SCE's assets) and loss of critical infrastructure and essential services including electricity.	**Approved**[15] – the WSD found that SCE has sufficiently accounted for the impacts resulting from the collaboration with OCFA to lease the helitanker.	**Achieved -** Reduction in consequence of wildfires in SCE's HFRA (four 2020 fires had enhanced fire suppression from the Helitanker, which released over 300,000 gallons of water during 145 water drops)
Sections: **5.3.4.9.1: IN-1.1;** **5.3.4.10.1: IN-1.2;**	SCE is continuing to improve its inspection programs to incorporate more lessons learned. This has resulted in SCE conducting	Increasing the scale of both Distribution and Transmission inspections in HFRI reduces wildfire risk (ignition probability) based on the number of defects found and remediated. In its response to Class B Deficiency Guidance-1, SCE provides the	**Pending Approval**[16] - Further justification required - The WSD finds that SCE has not sufficiently accounted for the impacts resulting from the increased scale of HFRI for Distribution and	**Achieved -** Remediation of notifications resulting from these inspections (due to

[14] Southern California Edison Company's First Change Orders Report, September 11, 2020

[15] WSD approval received on February 26, 2021 WSD Action Statement, Subject: SCE September 11, 2020 Change Order Report.

[16] WSD pending approval received on February 26, 2021 WSD Action Statement, Subject: SCE September 11, 2020 Change Order Report.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
Dist./Trans. High Fire Risk - Informed Inspections (HFRI) in HFRA **(Increase in Scale)**	additional HFRI in 2020.	baseline of the original program targets. This increase in scale of inspection work will further reduce wildfire risk presented in that response and reflected in SCE's 2021 WMP Update submission.	Transmission Electric Lines and Equipment as SCE has not demonstrated the reason for the large increases in costs related to the increased scope of inspections. Additionally, since SCE has relied on risk models that have not been fully vetted by the WSD, the WSD defers approval of the change to the scale and scope of HFRI inspections to its review of SCE's 2021 WMP Update. SCE provides more justification for this program in the 2021 WMP Update (Section 7.3.4.9.1). Risk analysis performed for this program resulted in a relatively high Risk Spend Efficiency (RSE) value, supporting the continued need for this program to proactively identify equipment failures and potentially hazardous conditions before an ignition could occur.	increase in scale of risk-informed inspections)[17]
Section 5.3.6.5.7: **OP-2** **Wildfire Infrastructure Protection Team Additional Staffing**	SCE is proposing an increase in scale for its Wildfire Infrastructure Protection Team to include 18 additional full-time employees who will serve on the dedicated PSPS	While this initiative does not directly reduce probability or consequence of ignitions, dedicated and specialized staff helps to ensure operational consistency and enhance efficiency in implementing PSPS standards/protocols, thus reducing PSPS impacts on customers.	**Approved**[18] - The WSD finds that SCE has sufficiently accounted for the impacts of increasing its Wildfire Infrastructure Protection Team to include 18 additional full-time employees.	**N/A - Enabling activity -** While this initiative does not directly reduce probability or consequence of ignitions, dedicated and specialized staff to help ensure operational consistency and enhance efficiency in implementing PSPS standards/protocols, thus

[17] SCE notes that the decision to increase inspections was to gain a 360-degree view of assets in SCE's system, and was not driven by the WRRM; rather inspections were prioritized based on the risk profile of the assets

[18] WSD approval received on February 26, 2021 WSD Action Statement, Subject: SCE September 11, 2020 Change Order Report.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
(Increase in Scale)	Incident Management Team (IMT). Based on lessons learned in 2019-2020, having variable resources between PSPS events created inefficiencies in operations and decision-making. A /dedicated PSPS IMT reduces stress on employees allowing them to focus on their routine work.	This initiative adjustment is expected to reduce the number of events requiring activation of broader IMT resources from across the company (normalized by weather events). These dedicated resources should additionally increase the accuracy and precision of each PSPS response.		reducing PSPS impacts on customers.

Table 3
Proposed Activity Changes in SCE's 2020 WMP Second Change Orders Report
Filed December 11, 2020[19]

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
Section 5.3.6.5.1: PSPS-2 Community Resource Centers (CRCs) **(Increase in Scale)**	As noted in its 2020-2022 WMP, SCE anticipated that the CRC scope recommendation would be finalized in 2020 (post-2020-2022 WMP submission) as it improves its ability to ensure timely deployment and	Increasing the scale of SCE's CRC program supports more customers' needs during PSPS events, thus reducing the potential impact of a PSPS de-energization. The location and timing of CRC locations are selected based on an assessment of circuits most likely to be impacted by a PSPS event and in consultation with local governments in the	**Approved**[21]- The WSD finds that SCE has sufficiently accounted for impacts resulting from the increase in scale and availability of its CRCs.	**Achieved** - Reduced consequence of PSPS

[19] Southern California Edison Company's Second Change Orders Report, December 11, 2020

[21] WSD approval received on February 26, 2021 WSD Action Statement, Subject: Southern California Edison December 11, 2020, Change Order Report.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
	customer access to CRCs in coordinated locations. SCE increased its count of CRC locations to 56 sites with which it contracts to activate in the case of a PSPS event.	impacted area. Additionally, the PSPS Phase 2 Decision imposes certain requirements on CRCs such as location criteria, hours of operation, and services. CRCs will be activated from 8 a.m. – 10 p.m. during an active event unless the event ends before 10 p.m. or the government facility at which the CRC is located provides guidance otherwise. Based on these regulatory requirements and stakeholder feedback on the need for temporary relief and additional information during PSPS de-energization events, it is imperative to have swift access to enabled (ready for activation) CRC sites across both urban and remote areas in SCE's HFRA.[20]		
Sections: **5.3.4.9.1: IN-1.1;** **5.3.4.10.1: IN-1.2;** **5.3.4.16: IN-5;** **5.3.5.4** **Asset and Vegetation**	During the 2020 fire season, SCE identified 17 Areas of Concern (AOCs) in its HFRA, primarily driven by elevated dry fuel levels that pose increased fuel-driven and wind-driven fire risk. In order to mitigate this risk, a dedicated team managing	The objective of this adjustment is to further reduce risk of a devastating wildfire by prioritizing the inspection and associated remediations of structures with a high Probability of Ignition (POI) in areas that have not had a burn, natural or human-caused, in recent years, and have dry fuel levels that pose increased fuel-driven and wind-driven fire risk that, if ignited, could have serious consequence to SCE's	WSD has indicated that further justification is required[22] - Since the changes described rely on the risk models still undergoing evaluation, WSD finds that SCE has not provided sufficient justification for the proposed change in its December 11, 2020, Change Order Report.	**Achieved -** The intent of this activity was to identify ignition risks in areas with elevated dry fuel levels and remediate those risks prior to fire season. There were ~14,000 notifications created resulting from the additional inspections. SCE remediated these notifications as intended. SCE notes that SCE's risk models were not the driver of this change.[23]

[20] If a CRC cannot be established in a particular community, SCE may utilize one or more of its Community Crew Vehicles (CCVs) to support the community impacted by a PSPS event.

[22] Further justification required per February 26, 2021 WSD Action Statement, Subject: Southern California Edison December 11, 2020, Change Order Report.

[23] SCE notes that rather than being driven by WRRM, the decision to increase inspections was to gain a 360-degree view of assets in SCE's system that were also located in high-risk areas of concern during the 2020 fire season, with inspections prioritized based on the risk profile of the assets.

Change to 2020 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity	Status	Risk Reduction Intent Assessment
Management and Inspections **(Modification to Methodology)**	inspections, remediation and vegetation was required to accelerate inspections, remediation and vegetation trimming and removal in the identified AOCs. This program primarily supplements the following 2020 WMP initiative activities: IN-1.1: High Fire Risk Informed Inspections – Distribution IN-1.2: High Fire Risk Informed Inspections – Transmission IN-5: High Fire Risk Informed Inspections – Generation 2020 WMP Section 5.3.5.4: Emergency Response Vegetation Management due to Red Flag Warning or Other Urgent Conditions	communities, customers and facilities. Moving forward, the analysis conducted will be incorporated into SCE's latest risk modeling. However, emergent conditions may necessitate a similar pivot in future years. SCE continues to analyze findings of the latest inspection results and remediation progress to inform its asset condition inputs to the POI model. Risk profiles change as more inspection data is compiled and analyzed and issues remediated, which will be reflected in future adjustment of SCE's risk-informed inspection cadence using improved risk modeling as described above.		

c) Descriptions of all planned WMP initiative spend vs actual WMP initiative spend and an explanation of any differentials between the planned and actual spends;

In Attachment C, SCE provides a table describing all forecast WMP initiative capital and O&M spend versus actual WMP spend in 2020 and a description of the variance drivers. SCE has

focused on describing variance drivers for initiatives where actual spend exceeded +/- 20% of forecast costs and, where this threshold was triggered, for variances greater than or less than $1M.

d) A description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope and duration of PSPS events;

In 2020, SCE saw considerable benefits from the deployment of WMP initiatives which allowed for a reduction in the scope/scale, frequency and duration of PSPS events. These benefits were largely derived from two main sources: distribution circuit sectionalization and SCE's circuit exception process.

Though the data has not been normalized for weather or other factors, in 2020, SCE's sectionalizing efforts helped avoid over 203,409 customer outages, an estimated 47% decrease from the number of outages the impacted circuits would otherwise have experienced. SCE used the weighted average duration of PSPS outages to calculate the likely customer minutes of interruption (CMI) avoided, estimated at 234 million customer minutes of interruption. Circuit de-energizations are more difficult to assess as a number of decision-making factors for PSPS de-energizations beyond FPI and windspeed have to be backcast. However, SCE's best estimate is that the increased thresholds associated with its circuit exception process avoided approximately 27 circuit de-energizations, or 6% of the total 2020 PSPS de-energizations. The circuit outages avoided would have yielded a further 28 million CMI, taking the 2020 total of likely CMI avoided to 262 million minutes. See Figure 1 for details.

Figure 1: 2020 PSPS Improvements

	Scope/Scale[24] *Customer Outages*	**Estimated Frequency** *Circuit De-energizations*	**Estimated Duration**[25] *Customer Minutes of Interruption (CMI)*
PSPS Reduction	203,409	27	262M

Sectionalization has thus far proven to be one of the most effective methods for SCE to reduce the scope and impacts of PSPS events. When SCE can de-energize only a portion of a distribution circuit, i.e., isolating the power loss only to areas with high fire threat conditions, more customers premises remain energized than would have been possible if the entire circuit

[24] SCE is unclear what the difference is between scope and scale of a PSPS event

[25] Duration Reduced (CMI) calculated as: Customer Outages Reduced x Weighted Average Duration of a PSPS Outage

was affected. This isolating capability is made possible using sectionalization devices such as remote-controlled switches and remote automated reclosers included in WMP Activity SH-5. SCE installed 48 new isolation devices in 2020 under this WMP activity. Along with SCE's broad network of existing devices already in the field, this enabled the operational flexibility to reduce customer outages while still eliminating the fire ignition risk.

SCE can use sectionalizing devices to reduce de-energization scope because conditions and de-energization thresholds can differ across the length of a circuit. To determine differing conditions, SCE used its network of 1,057 weather stations, 593 of which were installed in 2020, to obtain a real-time, granular understanding of weather conditions along a circuit. This enabled SCE's Incident Management Team to distinguish the risk among isolatable segments and leave portions of a circuit energized, even while other portions of the same circuit were experiencing threatening fire weather conditions and may have required de-energization.

Further, enhancements SCE made to its risk modeling efforts implemented as part of the circuit exception process enabled SCE to set varying thresholds across a single circuit. SCE's circuit exception process entails a detailed periodic review of circuits and circuit-segments located in HFRA to identify those with sufficiently low wildfire risk based on the latest circuit and environmental information. This allows SCE to increase wind speed thresholds on a particular circuit or circuit segment. Wildfire risk changes on this scale can be brought about through deployed PSPS mitigations such as asset upgrades or circuit reconfiguration, or through fuel loading changes driven by processes like urbanization or a recent burn scar. Through this exception process, SCE changed thresholds on 26 circuits, which enabled us to reduce PSPS de-energization for more than 31,000 customers in 2020.

SCE had other activities that led to reduced PSPS impacts in 2020. Two of SCE's distribution circuits (Gunsite and Cuddeback) achieved full covered conductor installation in 2020, allowing SCE to raise their PSPS thresholds to the National Weather Service's High Wind Warning level (40 mph sustained, 58 mph gusts). Both of these circuits were de-energized before the change but were able to avoid de-energization for all 346 customers in scope after the thresholds were increased. SCE's Shovel circuit had its thresholds raised as well based on more traditional grid maintenance. The Shovel circuit was de-energized several times in 2020 using its outage-informed threshold of 25 mph sustained wind and 40 mph wind gusts, but as the result of SCE's grid hardening efforts, was able to avoid de-energization for the two other events in 2020 once its thresholds were raised to 31 mph sustained and 46 mph gusts.

While SCE made measured progress in furthering longer term remediations like grid hardening and backup generation in 2020, SCE is working to aggressively build upon those efforts to drive incremental improvements in 2021 and beyond. For example, while more than 1,400 circuit miles of covered conductor has been deployed across SCE's HFRA, the thresholds for the circuit

segments can be raised only when entire isolatable portions have been covered. SCE is prioritizing the historically frequently impacted circuits for additional covered conductor installation to reduce PSPS scope and frequency prior to the 2021 fire season. These efforts and others are described in more detail in Section 8.1.4 of SCE's 2021 WMP Update and in SCE's PSPS Corrective Action Plan.

e) A summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.

Information on all defects identified by the WSD during the 2020 calendar year and corrective actions taken or planned by SCE is summarized in the table below.

Table 4
Summary of Defects Identified by WSD in 2020

#	Defect Description	Inspection Date	Planned Completion Date	Completion Date[26]	Corrective Action
1	Loose/unattached anchor guy	7/15/20	Completed	7/23/20	Anchor guy was attached to the anchor
2	Loose/unattached anchor guy	8/13/20	Completed	8/27/20	Anchor guy was attached to the anchor
3	Exposed conductor sticking out of jumper tap connection	9/3/20	Completed	9/18/20	Connector cover was repositioned to cover the exposed wire
4	Conductors and connection not covered	10/6/20	Completed	10/16/20	Data error in completed project list provided to WSD. Pole was inadvertently included in a work order listed as complete. This was corrected in SCE's system[27]
5	Mislabeled pole	10/8/20	Completed	10/22/20	Pole was labeled with the correct number[1]
6	Vegetation touching anchor guy above the insulator	10/21/20	Completed	11/19/20	Vegetation was cleared from the anchor guy

[26] All Planned Completion and Completion dates fall within the time permitted by GO 95 for correction.

[27] SCE requested that WSD remove these findings as "defects" on the grounds that they do not violate any WMP, GO 95, or other CPUC compliance requirements.

7	Vegetation touching anchor guy above the insulator	11/5/20	5/10/21	TBD	TBD
8	Clearance between anchor guy above insulator and communication wire less than 3 inches	11/5/20	5/10/21	TBD	TBD
9	Vegetation touching anchor guy above the insulator	12/3/20	12/10/21	TBD	TBD
10	Vegetation touching anchor guy above the insulator	12/10/20	12/29/21	TBD	TBD
11	Vegetation touching anchor guy above the insulator	12/29/20	7/7/21	TBD	TBD

III. CONCLUSION

SCE appreciates the opportunity to submit its 2020 WMP Annual Report on Compliance and looks forward to working with the Independent Evaluator and continued collaboration with WSD in the review of SCE's 2020 WMP activities.

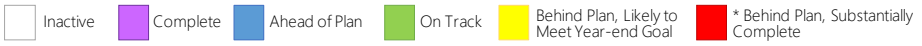
Attachment A: SCE Q4 2020 WMP Progress Update (Updated)

SCE's 2020-2022 Wildfire Mitigation Plan (WMP) Progress Update – Q4 2020 (Updated)*

(All data is as of December 31, 2020 or later)

*SCE is completing its data validation of 2020 WMP activities and as a result, some figures reported in Advice 4437-E. have been slightly revised. These revisions do not impact the status of activities and have been incorporated and noted in this updated WMP Q4 2020 Progress Update to accompany SCE's 2020 WMP Annual Report on Compliance. SCE further notes that reported 2020 figures are subject to further revision as it completes its data validation process.

WMP Activities Summary



PSPS

- PSPS-1: De-Energization Notifications
  - PSPS-1.1: Notifications to public safety agencies and local gov't
  - PSPS-1.2: Notifications to CalOES via State warning system
  - PSPS-1.3: Notifications to the CPUC
  - PSPS-1.4: Enhance Emergency Outage Notification System
- PSPS-2: Have 23 available Community Resource Centers
- PSPS-3: Develop a customer resiliency equipment incentive pilot program
- PSPS-4: Income Qualified Critical Care (IQCC) Customer Battery Backup Incentive Program
- PSPS-5: Support MICOP partnership
- PSPS-6: Support Independent Living Centers Partnership
- PSPS-7: Have 5 available Community Crew Vehicles
- PSPS-8: Assess microgrid resiliency projects

Risk Analysis

- RA-1: Implement Wildfire Risk Reduction Model (WRRM) module of Technosylva

Emergency Preparedness

- DEP-1: Customer Education and Engagement
  - DEP-1.1: Send ~915K /~3.2M letters to customers in HFRA / non-HFRA
  - DEP-1.2: Host 8-12 community meetings
  - DEP-1.3: Conduct marketing campaign (reach 5M cust.)
- DEP-2: Hold internal training on de-energization protocols, determine staffing needs, and fill positions
- **DEP-3: Participate in a multi-channel, multi-lingual campaign to provide information on wildfire mitigations
- DEP-4: Develop a measure to track customer awareness of, preparedness for, and satisfaction with outage experiences

Vegetation Management

- VM-1: Hazard Tree Management Program. Assess 75,000 trees
- VM-2:. Perform brush clearance of 200,000 poles
- VM-3: Expand clearances for legacy facilities
- VM-4: Perform annual DRI inspection scope and compete mitigations according to guidelines
- VM-5: Perform 3,000 risk-based quality control vegetation management inspections

System Hardening

- SH-1: Install 700 miles of covered conductor in HFRA
- SH-2: Refine undergrounding overhead conductor methodology
- SH-3: Replace 5,200 poles with fire resistant poles
- SH-4: Install/replace fusing at 3,025 locations
- SH-5: Install 45 RARs/RCSs
- SH-6: Circuit Breaker Relay Hardware for Fast Curve
- SH-7: PSPS-Driven Grid Hardening Work
- SH-8: Deploy Transmission Open Phase Detection on 6 additional circuits
- SH-9: Transmission Overhead Standards (TOH) Review
- SH-10: Remediate 325 tree attachments
- SH-11: Legacy Facilities
- SH-12: Remediate all notifications with ignition risk, to be past due compliant by year-end
  - *SH-12.1: Distribution
  - *SH-12.2: Transmission
  - SH-12.3: Generation

Operational Practices

- OP-1: Review and update Annual System Operating Bulletin 322
- OP-2: Hire additional staff for Wildfire Infrastructure Protection Team
- *OP-3: Increase the number of UAS operators by an additional 50 crews

Alternative Technologies

- AT-1: Meter Alarming for Downed Energized Conductor
- AT-2.1: Evaluate performance of Distribution Fault Anticipation technology
- AT-2.2: Conduct Extended Visual Line of Sight demonstration UAS flights
- AT-3: Alternative Technology Evaluations
  - AT-3.1: Initiate design and equipment order for a Ground Fault Neutralizer
  - AT-3.2: Initiate design to convert a substation to resonant grounding
  - AT-3.3: Install one Rapid Earth Fault Current Limiter - Isolation Transformer
  - AT-3.4: Complete Distribution Open Phase Detection pilot
- AT-4: Alternative Technology Implementation – Vibration Dampers
- AT-5: Asset Defect Detection Using Machine Learning Object Detection
- AT-6: Assessment of Partial Discharge for Transmission Facilities
- AT-7: Early Fault Detection (EFD) Evaluation
- AT-8: High Impedance Relay Evaluations

Situational Awareness

- SA-1: Install 375 Weather Stations
- SA-2: Fire Potential Index (FPI) Phase II. Refine current FPI
- SA-3: Complete installation of two High-Performance Computer Clusters
- SA-4: Implement FireCast and FireSim modules of Technosylva
- SA-5: Perform fuel sampling in HFRA
- SA-6: Map surface and canopy fuels across HFRA
- SA-7: Initiate procurement of remote sensing technology
- SA-8: Implement fire science enhancement initiatives

Inspections

- IN-1: Ground Inspections
  - **IN-1.1: Inspect 105,000 distribution structures in HFRA
  - IN-1.2: Inspect 22,500 transmission structures in HFRA
- IN-2: Perform quality review on 15,000 transmission, distribution, and generation structures in HFRA
- IN-3: Infrared Inspection of 50% of distribution circuits in HFRA
- IN-4: Infrared Inspection, Corona Scanning, and High Definition imagery of 1,000 transmission circuit miles in HFRA
- IN-5: Inspect 200 generation assets
- IN-6: Aerial Inspections
  - IN-6.1: Inspect 165,000 distribution structures in HFRA
  - *IN-6.2: Inspect 33,500 transmission structures in HFRA
- IN-7: Failure Modes and Effects Analysis (FMEA)

Source: All data is as of December 31, 2020 or later

** The Change Report filed in September 2020 describes that SCE has ended its statewide campaign (DEP-3) and that SCE plans to inspect (IN-1) ~165,000 distribution and ~33,500 transmission structures in HFRA in 2020.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

PSPS Activities

Public Safety Agencies and Local Govt

De-Energization Notifications (PSPS-1.1)

Section 5.3.6.7 Page 171*

Program Target: Notify applicable public safety agencies and local governments of possible de-energization

Status Update: Through the end of December the PSPS Incident Management Team (IMT) was activated for 12 events. Notifications were sent to stakeholders during each event.

Cal OES

De-Energization Notifications (PSPS-1.2)

Section 5.3.6.7 Page 171

Program Target: Notify Cal OES through the State Warning Center of possible de-energization

Status Update: Through the end of December the PSPS Incident Management Team (IMT) was activated for 12 events. Notifications were sent out to stakeholders during each event.

CPUC

De-Energization Notifications (PSPS-1.3)

Section 5.3.6.7 Page 171

Program Target: Notify the CPUC of possible de-energization

Status Update: Through the end of December the PSPS Incident Management Team (IMT) was activated for 12 events. Notifications were sent out to stakeholders during each event.

Enhance EONS

Enhance Emergency Outage Notification System (PSPS-1.4)

Section 5.3.6.7 Page 171

Program Target: Enhance Emergency Outage Notification System (EONS) to include Zip Code level alerting to include in-language notifications to align with its existing notification abilities for SCE customers

Status Update: Zip code level and in-language notification enhancements (in Spanish, Mandarin, Cantonese, Vietnamese, Korean, and Tagalog) were implemented and used during PSPS events in 2020.

Community Resource Centers

243%
confirmed

Community Resource Centers (PSPS-2)

Section 5.3.6.5.1 Page 165

Program Target: Have 23 sites available across SCE service territory for customers impacted by a PSPS

Status Update: 56 CRCs have been contracted across 9 counties. Of these 56, 43 can operate with extended hours (8am to 10pm) per PSPS Phase 2 D.20-05-051.

Customer Resiliency Equipment

Customer Resiliency Equipment Incentives (PSPS-3)

Section 5.3.6.5.2 Page 166

Program Target: Develop a customer resiliency equipment incentive pilot program that provides financial support to customers willing to increase resiliency within its HFRA. One customer will be implemented for this pilot in 2020.

Status Update: The pilot program has been completed and the chosen location, a local high school, now has the ability to island itself from the grid and maintain emergency services during a power outage.

*SCE 2020-2022 Wildfire Mitigation Plan

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

PSPS Activities

IQCC Customer Battery Backup

Critical Care Battery Backup Program (CCBB)* (PSPS-4)

Section 5.3.6.5.3 Page 166

Program Target: Outreach to eligible customers (low income, critical care, Tier 2/3) to provide portable battery back-up solution. SCE has identified approximately 2,500 customers that it will target for the program in 2020, with efforts to begin in the second quarter.

Status Update: The program launched on July 7th and by year end ~2,600 customers had been offered the program via direct outreach. Customer enrollments and battery deliveries started in Q3 and continued throughout Q4.

MICOP Partnership

MICOP Partnership (PSPS-5)

Section 5.3.6.5.4 Page 167

Program Target: Enable communications with indigenous populations and measure the number of customers contacted

Status Update: Mixteco/Indigena Community Organizing Project (MICOP) has exceeded the year-end goal of conducting wildfire safety outreach to 600 customers. In June, MICOP started follow-up phone calls with customers who had received the initial outreach. The target of 100 follow-ups has also been exceeded.

Independent Living Center Partnerships

Independent Living Centers Partnership (PSPS-6)

Section 5.3.6.5.5 Page 167

Program Target: Conduct outreach activities and workshops/trainings to provide preparedness education and assistance in applying for the Medical Baseline Program and measure the number of customers contacted

Status Update: The Independent Living Centers (ILCs) program exceeded the target holding 10 workshops/trainings for customers with disabilities and others with access and functional needs in June.

Community Outreach

Community Outreach (PSPS-7)

Section 5.3.6.5.6 Page 168

Program Target: Minimum of five Community Crew Vehicles (CCVs) ready to be deployed during times when weather and fuel conditions are at critical levels. Communicate with customers in a local targeted way using a variety of channels to ensure timely delivery of notifications.

Status Update: A minimum of five CCVs were ready for deployment during each of SCE's PSPS activations in 2020. The CCV locator tool has featured on sce.com and been promoted during PSPS events. A virtual CCV website went live in Q3 offering customers wildfire safety resources and support.

Microgrid Assessment

Microgrid Assessment (PSPS-8)

Section 5.3.3.8.2 Page 124

Program Target: 1) Execute requests for proposals (RFP) for six resiliency microgrid projects, 2) Depending on RFP results, implementation of up to 6 resiliency microgrid projects shown to be technically feasible and cost-effective.

Status Update: The 2020 program target of issuing an RFP for six potential 2020 microgrid projects was completed. However, this RFP did not yield any cost-effective options. Learning from this experience, SCE evaluated alternative microgrid sites that could be safely and more economically islanded and issued a second microgrid RFP. SCE received a higher response rate than the RFP issued earlier in 2020, evaluated the submissions, and recommended proceeding with one vendor for a potential 2022 deployment.

*Formerly called the Income Qualified Critical Care (IQCC) Customer Battery Backup Incentive

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Operational Practices and Risk Analysis Activities

OP: Operational Practices

Annual SOB 322 Review

Annual SOB 322 Review (OP-1)

Section 5.3.6.1.1 Page 161

Program Target: Review and update SOB 322 to reflect lessons learned from past elevated fire weather threats/PSPS events and integrate, where applicable, new and improved situational awareness data, improved threat indicators, and applicable regulatory requirements in an effort to reduce wildfire risk and the impact of outages on customers.

Status Update: Completed the annual SOB 322 bulletin, reflecting lessons learned from 2019, elevated threats, and PSPS events.

Wildfire Infrastructure Protection Staffing

Wildfire Infrastructure Protection Team Additional Staffing (OP-2)

Section 5.3.6.5.7 Page 168

Program Target: Hire additional resources including: a senior compliance manager, two compliance advisors, a project/program advisor, a data specialist and a fire-weather meteorologist. PSPS Operations will also be staffed to provide dedicated operational, project management, and compliance capabilities.

Status Update: PSPS Operations hiring was completed in November. Consultants are bridging the gap in Project Management and Compliance competencies until full time SCE employees can be hired.

UAS Operations Training

Unmanned Aerial (UAS) Operations Training (OP-3)

Section 5.3.4.9.2.2. Page 143

Program Target: Increase the number of UAS operators by an additional 50 crews

Status Update: Substantially complete. The goal of training an additional 50 UAS operators was not met, however, 42 resources passed the FAA 107 exam despite the closure of FAA testing centers due to COVID from March through July.*

RA: Risk Analysis

Expansion of Risk Analysis

Expansion of Risk Analysis (RA-1)

Section 5.3.2.7. Page 111

Program Target: Implement Wildfire Risk Reduction Model (WRRM) module of Technosylva (software platform)

Status Update: Technosylva delivered the WRRM software to SCE in Q4 2020. Following its quality review of the data and functionality of the WRRM software, SCE deemed that it met its requirements. SCE will continue working with Technosylva to incorporate enhancements throughout 2021.

* Following validation of records, 42 persons completed UAS 107 training and FAA certification in 2020. This is a decrease of 1 from what was published in the WMP Progress Update 2020-12-31 on 3/8/2021.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Vegetation Management Activities

HTMP
133%
trees assessed
97%
trees mitigated within 180 days

Hazard Tree Management Program (VM-1)

Section 5.3.5.16.1 Page 156
Program Target: Assess 75,000 trees for hazardous conditions and perform prescribed mitigations in accordance with program guidelines and schedules

Status Update: Assessed ~99,500 of 75,000 trees through Q4 and mitigated 97% of trees within 180 days, which exceeded the WMP Program Target.

Expanded Pole Brushing
117%
poles cleared

Expanded Pole Brushing (VM-2)

Section 5.3.5.5.1 Page 153
Program Target: Perform brush clearance of 200,000 poles
SCE will strive to perform brush clearance for 300,000 poles subject to resource constraints and other execution risks

Status Update: Pole clearances exceeded the WMP Target of 200K in November and ended the year at ~231,000 pole clearances.*

Expanded Clearances for Legacy Facilities

Expanded Clearances for Legacy Facilities (VM-3)

Section 5.3.5.5.2 Page 153
Program Target: Perform assessments of all identified facilities in HFRA. Establish enhanced buffers at 30% of identified facilities

Status Update: The activity was completed in December as enhanced buffers were completed at 39% (61) identified facilities, surpassing the original goal of 30% (46).

DRI Inspections & Mitigations

Drought Relief Initiative (DRI) Inspections and Mitigations (VM-4)

Section 5.3.5.16.2 Page 158
Program Target: Perform DRI annual inspection scope and complete prescribed mitigations in accordance with internal DRI program guidelines

Status Update: Drought Relief Initiative (DRI) inspections met year-end goal. 3rd (and final) cycle inspections completed mid-December. DRI mitigations exceeded year-end goal with 95% of active inventory aged less than 180 days, which exceeded the WMP target of 94%.

Vegetation Management Quality Control

Vegetation Management Quality Control (VM-5)

Section 5.3.5.13 Page 155
Program Target: Perform 3,000 risk-based HFRA circuit mile vegetation management Quality Control inspections

Status Update: Performed ~6,100 of 3,000 of risk-based HFRA circuit mile quality control inspections.

* Following validation of records, SCE performed ~231,000 pole clearances in 2020. This is a decrease from the reported ~233,900 figure reported in the WMP Progress Update 2020-12-31 submitted on 3/8/2021.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Situational Awareness Activities

Weather Stations

157%
installed

Weather Stations (SA-1)

Section 5.3.2.1 Page 104
Program Target: Install 375 Weather Stations. SCE will strive for installation of 475 Weather Stations subject to resource constraints and other execution risks

Status Update: ~590 of 375 weather stations installed. Exceeded WMP Program target and exceeded the strive target of 475 installations.

Fire Potential Index Phase II

Fire Potential Index (FPI) Phase II (SA-2)

Section 5.3.2.4.1 Page 107
Program Target: Refine the current FPI by integrating historical weather and vegetation data into the index

Status Update: Completed development of FPI 2.0 which factors in different fuel types (e.g. grass, timber, or brush) and historical weather data. Historical weather data was received in Q2. New fuel loading map and FPI 2.0 formulas were completed in Q4.

HPCC Weather Modeling System

High-Performing Computer Cluster (HPCC) Weather Modeling System (SA-3)

Section 5.3.2.6 Page 110
Program Target: Complete installation of second HPCC

Status Update: Completed the installation of second HPCC weather modeling system—It is in operational use.

Asset Reliability & Risk Analysis

Asset Reliability & Risk Analytics Capability (SA-4)

Section 5.3.2.7 Page 111
Program Target: Implement FireCast and FireSim modules of Technosylva

Status Update: Completed implementation of FireCast and FireSim applications and fire scientist training. Performed fire simulations in Q4.

Fuel Sampling Program

Fuel Sampling Program (SA-5)

Section 5.3.2.4.2 Page 108
Program Target: Perform updated fuel sampling in HFRA in areas deemed appropriate once every two weeks (weather permitting)

Status Update: Initiated fuel sampling in all four regions specified in the WMP (Inland Empire, North LA County, Eastern Sierra, Western Sierra). Fuel sampling continued in all four regions through year-end.

Surface and Canopy Fuels Mapping

Surface and Canopy Fuels Mapping (SA-6)

Section 5.3.2.4.3 Page 108
Program Target: Initiate surface and canopy fuels mapping across HFRA

Status Update: Vendor began work to refresh the fuels/surface canopy dataset in SCE territory in Q4. The program will improve fire spread modeling capabilities.

Remote Sensing / Satellite Fuel Moisture

Remote Sensing / Satellite Fuel Moisture (SA-7)

Section 5.3.2.4.4 Page 109
Program Target: Initiate procurement process for remote sensing technology for future implementation

Status Update: Procurement was initiated for a wind profiling pilot using LiDAR in the lower atmosphere of the Eastern Sierra. Contract was in the close to finalization by the end of 2020.

Fire Science Enhancements

Fire Science Enhancements (SA-8)

Section 5.3.2.4.5 Page 109
Program Target: Implement enhanced forecasting capability and improved fuel modeling

Status Update: Ensemble forecasting was implemented in Q3 and will increase the frequency of modeling to receive a range of outputs for forecasting.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Emergency Preparedness Activities

Dear Neighbor Letter

Customer Education and Engagement – Dear Neighbor Letter (DEP-1.1)

Section 5.3.9.2 Page 196

Program Target: Send ~915,000 letters with information about PSPS, emergency preparedness, and SCE's wildfire mitigation plan to customer accounts in HFRA and ~3,200,000 letters to customer accounts in non-HFRA

Status Update: Mailings have been completed to all customers (both HFRA and non-HFRA). COVID messaging was included in the newsletter along with contact information in 15 languages.

Community Meetings

Customer Education and Engagement – Community Meetings (DEP-1.2)

Section 5.3.9.2 Page 196

Program Target: Host 8-12 community meetings in areas impacted by 2019 PSPS plus other meetings including online as determined to share information about PSPS, emergency preparedness, and SCE's wildfire mitigation plan

Status Update: Nine virtual Community Meetings were held by the end of Q2. No additional Community Meetings were planned in 2020.

Marketing Campaign

Customer Education and Engagement – Marketing Campaign (DEP-1.3)

Section 5.3.9.2 Page 196

Program Target: Marketing campaign to reach 5,000,000 Customer Accounts (goal of 40% awareness about the purpose of PSPS, emergency preparedness, and SCE's wildfire mitigation plan)

Status Update: The 2020 marketing campaign was launched in May and SCE tracked PSPS and emergency awareness throughout the year. Average monthly awareness throughout 2020 was ~56%.

SCE Emergency Response Training

SCE Emergency Response Training (DEP-2)

Section 5.3.9.1 Page 194

Program Target: Hold SCE IMT member training on de-energization protocols, determine additional staffing needs and train, exercise and qualify new staff

Status Update: All annual trainings and exercises have been completed for 2020. The trainings and exercises were completed virtually as a result of COVID. Additional staffing for a permanent PSPS IMT have been hired.

IOU Customer Engagement

IOU Customer Engagement (DEP-3)

Section 5.3.9.2 Page 196

Program Target: Participate in statewide multichannel and multi-lingual campaign using digital ads, social media ads, and radio ads to provide customers with important and consistent messaging about wildfire mitigation activities happening across the state

Status Update: SCE has determined there is no need for a separate statewide customer engagement campaign in addition to SCE's local market campaign and informed CalOES of this change in direction. SCE further described this change in its June 1, 2020 Off-Ramp and September 11th Change Report. SCE's local PSPS education campaign launched in May 2020 across digital channels and continued throughout wildfire season.

Customer Research and Education

Customer Research and Education (DEP-4)

Section 5.3.9.2 Page 196

Program Target: Develop/implement various research activities that gauge customer awareness, preparedness for, and satisfaction with outage experiences; to include but not be limited to: town hall meetings, online & telephone surveys, focus groups, and assessments of programs & services to prepare customers before and after PSPS outages

Status Update: Town hall meetings were completed and a report summarizing findings was published. Online and telephone surveys were conducted on programs (e.g.,CRCs/CCVs). Assessments of customer preparations before and after PSPS outages were conducted through Voice of Customer surveys.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

System Hardening Activities

Covered Conductor

137%
Circuit Miles Installed

Covered Conductor (SH-1)

Section 5.3.3.3.1 Page 118
Program Target: Install 700 circuit miles of covered conductor in HFRA. While 700 circuit miles is SCE's program target, SCE will strive to complete 1,000 circuit miles subject to resource constraints and other execution risks.

Status Update: ~960 of 700 circuit miles installed.

Undergrounding Overhead Conductor

Undergrounding Overhead Conductor (SH-2)

Section 5.3.3.16 Page 130
Program Target: Refine evaluation methodology for targeted undergrounding as a wildfire mitigation activity

Status Update: Team refined targeted undergrounding methodology and began scoping work for 2021.

Fire Resistant Poles

117%
Poles Installed

Fire Resistant Poles (SH-3)

Section 5.3.3.6.1 Page 121
Program Target: Replace 5,200 poles with fire resistant poles in HFRA. SCE will strive to replace 11,700 poles with fire resistant poles in HFRA subject to pole loading assessment results, resource constraints and other execution risks

Status Update: ~6,090 of 5,200 poles installed.

Branch Line Protection Strategy

100%
Locations

Branch Line Protection Strategy (SH-4)

Section 5.3.3.7 Page 123
Program Target: Install/replace fuses at 3,025 locations

Status Update: 3,025 of 3,025 locations installed/replaced fuses.

Install RAR/RCS

107%
RARs/RCSs Installed

Installation of System Automation Equipment – RAR/RCS (SH-5)

Section 5.3.3.9 Page 125
Program Target: Install 45 RARs/RCSs

Status Update: 49 RARs were reported as installed, however, only 48 were operationalized and end point tested by end of 2020.*

Circuit Breaker Relay Hardware for Fast Curve

167%
Installed

Circuit Breaker Relay Hardware for Fast Curve (SH-6)

Section 5.3.3.2.7 Page 118
Program Target: Replace/upgrade 55 relay units in HFRA. SCE will strive to replace up to 110 relay units in HFRA. These targets are subject to resource constraints and other execution risks.

Status Update: ~100 of 55 circuit breaker relays impacted to allow for 92 fast curve settings installed and placed into service.**

PSPS-Driven Grid Hardening Work

PSPS-Driven Grid Hardening Work (SH-7)

Section 5.3.3.8.1 Page 123
Program Target: Review 50% of all distribution circuits within HFRA to determine if modifications may improve sectionalizing capability within HFRA

Status Update: Review of all 550 in-scope distribution HFRA circuits was completed, and sectionalization and other grid-hardening (e.g. covered conductor) modifications were proposed.

Transmission Open Phase Detection

Transmission Open Phase Detection (SH-8)

Section 5.3.2.2.3 Page 106
Program Target: Continue deployment of transmission open phase detection on six additional transmission/subtransmission circuits

Status Update: All six circuits are in service and are under observation.

* 49 RARs were reported as installed in the WMP Progress Update 2020-12-31 submitted on 3/8/2021, however upon validation of records, only 48 were operationalized and end point tested by end of 2020. One of the 48, was installed and operationalized in 2019, however, not reported in the 2019 WMP due to timing.
**Following validation of records, 100 of 55 circuit breaker relays were impacted to allow for 92 fast curve settings installed and placed into service. This is a decrease of 8 from what was published in the WMP Progress Update 2020-12-31 on 3/8/2021.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

System Hardening Activities

Transmission Overhead Standards

Transmission Overhead Standards (TOH) Review (SH-9)

Section 5.3.3.18 Page 132

Program Target: Review transmission standards to determine if there are any changes that can be made to help reduce wildfire threats, especially during extreme wind events

Status Update: Completed review of historical transmission outage data and identified several recommended updates for TOH standards that will be adopted in 2021.

Tree Attachment Remediation

123%
Remediated

Tree Attachment Remediation (SH-10)

Section 5.3.3.3.2 Page 120

Program Target: Remediate 325 tree attachments. SCE will strive to complete 481 tree attachment remediations subject to resource constraints and other execution risks

Status Update: ~400 tree attachments were remediated in 2020, exceeding the WMP target. The majority, 369, of these tree attachments were scoped for future years (e.g., 2021) but were removed as a result of wildfires in the second half of the year. Documentation for this methodology and rationale was captured in the 2021 WMP Update to the WSD.

Legacy Facilities

Legacy Facilities (SH-11)

Section 5.3.3.19 Page 132

Program Target: Evaluate risk, scope, and alternatives for identified circuits; evaluation of additional system hardening mitigation for wildlife fault protection and grounding/lightning arresters

Status Update: Risk evaluations on hydro control circuits and grounding study reports on two high priority sites were completed in December. Risk evaluations for low voltage sites were completed in November. Wildlife risk evaluation was completed in July.

Remediation – Distribution

Remediations - Distribution (SH-12.1)

Section 5.3.3.12.1 Page 127

Program Target: Remediate 100% of notifications with ignition risk in accordance with CPUC requirements, non-inclusive of notifications which meet the criteria of a valid exception

Status Update: Substantially complete. As of the end of December, Distribution Remediation finished at 97% complete, missing the WMP Program target of 100%. Prior to year-end Distribution Remediations were at risk of not meeting the goal due to resource diversion to restoration efforts from catastrophic fires and other precautions taken due to record dry fuel conditions. COVID related restrictions on outages, and PSPS activations also continually delayed and slowed work throughout the year.

Remediations – Transmission

Remediations - Transmission (SH-12.2)

Section 5.3.3.12.2 Page 128

Program Target: Remediate 100% of notifications with ignition risk in accordance with CPUC requirements, non-inclusive of notifications which meet the criteria of a valid exception

Status Update: Substantially complete. As of the end of December, Transmission Remediation finished at 95% complete, missing the WMP Program target of 100%. Prior to year-end Transmission Remediations were at risk of not meeting the goal due to resource diversion to restoration efforts from catastrophic fires and other precautions taken due to record dry fuel conditions. COVID related restrictions on outages also continually delayed and slowed work throughout the year.

Remediations – Generation

Remediations - Generation (SH-12.3)

Section 5.3.3.12.3 Page 129

Program Target: Remediate 100% of notifications with ignition risk in accordance with CPUC requirements, non-inclusive of notifications which meet the criteria of a valid exception

Status Update: Remediated 100% of generation notifications with ignition risk in accordance with CPUC requirements

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Alternative Technologies Activities

MADEC

Alternative Technology Pilots - Meter Alarming for Downed Energized Conductor (MADEC) (AT-1)
Section 5.3.3.2.2 Page 115
Program Target: Evaluating algorithm improvements specific to the detection of downed energized covered conductor, which may behave differently than bare conductor

Status Update: SCE collected and analyzed meter alarm data to build an event database to enhance the MADEC algorithm. As of year-end, there were no meter alarms specific to downed, energized covered conductor to enhance the algorithm for this type of event. SCE anticipates it may take several years to collect enough datapoints for thorough analysis.

Distribution Fault Anticipation

Distribution Fault Anticipation (DFA) (AT-2.1)
Section 5.3.2.2.1 Page 106
Program Target: Evaluate technology performance on fault anticipation technology and future deployment

Status Update: An evaluation report of the performance of the 60 installed Distribution Fault Anticipation (DFA) units was completed in Q4. SCE also developed a 2021 deployment plan for additional DFA units.

Advanced UAS Study

Advanced Unmanned Aerial Systems Study (AT-2.2)
Section 5.3.4.9.2.1 Page 142
Program Target: Conduct additional Extended Visual Line of Sight (EVLOS) demonstration UAS flights using lessons learned from 2019 study and validate aerial patrol findings via truck, foot, or helicopter

Status Update: Despite the UAS team being diverted to support fire restoration efforts in Q4, the second round of UAS demonstration flights were successfully conducted with multiple vendors and validated by inspectors along a 11.5-mile segment.

Ground Fault Neutralizer

Alternative Technology Evaluations: Rapid Earth Fault Current Limiter – Ground Fault Neutralizer (GFN) (AT-3.1)
Section 5.3.3.2.3.1 Page 115
Program Target: Initiate engineering design and order equipment for a GFN field installation

Status Update: Final substation engineering and design for Ground Fault Neutralizers was released in December with construction scheduled to begin in Q1 2021. GFN equipment was received ahead of schedule in 2020.

Resonant Grounding

Alternative Technology Evaluations: Rapid Earth Fault Current Limiter – Resonant Grounding with Arc Suppression Coil (AT-3.2)
Section 5.3.3.2.3.2 Page 116
Program Target: Initiate engineering design to convert a typical substation to resonant grounding

Status Update: Final substation engineering and design for resonant grounded substation was released in December with construction scheduled to begin in Q2 2021.

Isolation Transformer

Alternative Technology Evaluations: Rapid Earth Fault Current Limiter – Isolation Transformer (AT-3.3)
Section 5.3.3.2.3.3 Page 116
Program Target: Install one Rapid Earth Fault Current Limiter - Isolation Transformer

Status Update: The Rapid Earth Fault Current Limiter - Isolation Transformer was successfully tested and commissioned in Q4.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Alternative Technologies Activities

Distribution Open Phase Detection

Alternative Technology Evaluations – Distribution Open Phase Detection (AT-3.4)

Section 5.3.3.2.4 Page 117

Program Target: Complete pilot installation for five circuit locations

Status Update: Distribution open phase detection logic has been deployed at five pilot locations as of mid-Q3. These locations have been in-serviced and are now in observation mode for alarming to validate and test the logic.

Partial Discharge Assessment

Assessment of Partial Discharge for Transmission Facilities (AT-6)

Section 5.3.4.10.2.1 Page 144

Program Target: Evaluate use of a Partial Discharge assessment technology to assess the health of in-service transmission assets

Status Update: Team conducted a benchmark assessment for Transmission Partial Discharge based on survey data, industry research, and engineering analysis. Team developed an assessment report with its findings and recommendations.

Vibration Dampers

Alternative Technology Implementation – Vibration Dampers (AT-4)

Section 5.3.3.3.3 Page 120

Program Target: Evaluate damper technologies for both small and large diameter covered conductor applications and develop standards for small and large diameter covered conductors

Status Update: SCE completed the evaluation of damper technologies and published new standards incorporating vibration damper applications for both large and small diameter covered conductor in Q4. SCE's analysis validated that dampers help prevent conductor strain.

Early Fault Detection Evaluation

Early Fault Detection (EFD) Evaluation (AT-7)

Section 5.3.2.2.2 Page 106

Program Target: Develop installation standards, install, and commission at least 10 EFD sensors. Gather data to determine requirements to support the potential for larger system deployments. SCE will strive to complete an additional 90 sensors for evaluation subject to resource constraints and other execution risks

Status Update: Team developed installation standards and completed field installation of 33 EFD units.

Asset Defect Detection Using

Asset Defect Detection Using Machine Learning Object Detection (AT-5)

Section 5.3.4.9.1.1 Page 140

Program Target: Begin standardization of data collection for Machine Learning (ML) by cataloging and tagging inspection imagery metadata for ML. Investigate SCE use cases and evaluate feasibility of ML to support objective evaluation of assets

Status Update: Documentation of 2020 machine learning findings began in December and is expected to be completed in Q1 2021. In 2020 SCE developed a process for collecting and tagging images to support machine learning model development and explored collaboration opportunities with a ML vendors.

High Impedance Relay Evaluations

High Impedance Relay Evaluations (AT-8)

Section 5.3.3.2.5 Page 117

Program Target: Investigate and deploy two controllers/relays with a High Impedance (Hi-Z) element in HFRA

Status Update: SCE installed high impedance elements at two distribution pilot locations in Q3. SCE is monitoring these installations in "alarm" mode to validate that the alarm logic is working as expected.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Inspections Activities

Distribution HFRII in HFRA

190%
structures inspected

Distribution High Fire Risk Informed Inspections (HFRII) in HFRA (IN-1.1)*
Section 5.3.4.9.1 Page 139
Program Target: Inspect 105,000 structures in HFRA

Status Update: ~199,000 of 105,000 structures inspected in HFRA.

Distribution Infrared Inspections

Infrared Inspection of Energized Overhead Distribution Facilities and Equipment (IN-3)
Section 5.3.4.4 Page 137
Program Target: Inspect 50% of distribution circuits in HFRA

Status Update: Completed goal of inspecting 50% of distribution circuit miles in HFRA in Q4.

Transmission HFRII in HFRA

158%
structures inspected

Transmission High Fire Risk Informed Inspections (HFRII) in HFRA (IN-1.2)*
Section 5.3.4.10.1 Page 143
Program Target: Inspect 22,500 structures in HFRA

Status Update: ~35,500 of 22,500 structures inspected in HFRA.

Transmission Infrared Inspections

Infrared Inspection, Corona Scanning, and High Definition Imagery of Energized Overhead Transmission facilities and Equipment (IN-4)
Section 5.3.4.5 Page 138
Program Target: Inspect 1,000 transmission circuit miles in HFRA

Status Update: 1,000+ circuit miles inspected in HFRA.

Quality Oversight / Quality Control

116%
structures inspected

Quality Oversight / Quality Control (IN-2)
Section 5.3.4.14 Page 146
Program Target: Perform quality control and oversight of inspections of 15,000 transmission, distribution, and generation structures in HFRA

Status Update: Performed quality control on ~17,400 of 15,000 structures in HFRA.

Generation HFRII in HFRA

Generation High Fire Risk Informed Inspections in HFRA (IN-5)
Section 5.3.4.16 Page 147
Program Target: Perform inspection of 200 generation-related assets

Status Update: ~290 of 200 structures inspected in HFRA.

* The Change Report filed in September 2020 describes that SCE plans to inspect ~165,000 distribution and ~33,500 transmission structures in HFRA in 2020.

WMP Activities Summary

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Inspections Activities

Aerial Inspections – Distribution
102%
structures inspected

Aerial Inspections - Distribution (IN-6.1)

Section 5.3.4.9.2 Page 141
Program Target: Inspect 165,000 structures in HFRA

Status Update: ~168,000 of 165,000 structures inspected in HFRA. The start of 2020 aerial inspections were delayed due to COVID restrictions preventing aerial inspectors from accessing the on-site inspection room. Restarted inspections in Q2. Catastrophic fires and environmental factors (visibility, winds, heat) in the second half of the year caused inspection progress to slow, but the goal of 165,000 distribution structures in HFRA was met.

Aerial Inspections – Transmission
94%
structures inspected

Aerial Inspections - Transmission (IN-6.2)

Section 5.3.4.10.2 Page 144
Program Target: Inspect 33,500 structures in HFRA

Status Update: Substantially complete**.** ~31,380 of 33,500 structures inspected in HFRA.
The start of 2020 aerial inspections were delayed due to COVID restrictions preventing aerial inspectors from accessing the on-site inspection room. Restarted inspections in Q2. Catastrophic fires and environmental factors (visibility, winds, heat) in the second half of the year caused inspection progress to slow. FAA flight restrictions in sensitive areas (government, wildlife) prevented a portion of scope from being captured.

Failure Modes and Effects Analysis

Failure Modes and Effects Analysis (IN-7)

Section 5.3.4.15.1 Page 147
Program Update: Complete FMEA study for substation assets in HFRA and prepare final report

Status Update: The working group began developing FMEA risk identification in Q2 and completed it in Q3. The final assessment report, documenting the findings and recommendations, was completed in Q4.

Appendix

Behind Plan Activities Details

WMP Activities Details

Behind Plan Activities

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Status	Current Goal	Narrative
	OP-3: Unmanned Aerial (UAS) Operations Training **Increase the number of UAS operators (FAA certified drone pilot) by an additional 50 crews**	**Summary:** As of the end of December, 42 resources had passed the FAA 107 exam. FAA-contracted testing centers were closed until July due to COVID shutdowns.* **Progress:** • 42 resources attempted and passed the FAA exam (100% pass rate) – Of these, 30 resources passed the exam in Q4 • SCE held three training courses in September and October to help employees prepare for the FAA 107 certification exam **Risks or Challenges:** • FAA 107 exams need to be taken in-person at designated testing centers. These testing centers were closed from March until July due to COVID shutdowns. • Employees within the Transmission and Distribution organizations have been highly impacted by PSPS constraining their ability to study, schedule and sit for the FAA 107 exam by year-end 2020. **Actions to Improve Performance / Get Well Plan:** • Planning for 2021 certifications and tracking an additional 8 resources to take and pass the FAA exam

* Following validation of records, 42 persons completed UAS 107 training and FAA certification in 2020. This is a decrease of 1 from what was published in the WMP Progress Update 2020-12-31 on 3/8/2021.

WMP Activities Details

Behind Plan Activities

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Status	Current Goal	Narrative
	SH-12.1: Distribution Remediations **Remediate 100% of notifications with ignition risk in accordance with CPUC requirements, non-inclusive of notifications which meet the criteria of a valid exception**	**Summary:** As of the end of December, Distribution Remediation finished at 97% complete, missing the WMP Program target of 100%. Prior to year-end, Distribution Remediations were at risk of not meeting the goal due to resource diversion to restoration efforts from catastrophic fires and other precautions taken due to record dry fuel conditions. COVID-related restrictions on outages, and PSPS activations also continually delayed and slowed work throughout the year. **Progress**: • Two regions completed 100% of their 2020 notifications. Remaining regions will complete 2020 notifications in 2021. **Risks or Challenges**: • Timely remediation of notifications was impacted in August and September due to unforeseen constraints from catastrophic fires including resource diversion to fire restoration efforts. • Other precautions were taken due to record dry fuel conditions, which further diverted resources away from WMP scope. • COVID restrictions and PSPS activations delayed and/or disallowed outages in many areas, impacting ability to safely perform work timely and maintain production **Actions to Improve or Sustain Performance:** • Detailed line-by-line analysis of the outstanding 2020 notifications is being conducted to help all Regions clear remaining obstacles to completion

WMP Activities Details

Behind Plan Activities

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Status	Current Goal	Narrative
	SH-12.2: Transmission Remediations **Remediate 100% of notifications with ignition risk in accordance with CPUC requirements, non-inclusive of notifications which meet the criteria of a valid exception**	**Summary:** As of the end of December, Transmission Remediation finished at 95% complete, missing the WMP Program target of 100%. Prior to year-end, Transmission Remediations were at risk of not meeting the goal due to resource diversion to restoration efforts from catastrophic fires and other precautions taken due to record dry fuel conditions. COVID related restrictions on outages also continually delayed and slowed work throughout the year. **Progress**: • SCE completed almost all Right of Way (ROW) notifications in 2020, an improvement from 2019 • The two Grids with the most remaining 2020 notifications were North Coast and San Joaquin. **Risks or Challenges**: • Timely remediation of notifications was impacted in August and September due to unforeseen constraints from catastrophic fires including resource diversion to fire restoration efforts. • Other precautions were taken due to record dry fuel conditions, which further diverted resources away from WMP scope. • As with Distribution Remediations (12.1), COVID restrictions and PSPS activations delayed and/or disallowed outages in many areas, impacting ability to safely perform work timely and maintain production **Actions to Improve or Sustain Performance:** • Line-by-line analysis of the outstanding 2020 notifications is being done to help all Regions clear remaining obstacles to completion.

WMP Activities Details

Behind Plan Activities

Inactive | Complete | Ahead of Plan | On Track | Behind Plan, Likely to Meet Year-end Goal | * Behind Plan, Substantially Complete

Status	Current Goal	Narrative
	IN-6.2: Aerial Inspections – Transmission **IN-6.2: Inspect 33,500 structures in HFRA**	**Summary**: As of the end of December, aerial inspections have been completed on ~31,380 transmission structures in HFRA. This is ~6% short of the WMP Goal of 33,500. **Progress**: • In Q4, inspections were completed on an additional ~9,080 structures in HFRA. **Risks or Challenges**: • COVID shutdowns had several impacts throughout 2020. The initial March shutdown caused delays in planning and starting inspections as the team adjusted to working from home and social distancing requirements. Image capture was also impacted by equipment delays at the border and drone crews being deployed back to home states. • The aerial team faced challenges in collection of scope for several additional reasons: – Inability to complete full inspections based on imagery provided by vendor – Inability to access structures (limited access routes on foot, military restrictions, U.S. Forest Service work restrictions during fire season) – FAA Temporary Flight Restrictions (TFR), specifically in air space surrounding active fires – Internal master data inconsistencies **Actions to Improve or Sustain Performance**: • The aerial team is in the process of evaluating 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). • In 2021 the aerial team is targeting inspections to start earlier in the year (e.g., Q1 2021) to make greater progress ahead of fire season.

Attachment B: SCE 2021 WMP Updated Supplemental Filing (February 21, 2021) - Response to WMP Class B Deficiency Action Statements Guidance-5, Aggregation of initiatives into programs

WMP Class B Deficiency Action Statements
Guidance-5, Aggregation of initiatives into programs

Action SCE-5: *In its 2021 WMP Update, SCE shall: 1) provide a timeline and status update for when it intends to develop quantitative evaluations for each initiative, including the status of threshold values, 2) explain why any initiatives listed in Tables 2 through 10 of the QR would not be applicable for threshold values, and 3) explain what subject matter expert (SME) expertise is being used for in the development of each quantitative value and threshold.*

Response:
SCE has identified five categories of key portfolio-level effectiveness metrics (described in its response to Guidance-5 and in SCE's 2021 WMP Update) by which most of its WMP activities may be evaluated. These effectiveness metrics proposed by SCE are:

- CPUC reportable ignitions in HFRA (total and by key drivers such as CFO, wire-to-wire, Tree Caused Circuit Interruptions, equipment failure)
- Faults in HFRA (total and by key drivers mentioned above)
- Wire down incidents in HFRA (total and by key drivers mentioned above)
- Number of customers and average duration of PSPS events
- Timeliness and accuracy of PSPS notifications

In response to Guidance 5, on September 9, 2020, SCE included all the activities in its 2020 WMP and provided effectiveness metrics for each initiative separately. In response to this Action Statement, SCE is updating its response in two ways. First, SCE is updating the response provided in Guidance 5 to reflect the 39 activities included in its 2021 WMP Update to stay consistent with the current WMP and account for new activities and eliminated activities already completed or transitioned to routine operations. SCE provided a mapping of its 2020 activities to 2021 activities in Appendix 9.3 in its 2021 WMP Update submitted on February 5, 2021. Second, SCE has linked each activity to the portfolio level key effectiveness metrics to the extent feasible as improvement in these activities is the eventual goal of our WMPs.

The 39 WMP activities are described in Table G5-SCE5-1. Also, in Table G5-SCE5-1, along with SCE's description of each activity and their 2021 program targets, SCE describes which of the five effectiveness metrics relate to the activity. The 'Quantitative Evaluation' column provides initial methods SCE may employ to measure effectiveness and thresholds thereof, subject to further refinement. As SCE analyzes the effectiveness of the WMP activities, if there are other metrics that are materially impacted, SCE will address those in future updates.

In response to parts (1) and (2) of this Action Statement, SCE notes that for all 39 WMP activities described in the Table, quantifying actual mitigation effectiveness is a complex effort that requires availability of accurate and consistent data on ignition drivers, calculation methods to be developed and normalized for weather and other exogenous factors to facilitate meaningful conclusions, and tested methods. Sufficient time is necessary to evaluate and validate real-world field performance of the mitigations over a meaningful time-period. SCE plans to build, test, and refine methods to develop threshold values for effectiveness of each of the WMP initiatives throughout Q4 2021 and will include these findings in its 2022

WMP Update. Evaluation of the initiatives themselves will occur after a sufficient volume of work has been deployed and sufficient time has passed since deployment to evaluate pre- and post-deployment changes in effectiveness metrics. For example, though covered conductor has been deployed in many areas of SCE's HFRA, we have less than two years of data which translates to very few or no incidents on any particular segment making it challenging to compare overhead conductor performance prior to and after covered conductor installation, especially when uncontrollable environmental factors are accounted for. To account for anomalies related to grid conditions, weather events, and other externalities, these results must be measured and evaluated over time. While SCE is continuing to evaluate the effectiveness of its WMP activities after deployment, SCE suggests that results may require at least 3 years of mitigation deployment in order to adequately account for these factors. Therefore, the evaluation of initiatives will be an annual exercise for SCE, with continual refinements in the measurement approaches. Finally, for those where the portfolio effectiveness metrics cannot be applied, such as digital or work management tools, SCE has provided an explanation in the Quantitative Evaluation column of the activity's role with respect to other WMP activities.

SCE has been actively investigating ways to measure and evaluate effectiveness and offers initial thoughts in the 'Quantitative Evaluation' column of the table. SCE will build upon these efforts to develop more robust and repeatable methods for assessing effectiveness in 2021. SCE also intends to investigate approaches to gauge effectiveness in targeting and deploying wildfire mitigations to the highest risk areas. An important component of these efforts will be to benchmark with other utilities and organizations on best practices and methods. For most initiatives, SCE is in the process of evaluating the appropriate methods to quantify effectiveness for each initiative, and therefore thresholds have not yet been set. Finally, SCE would appreciate the opportunity to partner with WSD in this effort and suggests that a workshop be held in early Q3 of this year to share our progress and obtain feedback from WSD in advance of the 2022 WMP Update.

Within the attached table, for those WMP initiatives which SCE has risk-scored in the 2021 WMP Update, SCE provides estimates of expected effectiveness based on the risk and RSE analysis. These are not equivalent to threshold metrics as the WMP activities are potentially effective even if they provide lesser benefits than expected. For example, though our engineering judgment might say that covered conductor is 99% effective in reducing faults associated with a particular driver, 70-80% effectiveness in reducing faults would still be a significant improvement over bare conductor performance. SCE intends to utilize these risk-informed measurements to continuously refine the assumptions that are used to model the mitigation effectiveness of each initiative, and to help inform future levels and scope of deployment of the mitigation.

3) Subject Matter Expertise: SCE has used and is continuing to use the expertise of various resources to develop the methodology by which to quantify effectiveness, perform those calculations, and establish associated thresholds. This includes:

- Engineering and technical experts associated with each initiative who are experts in how each technology performs;
- Risk modelers and data scientists with expertise in statistical analysis and evaluation who help build and calculate quantitative metrics and thresholds;
- Performance management professionals who track performance following deployment of activities and align metrics and threshold values to evaluate effectiveness;

- Customer service professionals who evaluate customers awareness, understanding and gauge satisfaction with programs intended to reduce PSPS impacts to customers;
- Meteorology and weather professionals who use advanced tools and models to evaluate and forecast weather conditions; and
- Other SMEs as needed.

Table G5-SCE5-1

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
SA-1	Weather Stations	SCE expects to install 375 weather stations but will attempt to install as many as 475	Information from weather stations directly provide localized data on wind speed and FPI which are two of the factors which inform PSPS trigger thresholds and affect when PSPS events are called. Data from additional weather stations helps improve weather forecasting capabilities at a circuit and sub-circuit level. Additionally, by installing weather stations on specific segments of circuits, SCE is able to monitor and forecast weather at higher granularity that in turn can help decisions to sectionalize circuits and reduce the scope of PSPS events to fewer circuit segments. This improves the # of impacted customer and average duration, and timeliness and accuracy of PSPS notifications.	- Number of customers impacted and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE intends to measure the effectiveness of weather stations in improving the accuracy of weather models that drive PSPS de-energization decisions. The model results from the weather station installations will be compared with the model results from the alternative, which is to use Live Field Observations (LFO) to measure weather. The comparison will be used to draw conclusions about the effectiveness of this activity before and after deployment of additional weather stations. SCE intends to utilize data from 2018 to compare current and future years to measure the improvements in restoration time and duration over time. See parts (1) and (2) of action statement for evaluation timeline.
SA-2	Fire Potential Index (FPI)	1) Backcast 20 years of FPI using FPI 2.0 before typical height of fire season (Q3) to determine historical performance compared to current FPI 2) Run FPI 2.0 in parallel with the current FPI and compare outputs for the 2021 fire season	FPI estimates conditional fire potential at the circuit level; as accuracy of the FPI increases, it will lead to improvements in the accuracy, timeliness, and precision of PSPS decision making. By integrating historical weather and vegetation data into the FPI, SCE will improve the accuracy of this index which is a direct input into PSPS decision making. This will better inform PSPS decision-making by better estimating the potential risk of fire ignition and spread at the PSPS circuit level. Accurate FPI improves timeliness and accuracy of PSPS notifications to help better identify areas in scope for a PSPS event by more accurately targeting the number of circuits in scope and, hence, reducing number of customers who may need to be de-energized.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE intend to measure the effectiveness of the new FPI by comparing the historical performance of new and current FPI for critical and non-critical events by the end of Q3 2021; the results will be leveraged to validate or calibrate the FPI equations appropriately. Accurate FPI improves timeliness and accuracy of PSPS notifications to help better identify areas in scope for a PSPS event by more accurately targeting the number of circuits in scope and, hence, reducing the number of customers who may need to be de-energized (SCE anticipates updating the risk model ties to this metric by end of Q1 2022). See parts (1) and (2) of action statement for evaluation timeline.
SA-3	Weather and Fuels Modeling	Install two additional High-Performance Computing Clusters (HPCCs) to facilitate the installation and operationalization of the Next Generation Weather Modeling System allowing for more precise, higher resolution output	The installation of two additional HPCCs will enable SCE to produce ensemble forecast output at a 1 km resolution. This improved granularity ensemble output will provide SCE with more accurate forecasts of wind speed and FPI at the circuit level, which will ultimately improve the decision making of PSPS.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	As the Weather and Fuels Modeling will double the resolution of SCE's weather modeling, SCE intends to measure the effectiveness of this initiative by comparing the accuracy of forecasts of wind speed and FPI at the circuit level at 2km versus 1km. This would impact the number of de-energization circuits in scope and the number of customers impacted who may not need to be de-energized due to lower resolutions. See parts (1) and (2) of action statement for evaluation timeline.
SA-4	Fire Spread Modeling	Develop a methodology and a strategy to test FireCast/FireSim implementation into PSPS decision making based on backcast information by Q3	The Technosylva products allow SCE to simulate "what if scenarios" to predict various fire ignition and consequence outputs such as fire perimeter size, structures impacted, populations affected, injury and death, etc. This output will help SCE coordinate response during active wildfire events and may be used as an input to inform PSPS decision making.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE intends to measure the effectiveness of Fire Spread Modeling in improving timeliness and accuracy of PSPS notifications by evaluating how fire spread calculations would have affected de-energization decisions made historically (evaluations expected to be implemented by the start of Q3 2021). SCE intends to utilize the output to calibrate de-energization decisions as needed by end of Q3 2021. Similar to SA-2 and SA-3, this activity increases granularity to improve identification of areas in scope for a PSPS event, which will affect accuracy of PSPS notifications and number of customers de-energized. See parts (1) and (2) of action statement for evaluation timeline.
SA-5	Fuel Sampling Program	Maintain periodic fuel sampling across SCE's HFRA and evaluate the need to sample additional locations	This semi real-time measurements of vegetation moisture for 15 sites is an additional input which helps calibrate FPI which in turn increases the precision of PSPS decision making. This data can also be used to adjust inputs for fire spread calculations which will help improve the accuracy of fire consequence modeling.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE plans to track observed live fuel moisture to make appropriate adjustments to the FPI. SCE intends to measure the effectiveness of Fuel Sampling Program, by measuring the FPI accuracy before and after the live fuel moisture from the Fuel Sampling Program is incorporated, in impacting the accuracy of PSPS notifications and the number of customers impacted by a PSPS event. See parts (1) and (2) of action statement for evaluation timeline.
SA-7	Remote Sensing / Satellite Fuel Moisture	Initiate wind profiler pilot project to validate weather model performance for potential improvements to weather models	While this initiative does not reduce ignition risk or consequence directly, it enhances SCE's overall capability in our risk modeling and has the potential to improve FPI which is a direct input to PSPS decision making. Additionally, it can help improve Technosylva's fire consequence models that can help better target and prioritize WMP deployment.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE intends to measure the effectiveness of Remote Sensing in improving real-time de-energization decisions, by comparing the accuracy before (using in-house weather model forecasts) and after the implementation of the pilot to develop site-specific information about winds. This activity directly impacts the number of impacted customers and imminent notifications. See parts (1) and (2) of action statement for evaluation timeline.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
SA-8	Fire Science Enhancements	Evaluate current wildfire events in context of 40-year history of wildfires	While this initiative does not reduce ignition risk or consequence directly, it will help put current events into a historical perspective.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE intends to measure the effectiveness of Fire Science Enhancements in improving the accuracy of the PSPS event. This will help to better understand a PSPS event (whether typical or anomaly), given the historical context. Initial results are expected by the end of Q4 2021. See parts (1) and (2) of action statement for evaluation timeline.
SA-9	Distribution Fault Anticipation (DFA)	Complete installation of 120 DFA units on circuits in SCE's HFRA and continue evaluation of DFA technology which may result in SCE installing up to 150 units	DFA systems have the potential to provide awareness of arcing events and draw attention to unique fault events which may be precursors to future fault events using electrical signatures. Early detection to allow time to take proactive remedial action(s) is expected to reduce faults, potential ignitions, and indirectly reduce wire down events as a proportion of faults reduced.	- CPUC reportable ignitions in High Fire Risk Area (HFRA) - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics for risk drivers that DFA is effective in mitigating (e.g. CFO-driven faults, wire downs and ignitions) in the areas where DFA has been deployed, prior to and after deployment of DFA. See parts (1) and (2) of action statement for evaluation timeline. In addition, DFA reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 2% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
SH-1	Covered Conductor	SCE expects to install 1,000 circuit miles of covered conductor in SCE's HFRA but will attempt to install as many as 1,400 circuit miles of covered conductor in SCE's HFRA, subject to resources constraints and other execution risks	Covered conductor is anticipated to significantly reduce contact-from-object and wire-to-wire ignition risks as well as indirectly reduce the frequency of wire down events by reducing the number of faults. CC deployment on an entire circuit segment impacts the PSPS threshold, but only when installed on an entire segment	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA - Number of impacted customers and average duration of PSPS events	SCE intends to measure the number of incidences of each of these metrics for risk drivers that covered conductor is effective in mitigating (e.g. CFO-driven faults, wire downs and ignitions) in the areas where covered conductor has been deployed, prior to and after deployment of covered conductor. See parts (1) and (2) of action statement for evaluation timeline. In addition, covered conductor (and fire resistant poles) reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 66% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA. SCE intends to measure the ability for covered conductor to reduce the number of customers impacted and the average duration of PSPS events by comparing a circuit prior to and after SCE has fully covered that circuit or circuit segment with covered conductor. In order for SCE to increase the wind thresholds by which PSPS de-energization events are called, an entire circuit segment must be covered. SCE anticipates completely covering numerous isolatable circuit segments and circuits that are within PSPS deenergization scope in 2021. Therefore, SCE expects to be able to show actual results of the effectiveness of this mitigation after such time as the circuit is completely covered and there are potential PSPS events on that circuit that can incorporate these updated thresholds.
SH-2	Undergrounding Overhead Conductor	Install 4 miles of undergrounded HFRA circuits SCE will attempt to install 6 miles of undergrounded HFRA circuits, subject to resource constraints and other execution risks, such as permitting, environmental or coordinating with other utilities	Undergrounding is expected to nearly eliminate faults and ignitions associated with overhead distribution lines where deployed.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA - Number of impacted customers and average duration of Public Safety Power Shutoff events	SCE intends to measure the number of incidences of each of these metrics for risk drivers that underground construction is effective in mitigating (e.g. CFO-driven faults, all wire downs and all ignitions) in the areas where undergrounding facilities has been deployed, prior to and after deployment of the undergrounding construction. See parts (1) and (2) of action statement for evaluation timeline. In addition, undergrounding reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 91% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA. SCE expects undergrounding to be fully effective in mitigating PSPS de-energization events on circuits that are fully undergrounded, removing them from PSPS deenergization scope. SCE is currently evaluating locations that may be within scope for PSPS.
SH-4	Branch Line Protection Strategy	Install or replace fusing at 330 fuse installation locations SCE will strive to install or replace fusing at 421 locations, subject to resource constraints and other execution risks	Ignition probability is expected to be reduced by the installation of branch line circuit protection, such as current limiting fuses. As described in the WMP Section 5.3.3.17, the fusing program is intended to reduce the risk of fire ignitions associated with SCE's distribution lines and equipment by reducing fault energy.	- CPUC reportable ignitions in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that current limiting branch line protection/fuses are effective in mitigating (e.g. ignitions caused by equipment failure by replacing existing fuses with new current limiting fuses) in the areas where current limiting fuses have been deployed, prior to and after deployment of current limiting fuses. See parts (1) and (2) of action statement for evaluation timeline. In addition, current limiting fuses reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 4% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
SH-5	Installation of System Automation Equipment – RAR/RCS	N/A – If RARs/RCSs are determined to be necessary based on the SH-7 analysis, SCE will develop appropriate project plans	As stated in the WMP Section 5.3.3.9, SCE is expanding its system automation equipment strategy to target both RARs and additional sectionalizing devices such as RCSs to provide important isolating capabilities that could minimize the frequency of customer outages during PSPS and other outage events.	- Number of impacted customers and average duration of PSPS events - Timeliness and accuracy of PSPS notifications	SCE expects automation equipment to provide important isolating capabilities that could minimize the frequency and duration of PSPS deenergization events for customers. At this time, SCE is determining the 2021 scope for RARs/RCS based upon SH-7 analysis, and currently there is no 2021 target for deployment.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
SH-6	Circuit Breaker Relay Hardware for Fast Curve	Replace/upgrade 60 relay units in HFRA SCE will strive to replace/upgrade 86 relay units in HFRA, subject to resource constraints and other execution risks	Reducing fault current duration will reduce arcing and fault energy helping reduce wildfire ignition risk.	- CPUC reportable ignitions in HFRA - Wire down incidents in HFRA	SCE activates Fast Curve relay settings during elevated fire risk conditions that generally vary based on weather conditions and other factors. SCE plans to further assess threshold values throughout 2021 for the SH-6 program. While we expect there is directional improvement for reducing wire down events, we have not established metrics in the wire down category. SCE intends to measure the number of incidences of each of these metrics that CB fast curve settings are effective in mitigating (e.g. ignitions and wire down events) prior to and after deployment of circuits with CB fast curve settings. See parts (1) and (2) of action statement for evaluation timeline. In addition, CB fast curve settings reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 4% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
SH-7	PSPS-Driven Grid Hardening Work	SCE will develop a methodology to project probability of PSPS de-energization and impact. Utilizing this methodology, SCE will adopt a more targeted approach by evaluating highly impacted circuits from the remaining 50% circuits in HFRA (50% was completed in 2020). The outcome of this evaluation will identify mitigations/projects that could be implemented in other system hardening activities such as SH-1 and SH-5.	This initiative constitutes an evaluation and will not on its own reduce risk. The grid hardening projects recommended by SH-7 are expected to reduce PSPS frequency and scope	- Number of impacted customers and average duration of PSPS events	The effectiveness of this activity can only be measured when the recommendations by SH-7 are implemented. The effectiveness quantification of these recommendations is covered under SH-1, SH-2, and SH-5.
SH-8	Transmission Open Phase Detection	Install transmission open phase detection devices on 10 transmission circuits	By detecting and isolating lines prior to contacting ground when conductors and conductor related hardware (such as splices) fail, the TOPD system is expected to reduce ignition risk associated with wire down events.	- CPUC reportable ignitions in HFRA	The Transmission Open Phase Detection (TOPD) scheme will be implemented onto existing assets (Relays) for 10 Transmission lines residing within HFRA by Q4 of 2021. Upon implementation of said scheme, the TOPD will follow a 6-month evaluation period leading into Q2 of 2022. During the evaluation period, the Transmission line relays will be in Alarm mode only rather than trip mode. This approach will allow SCE to monitor the performance of our relay schemes while maintaining reliable operation of the network. In Q3 of 2022, with acceptable results from the TOPD scheme, SCE intends to configure the TOPD scheme to allow operational flexibility to transition between Alarm mode to Alarm/Trip mode when required. SCE is anticipating a 90% effectiveness rate for detection and isolation of separated conductor on the 10 targeted Transmission Line installations. However, it is important to recognize lower detection thresholds are also improvements over present systems which do not currently detect conductor separation events.
SH-10	Tree Attachment Remediation	Remediate 500 tree attachments; SCE will strive to complete over 600 tree attachment remediations, subject to resource constraints and other execution risks	Reducing tree attachments reduces the probability of conductors failing from compromised tree integrity or vegetation contact which in turn reduces the probability of ignitions.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that tree attachment remediations are effective in mitigating (e.g. wire down events that are caused by failure of the tree attachment) in the areas where tree attachments have been remediated, prior to and after remediation of tree attachments. See parts (1) and (2) of action statement for evaluation timeline.
SH-11	Legacy Facilities	Hydro Control Circuits – Perform evaluation on 5 circuits for possible system hardening improvements Low Voltage Site Hardening – Create 2 project plans based on 2020 engineering assessments Grounding Studies/Lightning Arrestor Assessments: Complete 12 additional assessments	This initiative will identify system hardening at these facilities, which will reduce faults and in turn probability of ignitions.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE is currently evaluating legacy facilities for this activity and expects to complete the evaluation in 2022. Additional evaluation or threshold values would be established to align with the actions from the evaluation.
SH-12	Microgrid Assessment	Perform internal assessment of vendor bid and location options. If assessment is favorable, SCE will issue an engineering, procurement, construction (EPC) contract to a vendor that meets SCE's design requirements	This initiative does not directly reduce the probability or consequence of ignitions but can provide PSPS resilience to multiple customers in areas expected to be frequently impacted by PSPS.	- Number of impacted customers and average duration of PSPS events	The system will be evaluated by the reduction in customer minutes of interruption for the supported circuit. Evaluation will not begin until system is operational in 2022.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
SH-13	C Hooks	Replace C-Hooks on at least 40 structures in HFRA SCE will strive to replace all C hooks in HFRA, currently estimated between 50-60 structures	Failure of a C-hook could lead to a risk event with ignition probability	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that C hook replacements are effective in mitigating in the areas where C hooks have been replaced, prior to and after replacement of C hooks. See parts (1) and (2) of action statement for evaluation timeline. In addition, C hook replacement reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be less than 1% against the overall set of ignition-causing risk drivers.
SH-14	Long Span Initiative (LSI)	Complete all field assessments for locations and corresponding remediations Remediate the highest risk locations, estimating that 300, and up to 600, locations will be remediated in 2021, subject to the completion timeline for inspections, resource constraints and other execution risks	Remediation of the highest-risk locations will reduce conductor clashing (wire-to-wire contact), and in turn the probability of ignitions	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Long Span Initiative (LSI) is effective in mitigating in the areas where LSI has been deployed, prior to and after deployment of LSI. See parts (1) and (2) of action statement for evaluation timeline. In addition, LSI reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 7% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
SH-15	Vertical Switches	Install 20 switches in HFRA SCE will strive to install 30 switches in HFRA	Replacement of vertical switches in HFRA targets reducing risk with vertical switch failure events which can produce incandescent particles, and therefore reduce the risk of ignitions that can lead to wildfires.	- CPUC reportable ignitions in HFRA - Faults in HFRA	SCE fault event data is extrapolated from outage events. The switch failures of concern many times occur when a downstream fault event occurs. This type of switch failure event commonly only produces a single outage scenario and therefore switch replacement may not have an appreciable change to outage or fault quantities. See parts (1) and (2) of action statement for evaluation timeline. SCE intends to measure the number of incidences of each of these metrics that vertical switches are effective in mitigating in the areas where vertical switches have been deployed, prior to and after deployment of vertical switches. In addition, vertical switches reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 2% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
IN-1.1	Distribution High Fire Risk Informed Inspections in HFRA	Inspect between 163,000 and 198,000 structures in HFRA, via both ground and aerial inspections. This target includes HFRI, compliance-due structures in HFRA and emergent risks during the fire season	Inspections identify conditions in need of remediation (i.e. priority notifications), notifications are prioritized, and notifications are expected to be remediated before they fail and cause a fault/wire down/ignition. Inspections lead to remediations, and these remediations help reduce ignition probability factors.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Distribution OH inspections identify and are ultimately remediated to reduce risk ("Distribution OH Inspections & Remediations") are effective in mitigating in the areas where Distribution OH Inspections & Remediations have been completed, prior to and after completion of Distribution OH Inspections & Remediations. See parts (1) and (2) of action statement for evaluation timeline. In addition, Distribution OH Inspections & Remediations reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 37% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
IN-1.2	Transmission High Fire Risk Informed Inspections in HFRA	Inspect between 16,800 and 22,800 structures in HFRA, via ground and aerial inspections. This target includes HFRI, compliance-due structures in HFRA and emergent risks during the fire season.	Inspections identify conditions in need of remediation (i.e. priority notifications), notifications are prioritized, and notifications are expected to be remediated before they fail and cause a fault/wire down/ignition. Inspections lead to remediations, and these remediations help reduce ignition probability factors.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Transmission OH inspections identify and are ultimately remediated to reduce risk ("Transmission OH Inspections & Remediations") are effective in mitigating in the areas where Transmission OH Inspections & Remediations have been completed, prior to and after completion of Transmission OH Inspections & Remediations. See parts (1) and (2) of action statement for evaluation timeline. In addition, Transmission OH Inspections & Remediations reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 3% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
IN-3	Infrared Inspection of energized overhead distribution facilities and equipment	Inspect approximately 50% of distribution circuits in HFRA	Inspections identify conditions in need of remediation, conditions are prioritized, and items are remediated before they fail and cause a fault. Inspections that lead to remediations help reduce ignition probability factors.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Infrared Inspection of Energized OH Distribution Equipment identify and are ultimately remediated to reduce risk ("Distribution OH Infrared Inspections & Remediations") are effective in mitigating in the areas where Distribution OH Infrared Inspections & Remediations have been completed, prior to and after completion of Distribution OH Infrared Inspections & Remediations. See parts (1) and (2) of action statement for evaluation timeline. In addition, Distribution OH Infrared Inspections & Remediations reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 1% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
IN-4	Infrared Inspection, Corona Scanning, and High Definition imagery of energized overhead Transmission facilities and equipment	Inspect 1,000 transmission circuit miles on HFRA circuits	Inspections identify conditions in need of remediation (i.e. priority notifications), notifications are prioritized, and notifications are expected to be remediated before they fail and cause a fault/wire down/ignition. Inspections lead to remediations, and these remediations help reduce ignition probability factors.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Infrared Inspection, Corona Scanning and HD image capture of energized OH Transmission equipment identify and are ultimately remediated to reduce risk ("Transmission OH Infrared Inspections & Remediations") are effective in mitigating in the areas where Transmission OH Infrared Inspections & Remediations have been completed, prior to and after completion of Transmission OH Infrared Inspections & Remediations. In addition, Transmission OH Infrared Inspections & Remediations reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be less than 1% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
IN-5	Generation High Fire Risk Informed Inspections in HFRA	Complete inspection of 181 generation-related assets in HFRA	Inspections identify conditions in need of remediation (i.e., priority notifications), notifications are prioritized, and notifications are expected to be remediated before they fail and cause a fault/wire down/ignition. Inspections lead to remediations, and these remediations help reduce ignition probability factors.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	Deterioration of electrify equipment in generation facilities pose the same fault and ignition risks described in the Distribution HFRI Inspection program (IN-1.1). Because SCE's generation facilities are often located in or near heavily forested areas, wildfire propagation in these areas could affect critical power generation infrastructure and equipment. Consistent with our RSE calculations, effectiveness of this activity will be evaluated through to IN-1.1.
IN-8	Inspection Work Management Tools	Transition Aerial and Transmission Ground inspection processes to a single digital platform with at least 75% of inspectors trained to use the tool by year end 2021 Key AI/ML models leveraged by the Aerial inspection process; Deploy scope mapping tool with GIS visualization to Distribution Planning and Engineering users Deploy remediation mobile software and iPad devices for transmission and distribution	The Inspection Work Management Tools are enabling activities to the inspection and remediation activities described in IN-1.1 and IN-1.2.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	Because IN-8 is an enabling activity for IN-1.1 and IN-1.2, the effectiveness is measured by the effectiveness of IN-1.1 and IN-1.2.
VM-1	Hazard Tree Management Program	Assess between 150,000 and 200,000 trees for hazardous conditions and perform prescribed mitigations in accordance with program guidelines and schedules	HTMP will reduce vegetation caused faults from fall-ins and blow-ins and therefore reduce probability of ignition.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Hazard Tree Mitigation Program (HTMP) are effective in mitigating in the areas where HTMP have been deployed, prior to and after deployment of HTMP. See parts (1) and (2) of action statement for evaluation timeline. In addition, HTMP reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 8% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
VM-2	Expanded Pole Brushing	SCE plans to pole brush between 200,000 and 300,000 Distribution poles	Performing brush clearance prevents fires spreading to and from poles, reducing probability and consequence of ignitions.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Hazard Tree Mitigation Program (HTMP) are effective in mitigating in the areas where HTMP have been deployed, prior to and after deployment of HTMP. See parts (1) and (2) of action statement for evaluation timeline. In addition, HTMP reduces risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 8% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
VM-3	Expanded Clearances for Legacy Facilities	Treat 46 sites	These assessments and treatments will help ensure SCE maintains vegetation clearance requirements per NERC, ANSI, and CALFIRE ordinances in all identified legacy facilities in HFRA. Reducing vegetation and fuel will reduce probability of ignition and reduce spread in the case of ignition.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	Expanded clearances for Legacy Facilities began in 2020 and SCE was able to treat 46 sites throughout the year. When comparing vegetation-related findings from the inspection activity (IN-5) for 2019 and 2020, SCE saw a decrease of 23% in findings. SCE expects findings to continue to decrease and remain low as we treat additional sites and maintain clearances in accordance with our annual vegetation maintenance plan. The focus of this activity is to reduce fuel, provide a defensible space and slow the spread of fire in the case of a future ignition. In addition, Expanded Clearances reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be less than 1% against the overall set of ignition-causing risk drivers.
VM-4	Dead and Dying Tree Removal	Perform Drought Relief Initiative (DRI) annual inspections and perform prescribed mitigations in accordance with program guidelines and schedules	Reducing the probability of dead, dying or diseased trees with compromised integrity falling into lines will reduce vegetation related faults and in turn reduce probability of ignitions.	- CPUC reportable ignitions in HFRA - Faults in HFRA - Wire down incidents in HFRA	SCE intends to measure the number of incidences of each of these metrics that Drought Relief Initiative (DRI) are effective in mitigating in the areas where DRI have been deployed, prior to and after deployment of DRI. See parts (1) and (2) of action statement for evaluation timeline. In addition, DRI reduce risk across specific sub-drivers that cause ignitions. Based on SCE's risk modeling used in the 2021 WMP Update, SCE estimates the overall mitigation effectiveness of this activity to be approximately 7% against the overall set of ignition-causing risk drivers, assuming deployment across HFRA.
VM-6	VM Work Management Tool (Arbora)	Continue Work Management Tool (Arbora) agile development and releases in accordance with project plan – complete full rollout of Dead & Dying Tree Removal and Hazard Tree Mitigation, and conduct discovery and design architecture associated with Line Clearing	Aligns workstreams to improve visibility to high risk areas across VM programs & increases work efficiency through aligning in-flight capital work. Improving work processes and work management can lead to reduced ignitions and faults from vegetation-contact with conductors.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	Because VM-6 is intended to be an enabling activity for all VM activities, its effectiveness is measured through VM activities.
PSPS-2	Customer Care Programs	Community Resource Centers (CRC): Enable up to 15 remote CRCs with a backup transfer switch. Community Resiliency Programs: Resiliency Zones: Targeting to obtain 5 to 10+ additional agreements, pending community leaders identifying potential customer sites. Customer Resiliency Equipment Incentive: Complete installation of microgrid islanding (CREI) capability on second pilot customer. CCBB: Expand the CCBB program to all eligible Medical Baseline customers (CARE/FERA & HFRA) and increase outreach activities to increase enrollment Well Water & Residential Battery Station Rebates: Increase customer participation by 20% - 40%	These activities do not directly reduce ignition probability or wildfire consequence, but are necessary for supporting SCE's customers during PSPS events. CRCs help mitigate the impacts of PSPS events by providing customers with information about SCE's PSPS resiliency programs and incentives, the ability to update contact information and enroll in outage alerts, as well as other amenities such as bottled water and light snacks, ice and ice vouchers, restroom access, and the ability for customers to charge personal devices. During the COVID-19 pandemic, CRC services have been altered to protect public safety further (social distancing, Resiliency kits with PPE). The Resiliency Zones Pilot will equip essential services (gas stations, markets, etc.) in remote zones that participate in the pilot with the electrical equipment for back-up generation, and SCE will deploy back-up power during PSPS events. The Critical Care Backup Battery (CCBB) Program is designed to assist SCE's most vulnerable customers by providing a free portable backup battery to temporarily power medical devices during an outage. By expanding the program to target a larger eligible customer population, SCE will increase back-up batteries deployed to vulnerable customers in HRFA that may not otherwise have the resources to procure necessary resiliency equipment. Well water generator rebates are designed to help mitigate the impact of the de-energization by enabling ongoing access to water that would	- Reduces consequence of PSPS de-energization events	CRCs: The effectiveness of CRCs will be measured by survey assessments taken by customers that visit CRCs during PSPS events. Resiliency Zones: SCE will assess the effectiveness of the Resiliency Zones pilot through post-event utilization learnings, as well as the receptiveness of the program with county and community leaders as evidenced by participation in identifying site locations. CCBB Program: SCE will measure the effectiveness of the CCBB program through customer participation and battery deployment volume, as well as through customer satisfaction surveys post battery deployment. Well Water & Residential Battery Station Rebates: Effectiveness will be measured by total customer rebate redemption against our target of increasing redemption by 20 to 40%.

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
DG-1	Wildfire Safety Data Mart and Data Management (WiSDM / Ezy)	WiSDM: - Complete the WisDM solution analysis and design phase for centralized data repository - Initiate staggered consolidation of datasets from SCE Enterprise systems Ezy Data: - Implement the cloud platform infrastructure for Ezy Data - Build a solution for data consumption, storage and visualization of inspection data (LiDAR, HD video, photograph) - Enable an environment for Artificial Intelligence (AI) assisted analytics	Improves accessibility of wildfire data across all WMP activities (inspection, mitigation, system hardening, vegetation management and PSPS efforts) and improves efficiency of reporting, among many other benefits.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	DG-1 is an enabling activity for data management, improved reporting and data sharing of other WMP activities, and its effectiveness is measured through other WMP activities in these areas.
DEP-1.2	Customer Education and Engagement - Community Meetings	Host at least nine virtual community meetings SCE will complete additional meetings as needed in 2021, based on PSPS impact to communities, up to 18	This activity is not intended to directly reduce ignition probability or wildfire consequence; however, it can help customers and communities be better prepared thus reducing the impacts of wildfire and PSPS events. Collaboration with the communities can also facilitate timely completion of wildfire mitigation work which would reduce wildfire risks in turn.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	While the community meetings do not reduce ignition probably or wildfire consequences, they help external stakeholders and customers better understand and be prepared for SCE's wildfire mitigation activities, including PSPS, as well as the customer programs and resources available to support them. The effectiveness of DEP-1.2 will be determined through DEP-4, as described in the entry for DEP-4.
DEP-1.3	Customer Education and Engagement - Marketing Campaign	PSPS Customer Awareness goal: 50%	While not intended to reduce ignition probability or wildfire consequence, the marketing campaign seeks to educate customers about PSPS and emergency preparedness and reduce impact of a PSPS or wildfire event through customers' preparedness.	- PSPS Customer Awareness goal	Effectiveness of the marketing campaign is measured by the PSPS customer awareness goal. The threshold to determine whether SCE is effective in its outreach is set to 50%, a higher percentage would indicate SCE's outreach is meeting the objective of the marketing campaign. SCE is continuing to refine its methodology for measuring the effectiveness of this activity. This is an enabling activity, and does not directly impact the five effectiveness metrics nor reduces wildfire risk. The effectiveness of DEP-1.3 will be determined through DEP-4, as described in the entry for DEP-4.
DEP-2	SCE Emergency Responder Training	IMT – Have all PSPS IMT and Task Force members fully trained and qualified or requalified by July 1, 2021 UAS – In 2021 SCE plans to expand the program by an additional 50 operators over 2020 levels	IMT - A trained and qualified incident management team is more effective in PSPS operations, thus mitigating the risk of wildfires along with frequency and scope of PSPS. Additionally, a well-trained team provides greater consistency and precision across each PSPS event. UAS - SCE develops technical training programs to train qualified personnel in the use of unmanned aircraft to perform activities such as pre-patrol inspections which can provide quicker and greater precision in identifying potential hazard on system equipment in areas that can be difficult to accurately detected from ground, thus reducing the risk of ignitions, faults and wire-downs. Additionally, this training program ensures qualified personnel can operate unmanned aircraft safely for post-patrol inspections during PSPS events, as circuits must patrolled to identify potential hazards before energization, which can reduce the overall PSPS durations and number of customer impacted.	IMT and UAS - These activity serve the purpose of enabling a number of the remaining WMP activities and therefore maps indirectly to all outcome-based metrics	IMT - While this is an enabling activity, SCE will continue to evaluate whether there is a direct correlation to PSPS average duration and accuracy of PSPS notification metrics. SCE aims to have 100% passing rate for trainings of all PSPS IMT and Task Force members who will be fully trained and qualified by July, 2021; with an additional 50 operators over 2020 levels who will be included in the program in 2021. Additionally, SCE will continue to explore the effectiveness of this activity and potentially leverage the datapoints included in after-action reports (populated post PSPS event) to measure the improvements made over time related to corrective actions and lessons learned which may have an impact on increasing accuracy and timeliness of PSPS notifications. UAS - By certifying additional resources to be able to operate drones, SCE is positioned to mitigate wire down, ignitions and faults through pre-patrol inspections by identifying anomalies more quickly (e.g., broken cross-arms, malfunctioning equipment, trees touching or falling into lines). For post-patrol inspections, drones can be utilized to evaluate the field conditions faster and perform inspections prior to re-energizing the circuits during the PSPS events. This may be especially beneficial for areas that are difficult to access. By utilizing drones in post-patrol, this may increase the efficiency and reduce the outage durations during PSPS events.
DEP-4	Customer Research and Education	Administer at least 4 PSPS-related surveys (PSPS Tracker Survey to capture feedback on the 2020 events, wildfire community meeting feedback survey, CRC/CCV feedback survey, In-Language Wildfire Mitigation Communications Effectiveness Pre/Post Survey)	This initiative is not intended to reduce ignition probability or wildfire consequence, but information from customer surveys will measure how effective we are at educating customers of WMP initiatives and communicating with them about PSPS events, where we can help improve customer communication channels, materials, and other resources, thus helping customers' preparedness for wildfires and PSPS events.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	Surveying stakeholders is a support function to collect customer insights and serves as a feedback mechanism for other WMP activities (DEP-1.2, DEP-1.3, PSPS-2) to improve their effectiveness. For the PSPS Tracker survey, SCE aims to receive completed survey responses from at least 500 customers in each of the 4 sample groups targeted in the Residential survey, and aims to receive completed survey responses from at least 100 customers in each of the 4 sample groups targeted in the business customer survey. For community meetings and CRC/CCV deployment feedback surveys, there is not a target response rate as it is entirely based on a customer's choice to respond to the survey request. For the In-Language Wildfire Mitigation Communications Effectiveness Pre/Post Survey, there are separate surveys for residential customers and business customers. For the residential survey, SCE aims to receive completed survey responses from a minimum of 2,000 Residential customers per survey wave. For the Business customer survey, SCE aims to receive completed survey responses from a minimum of 400 Business customers in each survey.

GUIDANCE 5 ACTION STATEMENT SCE-5
Table G5-SCE5-1

Activity #	Initiative / Activity	Projected Target by End of 2021	Describe the effectiveness of each initiative at reducing ignition probability or wildfire consequence	Metrics Impacted	Quantitative Evaluation
DEP-5	Aerial Suppression	Enter a Memorandum of Understanding (MOU) with CAL FIRE and local county fire departments to provide standby cost funding for up to 5 aerial suppression resources strategically placed around the SCE service area	While aerial suppression resources will not be able to stop a fire at the onset, they can be used to reduce the area and assets burned and enable faster response times. In addition, aerial suppression resources help lower emergency response support costs and help minimize the impact of redirecting work crews from previously scheduled maintenance and construction work to emergency response.	- These activities serve the purpose of enabling a number of the remaining WMP activities and therefore map indirectly to the outcome-based metrics	Based upon SCE's preliminary risk modeling results, SCE expects that aerial suppression activities are able to reduce the expected consequence of ignitions that materialize into large wildfires. Aerial suppression is estimated to reduce the consequence risk of ignitions. See parts (1) and (2) of action statement for evaluation timeline.

Attachment C: SCE 2020 WMP Cost Variance Explanation

SCE 2020 WMP Cost Variance Explanation (Nominal $ in thousands)

Note: *SCE has focused on describing variance drivers for initiatives where actual spend exceeded +/- 20% of forecast costs and, where this threshold was triggered, for variances greater than or less than $1M.*

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Asset management and inspections	9.2.1. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: unmanned aerial vehicles (UAV) (AT-2.2)	AT-2.2	$ -	$ 413	$ -	$ 159	$ -	0%	$ (254)	-62%	
Asset management and inspections	9.1.1. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: asset defect detection using machine learning object detection (AT-5)	AT-5	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Asset management and inspections	10.2.1. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations: assessment of partial discharge for transmission facilities (AT-6)	AT-6	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Asset management and inspections	9.1. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: distribution high fire risk-informed inspections (IN-1.1)	IN-1.1	$ -	$ 2,276		$ 11,013	$ -	0%	$ 8,737	384%	O&M Overrun: SCE conducted additional ground inspections to align with aerial and provide a 360 degree view of each structure as noted in September 11, 2020 Change Orders Report, and increased scope for data capturing on risk-informed inspections and ODI compliance inspections. SCE also conducted additional inspections of high-risk dry-fuel areas (Areas of Concern) as noted in December 11, 2020 Change Orders Report. In the 2020 WMP, SCE planned to inspect ~105k structures. By the end of 2020, SCE completed ~199k structures.
Asset management and inspections	10.1. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations: transmission risk-informed inspections in HFRA (IN-1.2)	IN-1.2	$ -	$ 1,150		$ 4,946	$ -	0%	$ 3,796	330%	O&M Overrun: SCE conducted additional ground inspections to align with aerial and provide a 360 degree view of each structure as noted in its September 11, 2020 Change Orders Report and also conducted additional inspections of high-risk dry-fuel areas (Areas of Concern) as noted in its December 11, 2020 Change Orders Report. In the 2020 WMP, SCE planned to inspect ~22,500 structures. By the end of 2020, SCE completed ~35,500 structures.
Asset management and inspections	4. Infrared inspections of distribution electric lines and equipment: infrared inspection of energized overhead distribution facilities and equipment (IN-3)	IN-3	$ -	$ 401	$ -	$ 791	$ -	0%	$ 390	97%	

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Asset management and inspections	5. Infrared inspections of transmission electric lines and equipment: infrared inspection, corona scanning, and high definition imagery of energized overhead transmission facilities and equipment (IN-4)	IN-4	$ -	$ 3,504	$ -	$ 384	$ -	0%	$ (3,120)	-89%	The original forecast was an error. Recorded costs were in line with expected costs for this type of work.
Asset management and inspections	16. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: generation risk-informed inspections in HFRA (IN-5)	IN-5	$ -	$ 158	$ -	$ -	$ -	0%	$ (158)	-100%	
Asset management and inspections	9.2. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: aerial inspections (IN-6.1)	IN-6.1	$ -	$ 40,059		$ 53,287	$ -	0%	$ 13,228	33%	O&M Overrun: Aerial Inspections overrun due to increased division overhead not previously forecast. Forecast only included direct costs from 3rd party vendors for helicopters, drone flights, and inspector costs, but did not include associated indirect/loader costs.
Asset management and inspections	10.2. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations: aerial inspections - transmission (IN-6.2)	IN-6.2	$ -	$ 11,869	$ -	$ 28,136	$ -	0%	$ 16,267	137%	O&M Overrun: Transmission Aerial Inspections cost increase due to 1) transition in strategy from using helicopters to more expensive unmanned aerial drones for improved image capture quality and 2) increased division overhead not in previous forecast. The transition in strategy to using more drones was due to SCE's helicopter vendor having difficulty providing deliverables that met the SCE technical requirements as well as incidents that jeopardized the safety of the awarded scope. SCE decided to reroute majority of the scope to Drone Vendors because they had the capacity and could provide deliverables that met SCE's technical requirements.
Asset management and inspections	9.2.2. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations: UAS operations training (OP-3)	OP-3	$ -	$ 271	$ -	$ -	$ -	0%	$ (271)	-100%	
Emergency planning and preparedness	2. Community outreach, public awareness, and communications efforts(DEP-1.1 - DEP-1.3, DEP-3)	DEP-1.1; DEP-1.3; DEP-3	$ -	$ 9,110	$ -	$ 1,797	$ -	0%	$ (7,313)	-80%	O&M Underrun: In 2019, SCE participated in the statewide PSPS marketing campaign in collaboration with the other IOUs. As discussed in September 11, 2020 Change Order Report, the statewide outreach captured in IOU Customer Engagement (DEP-3) ended and the funds were redeployed to SCE's local marketing campaign (DEP 1.3). Starting in 2020, SCE launched its own marketing campaign while continuing to work closely with the other IOUs for benchmarking purposes. PSPS Newsletter forecast underrun driven by ~11% lower quantity of customer letters printed and unit costs ~50% lower than planned.
Emergency planning and preparedness	1. Adequate and trained workforce for service restoration (DEP-2)	DEP-2	$ -	$ 1,722	$ -	$ 616	$ -	0%	$ (1,106)	-64%	O&M Underrun: Several trainings were pushed out from 2020 to 2021 primarily due to COVID-19 restrictions.
Emergency planning and preparedness	7. Customer research and education (DEP-4)	DEP-4	$ -	$ 1,409	$ -	$ -	$ -	0%	$ (1,409)	-100%	Costs recorded in DEP-1.1, DEP-1.3. DEP-3. See explanation above.

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Grid design and system hardening	2.2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - meter alarm down energized conductor (MADEC) (AT-1)	AT-1	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Grid design and system hardening	2.3.1. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - rapid earth current fault limiter - ground fault neutralizer (GFN) (AT-3.1)	AT-3.1	$ -	$ 2,587	$ 1,855	$ -	$ 1,855	-	$ (2,587)	-100%	*Forecast was originally identified as O&M in 2020 WMP filing but determined to be Capital through Capital Asset Versus Expense (CAVE) analysis*
Grid design and system hardening	2.3.2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - rapid earth current fault limiter - arc suppression coil (AT-3.2)	AT-3.2	$ -	$ 511	$ -	$ -	$ -	0%	$ (511)	-100%	
Grid design and system hardening	2.3.3. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - rapid earth current fault limiter - isolation transformer (AT-3.3)	AT-3.3	$ -	$ 409	$ -	$ -	$ -	0%	$ (409)	-100%	
Grid design and system hardening	2.4. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - distribution open phase detection (AT-3.4)	AT-3.4	$ -	$ 511	$ -	$ -	$ -	0%	$ (511)	-100%	
Grid design and system hardening	3.3. Covered conductor installation: alternative technology implementation - vibration dampers (AT-4)	AT-4	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Grid design and system hardening	2.5. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: alternative technology evaluations - high impedance relay evaluations (AT-8)	AT-8	$ -	$ 307	$ -	$ -	$ -	0%	$ (307)	-100%	
Grid design and system hardening	8.2. Grid topology improvements to mitigate or reduce PSPS events: microgrid assessment (PSPS-8)	PSPS-8	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Grid design and system hardening	3.1. Covered conductor installation: covered conductor (SH-1)	SH-1	$ 454,369	$ -	$ 546,151	$ -	*$ 91,783*	*20%*	*$ -*	*0%*	*Capital Overrun: Major Drivers of cost variance: 1) Includes Fire Resistant (FR) poles recorded costs whereas the 2020 WMP did not include Fire Resistant (FR) poles under SH-1. FR poles were in SH-3, 2020 equaled $56.8M. 2) Design and engineering of future year scope was started to enable increasing targets over time 3) Previous unit costs based on a composite of all regions*
Grid design and system hardening	3.2. Covered conductor installation: tree attachment remediation (SH-10)	SH-10	$ 15,183	$ -	$ 9,654	$ -	*$ (5,529)*	*-36%*	*$ -*	*0%*	*Capital Underrun: Underrun on tree attachment remediations were driven by halt in construction activities in September 2020 due to the Sequoia and Creek fires.*
Grid design and system hardening	19. Legacy facilities (SH-11)	SH-11	$ 1,304	$ 869	$ -	$ 74	*$ (1,304)*	*-100%*	*$ (796)*	*-92%*	*Capital and O&M Underrun: The primary underrun was due to the Creek Fire, which delayed SCE's ability to do assessments and pre-engineering studies for the Big Creek Hydro facilities originally planned. SCE also found a very low risk for avian wildlife protections for legacy facilities, which resulted in reduced incremental work to involving reduced ignition risks.*
Grid design and system hardening	12.1. Other corrective action: distribution remediations (SH-12.1)	SH-12.1	$ 147,130	$ 180,405	$ 85,219	$ 41,807	*$ (61,911)*	*-42%*	*$ (138,599)*	*-77%*	*Capital and O&M Underrun: Reduced inspection find rates from Aerial and Ground inspections resulted in less scope to be remediated. Operational challenges such as COVID-19 restrictions, fire storms, and PSPS events led to a reduction in the total number of compliance-driven notifications completed within the year.*
Grid design and system hardening	12.2. Other corrective action: transmission remediations(SH-12.2)	SH-12.2	$ 64,896	$ 6,424	$ 35,934	$ 18,739	*$ (28,962)*	*-45%*	*$ 12,315*	*192%*	*O&M Overrun: Transmission EOI Inspections- SCE conducted additional ground inspections to align with aerial and provide a 360 degree view of each structure as noted in its September 11, 2020 Change Orders Report and also conducted additional inspections of high-risk dry-fuel areas (Areas of Concern) as noted in its December 11, 2020 Change Orders Report. As noted in EOI Inspections - T, SCE conducted additional inspections and thus saw higher remediations, but also saw a higher find rate than forecasted. Also, scope originally forecast to be capital turned out to be O&M Aerial Remediations forecasted individually in 2020 WMP. In 2021 WMP, costs for Aerial remediations not tracked separately, actuals included under EOI Repairs/Replacements combined with Ground due to process for execution and contractor billing being combined during invoicing. Capital Underrun: Transmission EOI Replacement scope originally forecast to be capital turned out to be O&M. Underrun also driven by lower capital find rate compared to previously assumed in 2020 WMP filing which was based off 2018 & 2019 remediations. Aerial Remediations forecasted individually in 2020 WMP. In 2021 WMP, costs for Aerial remediations not tracked separately, actuals included under EOI Repairs/Replacements combined with Ground due to process for execution and contractor billing being combined during invoicing.*
Grid design and system hardening	12.3. Other corrective action: generation remediations (SH-12.3)	SH-12.3	$ 40	$ 160	$ -	$ 403	*$ (40)*	*-100%*	*$ 243*	*152%*	

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Grid design and system hardening	16. Undergrounding of electric lines and/or equipment: undergrounding overhead conductor (SH-2)	SH-2	$ -	$ -	$ 961	$ -	*$ 961*	*0%*	*$ -*	*0%*	
Grid design and system hardening	6.1. Distribution pole replacement and reinforcement, including with composite poles: composite poles and crossarms (SH-3)	SH-3	$ 56,833	$ -	$ -	$ -	*$ (56,833)*	*-100%*	*$ -*	*0%*	*2020 WMP filing did not include Fire Resistant (FR) poles Under SH-1. FR poles was in SH-3, 2020 equaled $56.8M)*
Grid design and system hardening	7. Expulsion fuse replacement: branch line protection strategy (SH-4)	SH-4	$ 9,054	$ 7,745	$ 8,955	$ 3,262	*$ (98)*	*-1%*	*$ (4,483)*	*-58%*	*O&M Underrun: Current Limiting Fuses O&M forecast underrun due to new fixed price contractor rates and lower maintenance units executed. Each year will have its own scope based on GRC, primarily replacements, and Unit Rate should be $4,100 per location replacement as originally estimated.*
Grid design and system hardening	9. Installation of system automation equipment: installation of system automation equipment - remote controlled automatic reclosers settings update (SH-5)	SH-5	$ 8,481	$ 159	$ 5,867	$ -	*$ (2,614)*	*-31%*	*$ (159)*	*-100%*	*Capital Underrun: RAR/RCS slightly underran by 33% due to lower units completed than planned (48 vs. 96). The "Program Target" of 45 was the minimum number of units SCE set out to complete in 2020.*
Grid design and system hardening	2.7. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault: circuit breaker relay hardware for fast curve (SH-6)	SH-6	$ 5,170	$ -	$ 9,786	$ (9)	*$ 4,616*	*89%*	*$ (9)*	*0%*	*Capital Overrun: Unit count increased as scope moved from 2019-20 to 2021-22 due to revised project planning timelines.*
Grid design and system hardening	8.1. Grid topology improvements to mitigate or reduce PSPS events: PSPS driven grid hardening work (SH-7)	SH-7	$ -	$ -	$ -	$ -	*$ -*	*0%*	*$ -*	*0%*	
Grid design and system hardening	18. Transmission overhead (TOH) review (SH-9)	SH-9	$ -	$ -	$ -	$ -	*$ -*	*0%*	*$ -*	*0%*	
Grid operations and protocols	1.1. Annual SOB 322 review (OP-1)	OP-1	$ -	$ -	$ -	$ -	*$ -*	*0%*	*$ -*	*0%*	
Grid operations and protocols	5.7. PSPS events and mitigation of PSPS impacts: wildfire infrastructure protection team additional staffing (OP-2)	OP-2	$ -	$ 1,817	$ -	$ 810	*$ -*	*0%*	*$ (1,007)*	*-55%*	*O&M Underrun: Due to a delay in hiring FTEs to support this activity.*
Grid operations and protocols	7. De-energization notifications (PSPS-1)	PSPS-1	$ -	$ 1,415	$ -	$ 2,690	*$ -*	*0%*	*$ 1,274*	*90%*	*O&M Overrun: Emergency Outage Notification System (EONS) overrun due to incremental notification billable units exceeding base subscription rates and system dashboard enhancements to track enrollments.*
Grid operations and protocols	5.1. PSPS events and mitigation of PSPS impacts: community resource centers (PSPS-2)	PSPS-2	$ 1,212	$ 1,063	$ -	$ 952	*$ (1,212)*	*-100%*	*$ (110)*	*-10%*	*Original forecasts including assumptions for capital and O&M. Recorded costs were all O&M and were less than total capital & O&M forecasts based on the assumptions on the number of times SCE would use those facilities.*
Grid operations and protocols	5.2. PSPS events and mitigation of PSPS impacts: customer resiliency equipment incentives (PSPS-3)	PSPS-3	$ -	$ -	$ -	$ 143	*$ -*	*0%*	*$ 143*	*0%*	

Mitigation	2020 WMP - Initiative Activity	WMP Identifier	2020 Forecast CAPEX	2020 Forecast OPEX	2020 Actuals CAPEX	2020 Actuals OPEX	CAPEX $ Variance Overrun/ (Underrun)	CAPEX % Variance Overrun/ (Underrun)	OPEX $ Variance Overrun/ (Underrun)	OPEX % Variance Overrun/ (Underrun)	Variance Drivers (+/- 20% and greater than +/- $1M delta)
Grid operations and protocols	5.3. PSPS events and mitigation of PSPS impacts: income qualified critical care (IQCC) customer battery backup incentive program (PSPS-4)	PSPS-4	$ -	$ 9,241	$ -	$ 4,589	$ -	0%	$ (4,652)	-50%	*O&M underrun: Critical Care Back-up Battery Program underrun due to lower customer enrollment than planned. The program launched later in the year in July 2020 due to initial inventory shortages (likely due to COVID-19) compounded by a longer lead time for customer uptake as SCE limited its marketing channels, also due to COVID-19. This year, SCE started in January and has expanded eligibility to a larger customer set.*
Grid operations and protocols	5.4. PSPS events and mitigation of PSPS impacts: MICOP partnership (PSPS-5)	PSPS-5	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Grid operations and protocols	5.5. PSPS events and mitigation of PSPS impacts: independent living centers partnership(PSPS-6)	PSPS-6	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Grid operations and protocols	5.6. PSPS events and mitigation of PSPS impacts: community outreach (PSPS-7)	PSPS-7	$ -	$ 440	$ -	$ -	$ -	0%	$ (440)	-100%	
Situational awareness and forecasting	2.1. Continuous monitoring sensors: Distribution Fault Anticipation (DFA) (AT-2.1)	AT-2.1	$ -	$ 252	$ 260	$ 215	$ 260	0%	$ (36)	-14%	
Situational awareness and forecasting	2.2. Continuous monitoring sensors: Early Fault Detection (EFD) evaluation (AT-7)	AT-7	$ -	$ 511	$ -	$ -	$ -	0%	$ (511)	-100%	
Situational awareness and forecasting	1. Advanced weather monitoring and weather stations (SA-1)	SA-1	$ 5,536	$ 1,297	$ 7,509	$ 2,073	$ 1,973	36%	$ 777	60%	*Capital and O&M Overrun: Weather Stations overrun driven by the increased units of weather stations installed from 375 to 575 as a stretch goal to achieve a higher level of saturation of weather sensors to obtain high resolution weather data across SCE's HFRA.*
Situational awareness and forecasting	6. Weather forecasting and estimating impacts on electric lines and equipment (SA-3)	SA-3	$ 800	$ 1,657	$ 2,300	$ 1,658	$ 1,500	188%	$ 1	0%	*Capital Overrun: Advanced Modeling overrun due to 1) IT budget/costs transferred to Business Resiliency under activity Wildfire Advanced Modeling and Computer Hardware to align costs related to appropriate work activity of capital investments and 2) additional costs incurred due to delayed vendor projects schedules, initially planned in 2019 and deferred to 2020.*
Situational awareness and forecasting	7. Develop Asset & Reliability & Risk Analytics Capability (RA-1, SA-4)	SA-4:RA-1	$ 6,692	$ -	$ 1,806		$ (4,886)	-73%	$ -	0%	*Capital Underrun: Program budget/costs transferred to Wildfire Advance Modeling and Computer hardware to acquire 1 additional super computer. 2020 forecast was conceptual because the vendors and solution were not finalized at the time of the 2020 WMP filing.*
Situational awareness and forecasting	4.2. Forecast of a fire risk index, fire potential index, or similar: fuel sampling program (SA-5)	SA-5	$ -	$ 632	$ -	$ 193	$ -	0%	$ (439)	-69%	
Situational awareness and forecasting	4.3. Forecast of a fire risk index, fire potential index, or similar: surface & canopy fuels mapping (SA-6)	SA-6	$ -	$ 1,381	$ -	$ 1,029	$ -	0%	$ (352)	-25%	

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Situational awareness and forecasting	4.4. Forecast of a fire risk index, fire potential index, or similar: remote sensing / satellite fuel moisture (SA-7)	SA-7	$ -	$ 1,534	$ -	$ -	$ -	0%	$ (1,534)	-100%	*O&M Underrun: Scope is still being finalized and SCE plans to onboard the vendors and execute the projects in 2021 and future years.*
Situational awareness and forecasting	4.5. Forecast of a fire risk index, fire potential index, or similar: fire science enhancements (SA-8)	SA-8	$ -	$ 1,534	$ -	$ 414	$ -	0%	$ (1,120)	-73%	*O&M Underrun: Fire Science Enhancements underrun driven by internal reprioritization of work to focus on higher priority projects.*
Situational awareness and forecasting	2.3. Continuous monitoring sensors: transmission open phase detection (SH-8)	SH-8	$ -	$ 295	$ -	$ 125	$ -	0%	$ (170)	-58%	
Vegetation management and inspections	16.1. Removal and remediation of trees with strike potential to electric lines and equipment: hazard tree (VM-1)	VM-1	$ -	$ 54,097	$ -	$ 46,685	$ -	0%	$ (7,413)	-14%	*O&M Underrun: Hazard Tree Mitigation: Volume lower than forecast - arborist expertise favors removal over trimming mitigation due to risk of trees dying from the amount of trimming required to mitigate risk. Hazard Tree Program Management: Forecast associated with number of mitigations/removals. Forecast underrun due to scope reductions as a result of lower number of mitigations identified. Hazard Tree Removal: SB 247 rate increases impacted contractor pricing. Reduced volume of removals from forecast. Hazard Tree Inspection: 2020 Actuals driven by increase in contractor assessments.*
Vegetation management and inspections	5.1. Fuel management and reduction of "slash" from vegetation management activities: expanded pole brushing (VM-2)	VM-2	$ -	$ 4,157	$ -	$ 7,459	$ -	0%	$ 3,302	79%	*O&M Overrun: Expanded Pole Brushing & Removal: In 2020 WMP, SCE forecasted 300K (compliance target 200k) units to be completed at a unit cost of $14. 2020 actuals reflect completion of ~230K poles minus 75k compliance poles. The unit costs recorded higher in 2020; therefore, SCE adjusted the 2021 and 2022 forecast based on the revised unit costs of $44. Increase due to higher average costs from the addition of two new vendors necessary to complete scope (competitive bid).*
Vegetation management and inspections	5.2. Fuel management and reduction of "slash" from vegetation management activities: expanded clearances for legacy facilities (VM-3)	VM-3	$ -	$ 1,217	$ -	$ -	$ -	0%	$ (1,217)	-100%	*O&M Underrun: Generation Expanded Vegetation Buffers: 2020 recorded of $881K included in Vegetation Line Clearing initiative (7.3.5.20) actuals for reporting purposes.*
Emergency planning and preparedness	5. Preparedness and planning for service restoration	N/A	$ -	$ 11,231	$ 1,796	$ 5,328	$ 1,796	0%	$ (5,903)	-53%	*Capital Overrun: Data Governance overrun due to emergent technology tool programs initiated post 2020 WMP filing.* *O&M Underrun: Line Patrols underrun driven by 1) lower incurred PSPS inspections and incidents than planned (based on 2019 estimates), and 2) percentage of activities and related costs combined and charged to CEMA storms accounts.*
Grid operations and protocols	1. Automatic recloser operations	N/A	$ -	$ -	$ -	$ -	$ -	0%	$ -	0%	
Grid operations and protocols	5. PSPS events and mitigation of PSPS impacts	N/A	$ 788	$ 6,471	$ 6,843	$ 13,528	$ 6,055	769%	$ 7,057	109%	*Capital and O&M overrun: Driven by the addition of customer programs such as outreach, rebates and incentives. Also driven by an overrun in PSPS Website Improvements due to incremental SCE.com scope and accelerated implementation schedules to meet CPUC compliance mandates (R.18-12-005) for compliance and reliability requirements.*
Resource allocation methodology	4. Organizational Support - PMO, OCM, and wildfire-related IT support	N/A	$ 32,117	$ 46,402	$ 28,719	$ 47,081	$ (3,399)	-11%	$ 680	1%	

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Situational awareness and forecasting	5. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	N/A	$ 220	$ 1,624	$ 94	$ 2,235	*$ (126)*	*-57%*	*$ 611*	*38%*	
Vegetation management and inspections	20. Vegetation management to achieve clearances around electric lines and equipment	N/A	$ -	$ 76,281	$ -	$ 233,585	*$ -*	*0%*	*$ 157,303*	*206%*	*O&M Overrun: Line Clearing cost increase of $157M due to several items as listed below:* *- 2020 WMP did not reflect impact of SB 247, which went into effect on January 1, 2020. SB 247 effectively set higher rates for tree trimmers working on vegetation clearance near power lines for wildfire mitigation and impacts all vegetation management contracts, which needed to be adjusted to reflect the higher rates for the entire crew – from supervisors to safety coordinators totaling ~$83M.* *- System wide trims $12M not included in 2020 forecast.* *- Distribution removals $17M not included in 2020 forecast* *- 2019 backlog of 35k trims primarily in district 50 driven by weather conditions $12M not included in 2020 forecast* *- Increase in Distribution and Transmission HFRA trims, removals, and maintenance $1M* *- Supplemental patrols $5M not included 2020 forecast* *- Environmental, property owner incentives, IVMP, Non-Exempt pole, bark beetle $16M not included in 2020 forecast* *- Costs associated with SCE labor $4M was not included in 2020 forecast. Increasing SCE personnel to enhance planning, reporting, and contractor management to adequately address continued volume and complexity of Line Clearance.* *- Costs associated with emergent work $8M such as district maintenance or trouble tickets was not included in 2020 forecast* *Note: Recorded costs system-wide are difficult to categorize into HFRA and non-HFRA as work is assigned, scheduled and performed in a bundled manner for efficiencies. Crews do not charge their time separately for HFRA and non-HFRA line clearances.*
Vegetation management and inspections	8. LiDAR inspections of vegetation around transmission electric lines and equipment	NA	$ -	$ 1,467	$ -	$ 4,092	*$ -*	*0%*	*$ 2,625*	*179%*	*O&M Overrun: LiDAR increase driven by Distribution and Transmission remediations and minor 2019 carry over.*

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Request For Hearing on Proposed Administrative Enforcement Order.	H 25-07-005

DECLARATION OF ED PIKE IN SUPPORT OF THE SAFETY AND ENFORCEMENT DIVISION RESPONSE TO PACIFICORP'S MOTION TO COMPEL FURTHER RESPONSES TO DATA REQUEST SETS ONE, TWO, AND THREE

1. I, Ed Pike, make this declaration in support of the Safety and Enforcement Division (SED) response to PacifiCorp's Motion to Compel further responses to PacifiCorp Data Request sets one, two, and three.
2. I am an investigator employed by the Safety and Enforcement Division of the California Public Utilities Commission. My duties include investigating utility caused fires, investigating utility Wildfire Mitigation Plan (WMP) compliance, and maintaining and updating SED WMP investigation manuals and SED incident investigation data request forms.
3. I am the lead investigator on three fires, including a fire in Los Angeles which resulted in 19 fatalities and destroyed over 9,000 structures. I support investigations into three additional fires. I am the lead investigator on three investigations related to WMP compliance, and support one additional investigation.
4. I am the lead investigator assigned to the investigation into PacifiCorp's compliance of their 2020 WMP. As lead investigator, I submitted Data Requests to PacifiCorp, communicated with Energy Safety regarding their investigation into PacifiCorp's 2020 WMP compliance, reviewed documents obtained as part of SED's confidential investigation, communicated my findings to SED decision makers, and drafted the investigation report and proposed administrative enforcement order (AEO) that was submitted to the Commission in this matter.
5. I regularly conferred with SED attorney counsel throughout the investigation into PacifiCorp's 2020 WMP compliance.
6. Information obtained during the investigation was acquired in confidence in the course of my duties as a public employee. Information not contained in the investigation report, AEO, and supporting exhibits has not been disclosed to the public.

7. As lead investigator, I am required to regularly confer with SED counsel regarding the AEO resulting from the investigation into PacifiCorp's 2020 WMP compliance. This includes conferring with SED counsel regarding data requests submitted by PacifiCorp.
8. Responding to PacifiCorp's data requests has been burdensome, invasive, and resource intensive. My capacity to work on other investigations has been reduced, resulting in unnecessary delays that negatively impact the public interest in timely investigation of enforcement matters.
9. Providing the responses requested by PacifiCorp requires the disclosure of communications between SED staff acting in their advisory capacity and their attorneys during the deliberative process. Disclosure would expose SED's decision-making process and internal conversations with decision makers.
10. Exposure would discourage candid discussion within SED regarding potential enforcement actions and undermine SED's ability to perform its functions.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on December 12, 2025, at San Francsico, California

/s/ *Ed Pike*

ED PIKE