Gary Chen
Director, Safety and
Infrastructure Policy,
Regulatory Affairs

03/31/2022

Caroline Thomas Jacobs, Director
Wildfire Safety Division
Office of Energy Infrastructure Safety
715 P Street 20th Floor
Sacramento, CA 95814

SUBJECT: Southern California Edison Company's 2021 Wildfire Mitigation Plan Annual Report on Compliance (EC ARC) Pursuant to PUC Section 8386.3(c)(1)

Dear Director Caroline Thomas Jacobs,

Pursuant to California Public Utilities Code (PU Code) §8386.3(c)(1) and the Wildfire Safety Division's (WSD), now Office of Energy Infrastructure Safety (OEIS),[1] 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 2021.

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

Sincerely,

//s//
Gary Chen
Director, Safety and Infrastructure Policy, Regulatory Affairs
Southern California Edison

cc: Docket No. 2021-EC_ARC
compliance@energysafety.ca.gov

[1] On July 1, 2021, the WSD transitioned from the California Public Utilities Commission (Commission or CPUC) to the California Natural Resources Agency and became the Office of Energy Infrastructure Safety (OEIS or Energy Safety).

Southern California Edison Company's 2021 WMP Annual Report on Compliance

I. INTRODUCTION

California Public Utilities Code Section 8386.3(c)(1) directs electrical corporations (EC) to file a report addressing the EC's compliance with their Wildfire Mitigation Plan during the prior calendar year. Additionally, on February 16, 2021, the WSD (now Office of Energy Infrastructure Safety – OEIS) issued Final Guidance on Compliance Operational Protocols for the annual report on compliance to address five requirements meant to demonstrate compliance with the EC's WMP. In accordance with PUC 8386.3(c)(1) and the February 16, 2021 Guidance, SCE submits its Annual Report on Compliance (EC ARC) addressing compliance with its WMP during calendar year 2021. SCE substantially complied with its Commission-approved 2020-2022 WMP[2] for wildfire mitigation work in 2021, as set forth in detail below.

On February 5, 2021, SCE submitted its comprehensive 2021 WMP update[3] covering the years 2021 through 2022 and building on its 2020 WMP, including successes and lessons learned. On June 3, 2021, SCE submitted its 2021 WMP Update Revision, which included responses to four Critical Issues identified by the Wildfire Safety Division (WSD). On July 1, 2021, the WSD transitioned from the California Public Utilities Commission (Commission or CPUC) to the California Natural Resources Agency and became the Office of Energy Infrastructure Safety (OEIS or Energy Safety). On July 16, 2021, the CPUC issued a draft Resolution WSD-020 and comment letter ratifying Energy Safety's draft Action Statement approving SCE's 2021 WMP Update. On August 19, 2021, the Commission ratified SCE's 2021 WMP Update.[4]

In 2021, consistent with OEIS' Final Action Statement on SCE's 2021 WMP and OEIS' October 16, 2021 Final Change Order Process, SCE submitted a November 1, 2021 Change Order Report describing changes to wildfire activities set forth in its 2021 WMP Update and other changes under consideration as new information became available and as SCE gained experience and measured the outcomes of its initiatives.

In 2021, SCE tracked 39 specific wildfire-related programs and activities included in its 2021 WMP Update, including additional grid hardening, enhanced inspection and repair programs, continuation of extensive vegetation management, increased situational awareness and response and augmented activities for Public Safety Power Shutoff (PSPS) resilience and community engagement, particularly for underrepresented groups and access and functional needs customers.

[2] "Substantial compliance" is the standard for WMP compliance review. *See* Pub. Util. Code §§ 8386.1 & 8386.3(c)(4) and CPUC Resolution WSD-012.
[3] SCE submitted a Supplement to the Update on February 26, 2021.
[4] WMP approval statement available at: https://energysafety.ca.gov/wp-content/uploads/final-resolution-wsd-020.pdf

SCE met the majority of the 2021 targets as set forth in the 2021 WMP Update. Further details on SCE's progress in executing 2021 WMP activities can be found in the quarterly notifications to OEIS, a portion of the most recent of which is appended to this ARC as Attachment A.[5]

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 their approved WMP initiatives, i.e., the degree to which initiative activities have reduced ignition probabilities[6];

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 substantially completing the vast majority of its approved WMP initiatives and activities. Some highlights of the activities completed in 2021 include the following:

- Installing approximately 1,500 circuit miles of covered conductor, exceeding the WMP program target of 1,000 circuit miles;
- Replacing approximately 12,000 wood poles with Fire Resistant Poles in SCE's high fire risk area (HFRA);
- Undergrounding ~5.8 overhead circuit miles in HFRA, exceeding target of four circuit miles;
- Meeting Distribution ground and aerial inspection targets by performing ~179,600 ground and ~180,200 aerial inspections on structures in HFRA;
- Meeting Transmission inspections targets by performing ~20,800 ground and ~20,790 aerial inspections on structures in HFRA;
- Inspecting ~600,000 trees adjacent to distribution lines and ~190,000 trees adjacent to transmission lines through its vegetation management program;[7]
- Making significant advancements in reducing the scope, frequency, and duration of PSPS events through grid hardening, grid protocols for de-energization and re-

[5] SCE is completing its data validation of 2021 WMP activities and as a result, some figures reported in SCE's AB 1054 Q4 2021 Notification, submitted February 1, 2022, have been slightly revised. Redlines in Attachment A to this EC ARC reflect changes known as of March 15, 2022, and do not impact the status of activities.

[6] 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)."

[7] Note that routine vegetation line clearing is not a WMP activity with a compliance target that is measured and tracked in SCE's AB 1054 Quarterly Notification.

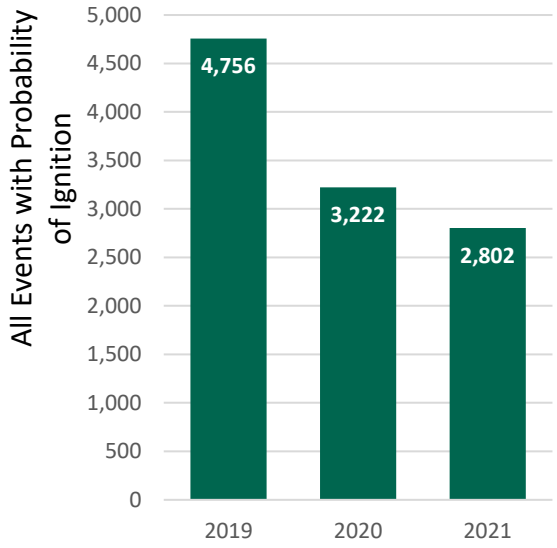
energization, and other factors. For example, SCE expedited the hardening of nearly 700 miles of overhead distribution lines and removed ~81,000 customers from PSPS scope through exceptions and switching protocols. SCE noted a ~45% reduction in PSPS duration as a result of 2021 PSPS mitigation measures. SCE's progress in reducing the impacts of PSPS in 2021 is further described in Part D of this report, as well as in Chapter 8 of SCE's 2022 WMP Update.

- Continuing support for fire agencies' fire suppression efforts and performing additional inspections during the fire season based on emergent dry fuel accumulation and high wind conditions.
- Using 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 of work by location for efficiency in scheduling), further increasing SCE's ability to meet its risk reduction intent. SCE also continues to enhance our risk analysis capabilities as described in detail in Chapter 4 of SCE's 2022 WMP Update and will use these results to further refine deployment prioritization. Advancements in risk modeling in 2022 have led to enhanced data-driven and risk-informed methods to assess fire threats across HFRA. SCE has generated 19 additional fuel regrowth models projected to 2030, expanded weather scenarios, and developed a new severe risk methodology to better characterize utility ignition risk.

Beyond meeting or exceeding the vast majority of its 2021 WMP activity targets and further implementing its risk-informed decision-making and prioritization practices, SCE continues to evaluate metrics that can offer insights into the effectiveness of its mitigation portfolio. The following figures (**Figure 1** to **Figure 5)** provide a 3-year review (2019-2021) of examples of potential outcome-based metrics that SCE currently tracks. While these effectiveness metrics can provide encouraging indications of risk reduction from SCE's activities and initiatives, large variations in weather events (e.g., temperature, rainfall, fuel moisture, and wind) can impact the metrics' outputs and therefore may not represent direct correlations between wildfire risk reduction and SCE's wildfire mitigations.[8]

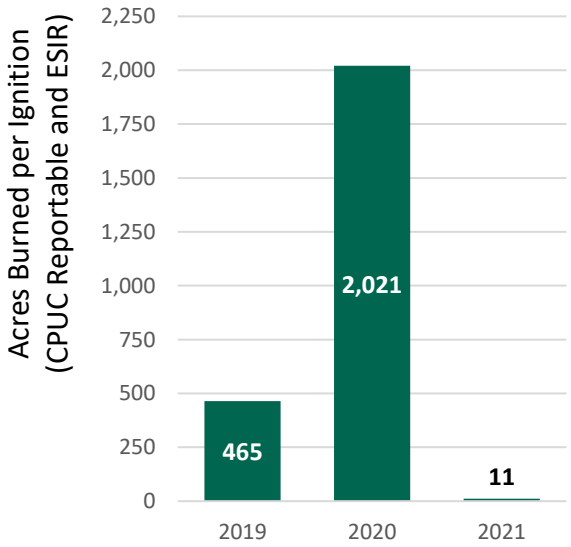
[8] High Fire Threat Districts (HFTD) Tier 1 are de minimis and omitted from the figures.

Figure 1
All Events with Probability of Ignition



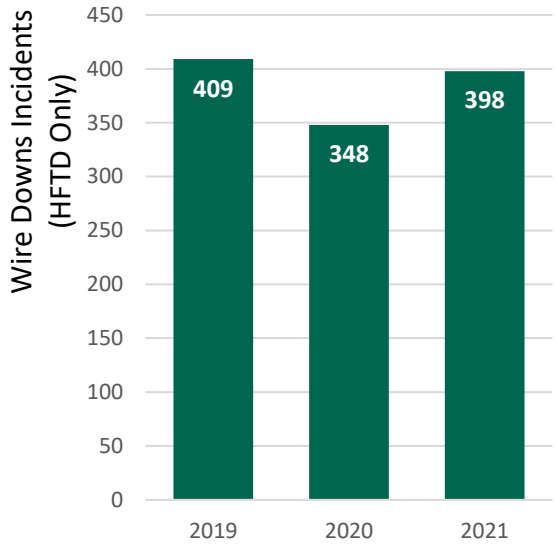
Probability of Ignition (POI) events include wire downs, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition.

Figure 2
Acres Burned per Ignition
(CPUC Reportable and ESIR)



A CPUC reportable ignition includes all the following: (1) ignition is associated with the utility's powerlines (both transmission and distribution); (2) something other than the utility's facilities burned; and (3) the resulting fire traveled more than one meter from the ignition point.

Figure 3
Wire Down Incidents in HFTD



Wire down events occur at a greater frequency than ignitions. Wire down events precede only a fraction of ignition events.

Figure 4
Outage Events NOT due to Contact with Vegetation

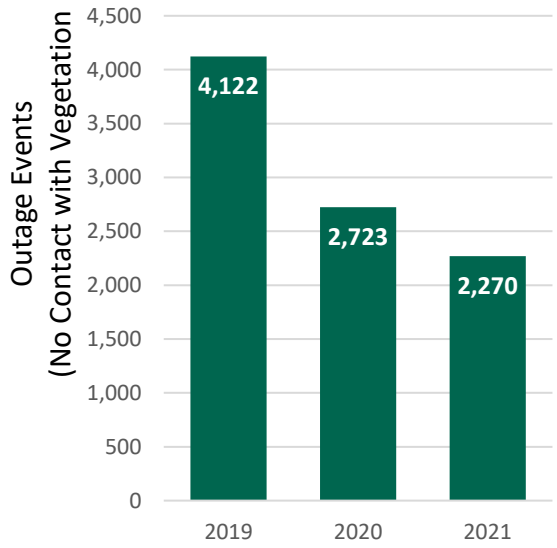


Figure 4 represents outage events that have occurred in SCE's HFTD from 2019 to 2021, not including outage events caused by vegetation contact.

Figure 5

Outage Events due to Contact with Vegetation

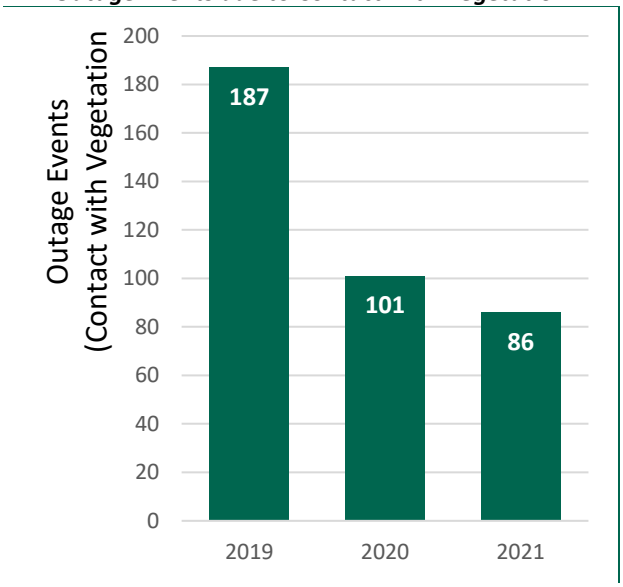


Figure 5 represents outage events only caused by vegetation contact that have occurred in SCE's HFTD from 2019 to 2021.

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;*

Table 1 provides a listing of all proposed changes to WMP activities in 2021, as reported in the Change Order filing in 2021. The table also includes the purpose, expected outcomes, and whether the changes achieved the same risk reduction intent as initially intended for that activity. In some cases, the proposed changes were for "enabling activities," which do not directly reduce wildfire or PSPS risk or consequence, or were driven by changes in the costs associated with the activity that had no corresponding change to strategy or risk reduction intent. Refer to SCE's response to Part A for further discussion on risk reduction intent of SCE's 2021 WMP.

Table 1
Proposed Activity Changes in SCE's 2021 WMP Change Orders Report
Filed November 1, 2021[9]

Change to 2021 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity / Risk Reduction Intent Assessment	Status
Section 7.3.3.16: SH-2 **Undergrounding of Overhead Conductor** **(Other Change - Cost Efficiency) – SCE reduced the 2021 cost forecast for SH-2**	The decrease in cost forecast was made as SCE had previously used the average cost for past Rule 20A projects to estimate high level unit costs for overhead to underground distribution line conversions (average of $3.4M based on a range of $1.8M to $5.2M per mile). However, the wildfire mitigation projects in scope in 2021 did not require undergrounding telecommunications or secondary lines included in Rule 20A conversions. Further, the locations targeted in 2021 were selected based on ease of terrain, accessibility, permitting and environmental issues which incurred less costs than average.	In terms of probability of ignition (POI) reduction, SCE estimated that targeted undergrounding was extremely effective in mitigating contact from foreign object (CFO) and equipment and facility failure (EFF) drivers. Targeted undergrounding was also extremely effective in mitigating PSPS risk so long as the full circuit or isolatable segment is fully undergrounded. This cost outlook change was not a result of a change to the estimates for targeted undergrounding's POI mitigation effectiveness or PSPS risk reduction.	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.
Section 7.3.4.9.1: IN-1.1 **Distribution High Fire Risk-Informed (HFRI) Inspections and Remediations** **(Decrease in Scale and Other Change - Cost Efficiency) – SCE**	Decrease in scale and decrease in cost forecast have been updated due to: Lower find rate of conditions requiring remediations than expected from inspections. SCE relied on historical find rates, notably the assumed find rate of Distribution HFRI ground inspections of 7.0% based on inspections	In terms of POI reduction, SCE estimated that Distribution HFRI was very effective in mitigating CFO-vegetation contact, CFO-animal contact, and many EFF drivers. POI reduction was not a result of a change to estimated POI mitigation effectiveness from Distribution HFRI. Note, approximately 2% of remediations planned for 2021 rolled into early 2022 due to	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.

[9] Southern California Edison Company's Change Orders Report, November 1, 2021.

Change to 2021 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity / Risk Reduction Intent Assessment	Status
reduced the 2021 cost forecast for this activity as a result of fewer remediations identified from inspections.	as of mid-year 2020, but the actual find rate for 2021 came down to 5.7%; Cost efficiencies from bundling remediations with other programmatic work. Whenever operationally feasible, SCE bundled different types of work by location to reduce costs; and Execution constraints due to external factors such as environmental permitting and internal factors such as crew resource constraints including limited crew flexibility.	execution constraints from factors such as environmental permitting and crew resource constraints.	
Section 7.3.4.10.1: IN-1.2 **Transmission High Fire Risk-Informed (HFRI) Inspections and Remediations** **(Decrease in Scale and Other Change - Cost Efficiency) – SCE reduced the 2021 cost forecast for this activity as a result of fewer remediations identified from inspections.**	Decrease in scale and decrease in cost forecast due to: Lower find rate of conditions requiring remediations than expected from inspections. SCE relied on historical find rates, notably the assumed find rate of Transmission HFRI ground inspections of 23%, but the actual find rate for 2021 had been 12%; and Execution constraints due to external factors such as environmental permitting and internal factors such as crew and design resource constraints.	In terms of POI reduction, SCE estimated that Transmission HFRI was very effective in mitigating CFO-vegetation contact, CFO-animal contact, and many EFF drivers. POI reduction was not a result of a change to estimated POI mitigation effectiveness from Transmission HFRI. Note, approximately 5% of remediations planned for 2021 rolled into early 2022 due to execution constraints from factors such as environmental permitting and crew resource constraints.	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.

Change to 2021 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity / Risk Reduction Intent Assessment	Status
Section 7.3.5.16.1: VM-1 **Hazard Tree Mitigation Program (HTMP)** **(Decrease in Scale, Cost Forecast)**	While circuit patrols were performed as planned, those patrols resulted in fewer findings than anticipated, leading to a decrease in scale of assessments and mitigations performed and decrease in cost forecast. Although SCE exceeded the number of circuits patrolled in 2021, SCE found fewer trees with strike potential (subject tress) than originally forecasted, therefore fewer assessments were performed, and found a lower than anticipated number of subject trees that required subsequent mitigation. The original forecast was based on average historical prescription rate of 8% but the actual prescription rate for assessments performed in 2021 was closer to 5%. Additionally, compliance with environmental regulations resulted in delays for subsequent tree removals and mitigations in 2021.	In terms of POI reduction, SCE estimated that HTMP was very effective in mitigating Contact from Object (CFO)-vegetation contact. This change was not a result of a change to the estimates for HTMP's POI mitigation effectiveness.	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.
Section 7.3.5.16.2: VM-4 **Dead and Dying Tree Removal**	The decrease in scale and decrease in cost forecast of the Dead and Dying Tree Removal Program was primarily due to a lower than anticipated find rate of dead, dying, and diseased trees, resulting in	In terms of POI reduction, SCE estimated that the Dead and Dying Tree Program was very effective in mitigating CFO-vegetation contact. This change was not a result of a change to the estimates for the	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.

Change to 2021 WMP Impacted Activity	Purpose of Change	Change in Expected Outcomes from Impacted Activity / Risk Reduction Intent Assessment	Status
(Decrease in Scale, Cost Forecast)	less work needing to be completed. The volume of trees in need of removal was lower than anticipated.	Dead and Dying Tree Program's POI mitigation effectiveness.	
Section 7.3.6.5.2: PSPS-2 **Customer Care Programs** **(Increase in Scale, Cost Forecast)**	Increase in scale and increase in cost forecast were incorporated for select Customer Care workstreams. The primary drivers were sce.com enhancements and PSPS process improvements and expanding the Critical Care Backup Battery program. Other changes included modifying the Residential Battery Station and Well Water and Pumping Backup Generation programs.	This initiative does not reduce the probability or consequence of ignitions, but rather reduces the consequence of PSPS events. This change was not a result of a change to the estimated PSPS risk reduction effectiveness of these programs.	**Pending Approval** - activity included in SCE's 2021 Change Order Report submitted on Nov. 1, 2021.

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;*

Attachment B provides a comprehensive table describing 2021 forecast versus actual capital and O&M spending variances for WMP initiatives. A description of variance drivers accompanies each WMP initiative if the initiative's variance meets the criteria set forth below:

- Underspend of any amount; or,
- Overspend that meets both of the following criteria
    - Variance ≥ 20%; and,
    - Variance ≥ $1,000,000

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;

SCE's 2021 PSPS season,[10] which ran from April to November, resulted in 85,237 customer outages, 124 circuit de-energizations and approximately 105M customer minutes of interruption. A core tenet of SCE's PSPS operating principles is to keep as many customers energized as possible. As such, it is SCE's goal that when PSPS is required as a last resort mitigation option, that we only de-energize circuits when actual conditions necessitate it and the benefits of de-energization outweigh the risks. SCE monitors real-time conditions via live field observations and a network of 1,460 permanent weather stations deployed along circuits throughout the HFTD. Once the decision is made that a particular circuit or circuit segment should be de-energized to prevent a potentially significant wildfire, SCE isolates and cuts power only to the smallest possible portion of a circuit necessary to mitigate that risk. In 2021, SCE was able to use sectionalization devices (e.g., Remote-Controlled Automatic Reclosers (RAR) and Remote-Controlled Switches (RCS)) and predetermined switching plans to limit PSPS de-energizations to 85,237 customers, down from a potential 155,609 customer outages based on total customer accounts on impacted circuits.

Using 2021 average interruption durations, the reduction of approximately 70,000 customer outages equates to a reduction of approximately 86.5 million minutes of interruption. While most of the reduction in scope is attributable to existing switching plans and sectionalization devices, some benefits are likely attributable to 2021 sectionalizing device scope detailed below. There is a possibility of duplicative counting of benefits.

Table 2 shows the significant reduction in overall scope/scale, frequency, and duration of PSPS in the 2021 PSPS season against 2020.

Table 2
2020 PSPS Season vs 2021 PSPS Season

Frequency *Circuit De-energizations*	**Scope/Scale**[11] *Customer Outages*	**Duration** *Customer Minutes of Interruption (CMI)*
↓79%	**↓76%**	**↓73%**

SCE's targeted PSPS mitigation efforts helped to achieve this progress. In 2021, SCE expedited grid hardening activities on 72 of its Frequently Impacted Circuits (FICs). This

[10] SCE's January 2021 event was driven by 2020 weather and fuel conditions and managed with 2020 tools and capabilities, and is therefore considered to be a part of the 2020 season.
[11] SCE is unclear what the difference is between scope and scale of a PSPS event, and therefore groups those terms together, defined as the number of customer outages experienced due to PSPS de-energization.

work included installation of approximately 685 circuit miles of covered conductor, 25 new automated switches (i.e., RAR), including 17 automation devices (i.e., RCS) and eight isolation devices, approval of 96 circuit exceptions to either raise PSPS thresholds or eliminate the circuits from PSPS consideration altogether (re-evaluated every 1-3 years), and provision of mobile generators to keep some locations energized during PSPS events.

After an in-depth review of 40 years of historical fire and weather data, SCE raised the Fire Potential Index (FPI) thresholds for PSPS from 12 to 13 in all but one of its Fire Climate Zones. This means that even in high winds, PSPS de-energizations would not be necessary unless the FPI, which is a calculated value based on fuel and weather conditions, has reached a higher value (e.g., dryer fuels, lower humidity).

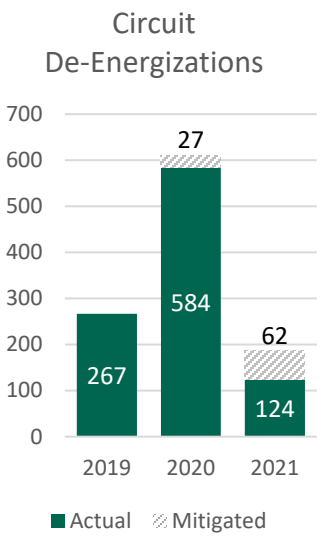
SCE performed a backcasting analysis comparing actual 2021 PSPS outcomes against 2021 weather/fuels modeled with 2020 protocols (**Table 3**), which helps evaluate the effectiveness of SCE's PSPS mitigation activities described above. "Backcasting" refers to expected PSPS outcomes provided no change to PSPS operating protocols. While it is difficult to recreate all the complex decision-making factors to determine how much longer and more widespread an outage could have been, SCE was able to attribute savings due to mitigations (e.g., raised thresholds from covered conductor installation) and model likely PSPS reductions. This analysis shows that SCE's proactive mitigations implemented in 2021 reduced the 2021 PSPS outcomes by 65,807 customer interruptions, 62 circuit outages and approximately 86M customer minutes of interruption.

Table 3
2021 PSPS Actual vs. Backcast

Frequency *Circuit De-energizations*	**Scope/Scale** *Customer Outages*	**Duration** *Customer Minutes of Interruption (CMI)*
↓33%	**↓44%**	**↓45%**

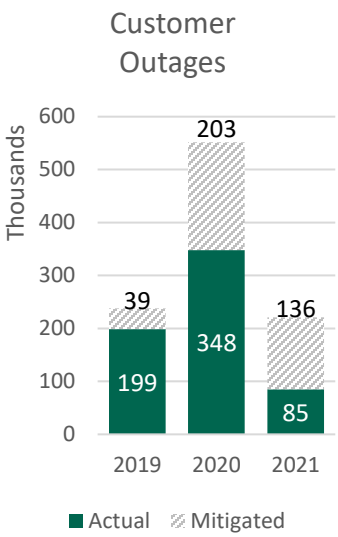
When incorporating impacts from mitigations implemented prior to 2021, the 2021 reductions in scope/scale and duration are estimated to grow even further. The total benefit toward annual circuit de-energizations (***Figure 6***), customer outages (***Figure 7***), and customer minutes interrupted (***Figure 8***) are illustrated below for the 2019-2021 period. "Mitigated" refers to the difference between the backcasting theoretical scenario and what actually occurred.

Figure 6



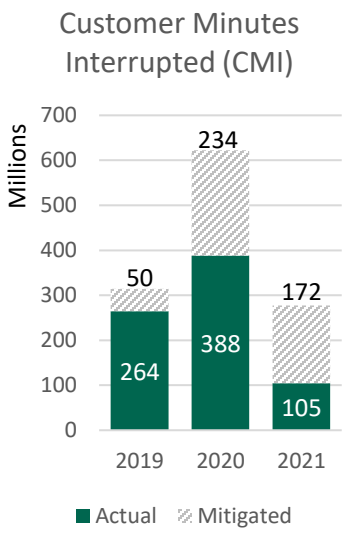
Circuit de-energizations are used with the smallest possible portion of a circuit necessary to mitigate risk while keeping as many customers energized as possible

Figure 7



Sectionalization by means of RAR and RCS effectively reduce the total number of impacted customers

Figure 8



Customer Minutes Interrupted (CMI) generally correlates with the total number of customer outages

Covered conductor was principal among the mitigations deployed in 2021. Due to covered conductor's ability to reduce risk of contact from foreign objects, SCE was able to raise wind speed de-energization thresholds from the National Weather Service Wind Advisory levels, at 31 mph sustained wind speed and 46 mph gust wind speed, to the National Weather Service High Wind Warning levels, at 40 mph sustained and 58 mph gusts, on portions of overhead circuitry that have covered conductor installed. This action eliminated the need for PSPS on some circuits in lower wind areas and reduced the duration of PSPS de-energizations on circuits in higher wind areas where the new thresholds were still breached.

SCE's circuit exception process entails a detailed periodic review of the wildfire risk in very specific areas of the HFTD. If the risk is sufficiently low, an approved exception allows a circuit that would otherwise have a lower PSPS windspeed threshold to be increased to the National Weather Service High Wind Warning, or to take it out of PSPS consideration altogether, depending on the specifics of the approval. In this way, the circuit exception process can reduce the frequency, scale/scope, and duration of PSPS events on the circuits where exceptions are approved. In the exception review process, wildfire risk is determined by consideration of localized fuel conditions, topography, proximity to wildland areas, and other criteria. Exceptions are periodically re-visited since these criteria can change with time due to processes like urbanization or a recent burn scar.

Sectionalizing devices help to reduce the areas that are de-energized. Redundancy in SCE's electrical grid allows for transfer of load from one circuit to another through a circuit tie, which means that, even on a radial line, SCE can leave upstream segments of a circuit energized while de-energizing areas downstream that are experiencing high fire threat conditions. Using these devices and operating in this way allows for reducing the number of customers impacted by PSPS events.

e) *A summary of all defects identified by Energy Safety, formerly the WSD, within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.*

Table 4 summarizes information on all "defects" identified by Energy Safety during the 2021 calendar year under their former inspection reporting and findings process.

Table 5 and **Table 6** summarize the Notices of Violation and Notices of Defect received on February 24, 2022 and March 23, 2022 under Energy Safety's new notice issuance process for field inspections performed in November and December 2021. The tables reflect what was issued in the notices and not the outcome of SCE's work with Energy Safety to make final determinations as to their status as "violations" and "defects"; in some cases, SCE requested written hearings. Details regarding SCE's responses are available on Energy Safety's website.

Table 4
Summary of "Defects" Identified by Energy Safety in 2021

#	"Defect" Description	Inspection Date	Planned Completion Date	Completion Date	Corrective Action[12]
1	Vegetation contacting guy wire above the guy insulator in HFTD	1/14/21	Completed	2/8/21	Vegetation was trimmed around the anchor guy
2	Data provided by utility does not reflect conditions in the field	2/9/21	Completed	2/24/21	SCE updated its system of record to reflect the new pole number[12]
3	Data provided by utility does not reflect conditions in the field	2/9/21	Completed	4/15/21	SCE updated its system of record to reflect the new pole number[12]
4	Guy wire loose (loose guy wires do not provide necessary mechanical support) in HFTD	2/9/21	Completed	7/23/21	Anchor guy was tightened

#	"Defect" Description	Inspection Date	Planned Completion Date	Completion Date	Corrective Action[12]
5	Patrol inspection of vegetation not conducted and documented in addition to Detailed Inspection of vegetation ("Abandoned pole found lying next to SCE pole")	2/9/21	Completed	2/25/21	The abandoned pole was cut up and removed from the field
6	Supply conductor, conductor taps, feeder taps not covered or insulated	2/9/21	Completed	3/15/21	The conductor was covered
7	Data provided by utility does not reflect conditions in the field	2/18/21	Completed	1/26/22	Finding was clarified to Energy Safety for defect closure: the structure was an associated pole which anchored the termination of covered conductor installation on a separate circuit
8	Failure to remove or mitigate all trees with strike potential	2/18/21	Completed	3/8/21	The palm tree was removed
9	Vegetation contacting guy wire above the guy insulator in HFTD	2/18/21	Completed	9/7/21	Vegetation was trimmed around the anchor guy
10	Vegetation contacting guy wire above the guy insulator in HFTD	3/9/21	Completed	9/2/21	Vegetation was trimmed around the anchor guy
11	Vegetation contacting guy wire above the guy insulator in HFTD	3/10/21	Completed	4/1/21	Vegetation was trimmed around the anchor guy
12	Failure to remove or mitigate all trees with strike potential	3/16/21	Completed	4/2/21	Tree was removed
13	Anchors supporting wooden pole not visible and is buried under soil	3/18/21	Completed	3/18/21	Anchor guy was extended[12]
14	Guy wire is loose with no tension	3/18/21	Completed	3/18/21	Anchor guy was tightened[12]
15	Anchors supporting wooden pole not visible or buried under vegetation in HFTD	4/1/21	Completed	11/19/21	New anchor guy and down guy were installed

#	"Defect" Description	Inspection Date	Planned Completion Date	Completion Date	Corrective Action[12]
16	Vegetation violates minimum clearance standard (Rule 35, Case 14) in HFTD or PRC 4292 and PRC 4293	4/1/21	Completed	4/19/21	Vegetation was trimmed
17	Failure to remove or mitigate all trees with strike potential	4/2/21	Completed	6/29/21	Tree was trimmed
18	Vegetation contacting guy wire above the guy insulator in HFTD	4/2/21	Completed	6/15/21	Vegetation was trimmed around the anchor guy[12]
19	Vegetation contacting guy wire above the guy insulator in HFTD	4/2/21	Completed	6/15/21	Vegetation was trimmed around the anchor guy[12]
20	Vegetation contacting guy wire above the guy insulator in HFTD	4/14/21	Completed	4/30/21	Vegetation was trimmed around the anchor guy
21	Anchors supporting wooden pole not visible or buried under vegetation in HFTD	4/21/21	Completed	1/27/22	Ground and vegetation cleared so anchor is visible
22	Vegetation contacting guy wire above the guy insulator in HFTD	4/21/21	Completed	6/18/21	Vegetation was trimmed around the anchor guy

Table 5
Summary of Notices of Violation Identified **by Energy Safety in 2021**

NOV	Item #	"Violation" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
NOV_SCE_ATJ_20211115-01	1	Failure to install vibration dampers on a span (7)	Minor	11/15/21	2/24/23
NOV_SCE_ATJ_20211118-01	1	Covered Conductor reported as completed, and has not started (5)	Moderate	11/18/21	4/24/22
NOV_SCE_ATJ_20211118-01	2	No covered conductor installed (5)	Moderate	11/18/21	4/24/22
NOV_SCE_ATJ_20211118-01	3	Failure to update fiberglass guy strain insulator (4)	Minor	11/18/21	2/24/23
NOV_SCE_ATJ_20211118-01	4	Failure to install vibration dampers on a span (1)	Minor	11/18/21	2/24/23
NOV_SCE_ATJ_20211130-01	1	Data submitted by SCE is inaccurate and indicates covered conductor work terminates one span to the	Minor	11/30/21	2/24/23

[12] SCE requested that Energy Safety remove these findings as "defects".

NOV	Item #	"Violation" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
		East. Covered conductor terminates at this pole. (1)			
NOV_SCE_ATJ_20211130-01	2	Failure to install fiberglass strain insulator on guy strain wire (6)	Minor	11/30/21	2/24/23
NOV_SCE_ATJ_20211130-01	3	Failure to install vibration dampers on a span (12)	Minor	11/30/21	2/24/23
NOV_SCE_ATJ_20211207-01	1	Pole submitted to Energy Safety as covered conductor work completed. Covered conductor not installed at this pole. Covered conductor starts at next pole (1)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211207-01	2	Wrong pole ID provided. (3)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211207-01	3	Failure to install vibration dampers on a span (14)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211207-01	4	Failure to remove guy anchor (1)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211207-01	5	Loose dead-end clamp (1)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211207-01	6	Covered conductor covering is frayed (1)	Minor	12/07/21	2/24/23
NOV_SCE_ATJ_20211209-01	1	Covered conductor reported as completed, and has not started (5)	Moderate	12/09/21	4/24/22
NOV_SCE_ATJ_20211209-01	2	Failure to install covered conductor (5)	Moderate	12/09/21	4/24/22
NOV_SCE_ATJ_20211209-01	3	Failure to install fiberglass guy strain insulator (3)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	4	Failure to install vibration dampers on a span (4)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	5	Failure to install bolted wedge connector cover on center phase (1)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	6	Improperly installed fuse cover (1)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	7	Jumper transitioning to T intersection is bare prior to entering bolted wedge connector cover (1)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	8	Failure to install vice top polymer pin type insulators with nylon inserts (2)	Minor	12/09/21	2/24/23
NOV_SCE_ATJ_20211209-01	9	Pole not submitted to Energy Safety as covered conductor work. Covered conductor work was installed at this	Minor	12/09/21	2/24/23

NOV	Item #	"Violation" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
		pole. Data submitted to Energy Safety is inaccurate (1)			
NOV_SCE_ATJ_20211116-01	1	Failed to install vibration dampers (12)	Minor	11/16/21	3/23/23
NOV_SCE_EDC_20211116-01	1	Failure to install vibration dampers on a span (16)	Minor	11/16/21	3/23/23
NOV_SCE_IAG_20211116-01	1	Failure to install vibration dampers on a span (7)	Minor	11/16/21	3/23/23
NOV_SCE_IAG_20211116-01	2	Pole type provided by SCE is incorrect. Reported pole type is a wood pole. The true pole type is a steel pole. (3)	Minor	11/16/21	3/23/23
NOV_SCE_ATJ_20211117-01	1	Failure to install vibration dampers on a span (11)	Minor	11/17/21	3/23/23
NOV_SCE_EDC_20211117-01	1	Failure to install vibration dampers on a span (11)	Minor	11/17/21	3/23/23
NOV_SCE_ATJ_20211201-01	1	Failure to install vibration dampers on a span (17)	Minor	12/1/21	3/23/23
NOV_SCE_ATJ_20211201-01	2	Failure to install bolted wedge connector cover (2)	Minor	12/1/21	3/23/23
NOV_SCE_ATJ_20211201-01	3	Loose bolted wedge cover connector (1)	Minor	12/1/21	3/23/23
NOV_SCE_ATJ_20211202-01	1	Covered conductor reported as completed, and has not started (4)	Moderate	12/2/21	5/23/22
NOV_SCE_ATJ_20211202-01	2	Failure to install covered conductor (4)	Moderate	12/2/21	5/23/22
NOV_SCE_ATJ_20211202-01	3	Failure to install fiberglass guy strain insulator (8)	Minor	12/2/21	3/23/23
NOV_SCE_ATJ_20211202-01	4	Failure to install vibration dampers (13)	Minor	12/2/21	3/23/23
NOV_SCE_ATJ_20211202-01	5	Failure to install bolted wedge connector covers when transitioning from covered to bare conductor (1)	Minor	12/2/21	3/23/23
NOV_SCE_ATJ_20211202-01	6	Wrong pole ID provided (3)	Minor	12/2/21	3/23/23
NOV_SCE_EDC_20211207-01	1	Support structure ID provided by SCE is incorrect (3)	Minor	12/7/21	3/23/23
NOV_SCE_EDC_20211207-01	2	Failure to install surge arrestor cover (2)	Minor	12/7/21	3/23/23
NOV_SCE_EDC_20211207-01	3	Failure to install vibration dampers on a span (16)	Minor	12/7/21	3/23/23

NOV	Item #	"Violation" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
NOV_SCE_EDC_20211207-01	4	Failure to remove guy anchor (1)	Minor	12/7/21	3/23/23
NOV_SCE_ATJ_20211208-01	1	Covered Conductor reported as completed, and has not started (2)	Moderate	12/8/21	5/23/22
NOV_SCE_ATJ_20211208-01	2	Failure to install covered conductor (2)	Moderate	12/8/21	5/23/22
NOV_SCE_ATJ_20211208-01	3	Failure to install two fiberglass guy strain insulators (2)	Minor	12/8/21	3/23/23
NOV_SCE_ATJ_20211208-01	4	Failure to install vibration dampers on a span (5)	Minor	12/8/21	3/23/23
NOV_SCE_ATJ_20211208-01	5	Failure to install bolted wedge connector cover (1)	Minor	12/8/21	3/23/23
NOV_SCE_ATJ_20211208-01	6	Wrong pole ID reported. Actual pole ID: 4611322E. Reported: 4621322E (1)	Minor	12/8/21	3/23/23

Table 6
Summary of Notices of Defect Identified by Energy Safety in 2021

NOD	Item#	"Defect" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
NOD_SCE_ATJ_20211115-01	1	Loose guy wire (2)	Minor	11/15/21	2/24/23
NOD_SCE_ATJ_20211115-01	2	Conductor strands are broken (1)	Minor	11/15/21	2/24/23
NOD_SCE_ATJ_20211115-01	3	Three splices found on phase east of pole (1)	Minor	11/15/21	2/24/23
NOD_SCE_ATJ_20211118-01	1	Loose guy wire (2)	Minor	11/18/21	2/24/23
NOD_SCE_ATJ_20211130-01	1	Loose guy wire (1)	Minor	11/30/21	2/24/23
NOD_SCE_ATJ_20211209-01	1	Vegetation touching guy wire above insulator (1)	Minor	12/09/21	2/24/23
NOD_SCE_ATJ_20211209-01	2	Conductor strands are broken (2)	Minor	12/09/21	2/24/23
NOD_SCE_ATJ_20211116-01	1	There is a bird nest within a dead-end bolted wedge connector cover (1)	Moderate	11/16/21	5/23/22
NOD_SCE_ATJ_20211202-01	1	Conductor shows evidence of bird caging (1)	Minor	12/2/21	3/23/23

NOD	Item#	"Defect" Description (No. of structures impacted)	Risk Level	Inspection Date	Deadline to Address
NOD_SCE_ATJ_20211208-01	1	Down guy wire is within six inches of 12kV primary conductor (1)	Moderate	12/8/21	5/23/22
NOD_SCE_ATJ_20211208-01	2	Vegetation touching guy wire above insulator (1)	Minor	12/8/21	3/23/23
NOD_SCE_ATJ_20211208-01	3	Three splices found on one phase single span (1)	Minor	12/8/21	3/23/23

III. CONCLUSION

SCE appreciates the opportunity to submit its 2021 WMP Annual Report on Compliance and looks forward to working with the Independent Evaluator and continued collaboration with Energy Safety in the review of SCE's 2021 WMP activities.

ATTACHMENT A

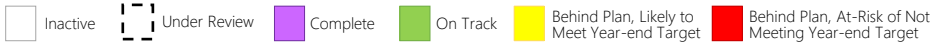
SCE Q4 2021 WMP Progress Update (Updated)

SCE's 2020-2022 Wildfire Mitigation Plan (WMP) Progress Update – Q4 2021 (Updated)

(All data is as of December 31, 2021)*

* SCE is completing its data validation of 2021 WMP activities and as a result, some figures reported in the Notification have been slightly revised (redlines reflect changes known as of March 15, 2022). These revisions do not impact the status of activities and have been incorporated and noted in this updated WMP Q4 2021 Progress Update to accompany SCE's 2021 WMP Annual Report on Compliance.

WMP Activities Summary[1]



Grid Design and System Hardening

- SH-1 Covered Conductor
- SH-2 Undergrounding Overhead Conductor[2]
- SH-4 Branch Line Protection Strategy
- SH-5 Installation of System Automation Equipment – RAR/RCS
- SH-6 Circuit Breaker Relay Hardware for Fast Curve
- SH-7 PSPS-Driven Grid Hardening Work
- SH-8 Transmission Open Phase Detection
- SH-10 Tree Attachment Remediations
- SH-11 Legacy Facilities
- SH-12 Microgrid Assessment
- SH-13 C-Hooks
- SH-14 Long Span Initiative
- SH-15 Vertical Switches

Asset Management and Inspections

- IN-1.1 Distribution Ground / Aerial Inspection and Remediations[2]
- IN-5 Generation Inspections
- IN-1.2 Transmission Ground / Aerial Inspection and Remediation[2]
- IN-8 Inspection and Maintenance Tools
- IN-3 Distribution Infrared Inspections
- IN-4 Transmission Infrared Inspections

Data Governance

- DG-1 Wildfire Safety Data Mart and Data Management

Situational Awareness

- SA-1 Weather Stations
- SA-2 Fire Potential Index (FPI)
- SA-3 Weather and Fuels Modeling System
- SA-4 Fire Spread Modeling
- SA-5 Fuel Sampling Program
- SA-7 Remote Sensing / Satellite Fuel Moisture
- SA-8 Fire Science Enhancements
- SA-9 Distribution Fault Anticipation

Vegetation Management and Inspections

- VM-1 Hazard Tree Management Program[2]
- VM-4 Dead and Dying Tree Removal[2]
- VM-2 Expanded Pole Brushing
- VM-3 Expanded Clearances for Legacy Facilities
- VM-6 VM Work Mgmt. Tool

PSPS

- PSPS-2[2]
- Customer Care Programs
- Community Resiliency Programs
- Customer Resiliency Equipment

Emergency Planning and Preparedness
Stakeholder Cooperation and Community Engagement

- DEP-1.2 Community Meetings
- DEP-1.3 Marketing Campaign
- DEP-4 Customer Research and Education
- DEP-2 SCE Emergency Responder Training
- DEP-5 Aerial Suppression

[1] Source: All data is as of December 31, 2021 (+/- 5 business days). Reported numbers are subject to revision upon data validation.
[2] Activity included in 2021 Change Orders Report filed on November 1, 2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Situational Awareness Activities

Weather Stations

Weather Stations (SA-1)

Section 7.3.2.1 Page 196[3]
Program Target: SCE expects to install 375 weather stations but will attempt to install as many as 475.

Status Update: SCE met target by installing a total of ~400 weather stations in 2021.

Fire Potential Index (FPI)

FPI (SA-2)

Section 7.3.2.4.1 Page 201
Program Target: 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.

Status Update: SCE met target by completing evaluation of FPI 2.0 performance against previous FPI methodology.

Weather and Fuels Monitoring System

Weather and Fuels Monitoring System (SA-3)

Section 7.3.2.6.1 Page 207
Program Target: 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.

Status Update: SCE has met the target by producing higher resolution (1km x 1km) ensemble weather forecasts and extended PSPS forecast from 5 to 7 days.

Fire Spread Modeling

Fire Spread Modeling (SA-4)

Section 7.3.2.6.2 Page 205
Program Target: Develop a methodology and a strategy to test FireCast/FireSim implementation into PSPS decision making based on backcast information by Q3.

Status Update: SCE met the target by completing development of methodology for incorporating risk and consequence data.

Fuel Sampling Program

Fuel Sampling Program (SA-5)

Section 7.3.2.4.2 Page 202
Program Target: Maintain periodic fuel sampling across SCE's HFRA and evaluate the need to sample additional locations.

Status Update: SCE has met the target by having vendor supply fuel sampling reports every 2 weeks through the end of the year. Assessed and verified quality of fuel sampling output with vendor in Q4.

Remote Sensing / Satellite Fuel Moisture

Remote Sensing / Satellite Fuel Moisture (SA-7)

Section 2.3.2.4.3 Page 204
Program Target: Initiate wind profiler pilot project to validate weather model performance for potential improvements to weather models.

Status Update: SCE met the target in October by completing first wind profiler deployment to align existing weather model and weather station output. Future deployments will further help to determine the level of predictability of surface wind velocities and how weather model performance can be improved.

[3] Denotes section and page number within SCE 2021 Wildfire Mitigation Plan Update.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Situational Awareness Activities

Fire Science Enhancements

Fire Science Enhancements (SA-8)

Section 7.3.2.4.4 Page 205

Program Target: Evaluate current wildfire events in context of 40-year history of wildfires.

Status Update: SCE did not meet target. Vendor developed a climatology output containing a 40-year history of wildfires for multiple variables but unable to complete because vendor work was reprioritized to support other emergent work. Due to vendor resource constraints, evaluation will take place in 2022.

Distribution Fault Anticipation (DFA)

Distribution Fault Anticipation (DFA) (SA-9)

Section 7.3.2.2 Page 198

Program Target: 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.

Status Update: SCE met target by installing 130 DFA devices on circuits in HFRA in 2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Grid Design and System Hardening

Covered Conductor

140%
installed

Covered Conductor (SH-1)

Section 7.3.3.3.1 Page 214
Program Target: 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. SCE continues to reevaluate its covered conductor strategy and scope along with alternative strategies as appropriate to protect public safety.

Status Update: SCE met target by installing ~1,500 circuit miles of covered conductor in HFRA in 2021.

Undergrounding Overhead Conductor

Undergrounding Overhead Conductor (SH-2)[4]

Section 7.3.3.16.1 Page 228
Program Target: 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.

Status Update: SCE met target by installing ~5.8 circuit miles in HFRA in 2021.

Branch Line Protection Strategy

Branch Line Protection Strategy (SH-4)

Section 7.3.3.7.1 Page 219
Program Target: Install or replace fusing at 330 fuse locations. SCE will strive to install or replace fusing at 421 locations, subject to resource constraints and other execution risks.

Status Update: SCE met target by completing ~350 fuse installations in 2021.

Install RAR/RCS

Installation of System Automation Equipment – RAR/RCS (SH-5)

Section 7.3.3.9 Page 223
Program Target: N/A – If RARs/RCSs are determined to be necessary based on the SH-7 analysis, SCE will develop appropriate project plans.

Status Update: : After SH-7 determined RARs/RCSs to be necessary, Corrective Action Plan (project plan) was developed and subsequentially satisfied with installation of ~~23~~18 devices.*

Circuit Breaker Relay Hardware for Fast Curve

Circuit Breaker Relay Hardware for Fast Curve (SH-6)

Section 7.3.3.2 Page 213
Program Target: 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.

Status Update: SCE met target in Q3 and finished 2021 with ~95 devices installed.[5]

PSPS-Driven Grid Hardening

PSPS-Driven Grid Hardening (SH-7)

Section 7.3.3.8.1 Page 221
Program Target: 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.

Status Update: SCE met target in Q4 after review of the second 50% of riskiest circuits.

[4] Activity included in 2021 Change Orders Report filed on November 1, 2021.
[5] 10 circuit breaker relays (SH-6) were installed in non-HFRA in 2021.
* Following validation of records, SCE installed 18 devices in 2021. This is a decrease from the 23 devices reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Grid Design and System Hardening

Transmission Open Phase Detection
100%
installed

Transmission Open Phase Detection (SH-8)

Section 7.3.3.17.1 Page 230
Program Target: Install transmission open phase detection devices on 10 transmission circuits.

Status Update: SCE has met target by completing installation on 10 transmission circuits.

Tree Attachment Remediation
104%
remediations

Tree Attachment Remediation (SH-10)

Section 7.3.3.3.2 Page 217
Program Target: Remediate 500 tree attachments. SCE will strive to complete over 600 tree attachment remediations, subject to resource constraints and other execution risks.

Status Update: SCE has met target by completing ~~520~~530 remediations.*

Legacy Facilities

Legacy Facilities (SH-11)

Section 7.3.3.17.2 Page 231
Program Target: Perform evaluation on 5 circuits for possible hardening. Create 2 project plans based on 2020 engineering assessments on low voltage site. Complete 12 additional assessments on grounding studies/lighting arrestor.

Status Update: SCE has met target by completing five Hydro Control Circuits assessments, Completed 2 Low Voltage Site Hardening project plans based on 2020 engineering assessments, and completed 12 additional Grounding Studies/Lightning Arrestor assessments.

Microgrid Assessment

Microgrid Assessment (SH-12)

Section 7.3.3.8.2 Page 222
Program Target: Perform internal assessment of vendor bid and location options. If assessment favorable, issue engineering procurement construction (EPC) contract.

Status Update: SCE target of completing internal assessment of vendor bid and location options. Conditional Engineering-Procurement-Construction (EPC) contract is in place with contingency on finalization of land agreement.

C-Hooks

C-Hooks (SH-13)

Section 7.3.3.15.1 Page 227
Program Target: 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.

Status Update: SCE target met in Q4 with ~50 C-Hooks removed.

Long Span Initiative

Long Span Initiative (SH-14)

Section 7.3.3.12.1 Page 226
Program Target: 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.

Status Update: SCE has met target by completing ~360 remediations.

Vertical Switches

Vertical Switches (SH-15)

Section 7.3.3.17.3 Page 232
Program Target: Install 20 switches in HFRA. SCE will strive to install 30 switches in HFRA.

Status Update: SCE did not meet target for 2021. Installed 16 of 20 vertical switches in 2021. Crews and material for the remaining 4 were reassigned due to storm restoration efforts. The final 4 installations were completed in Q1 2022.

* Following validation of records, SCE remediated ~530 tree attachments in 2021. This is an increase from the ~520 remediations reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Asset Management and Inspections

YTD Status

Ground

113%

Aerial

110%

Distribution Ground / Aerial Inspections and Remediations (IN-1.1)[7]

Section 7.3.4.9.1 Page 242

Program Target: Inspect between 163,000 and 198,000 structures in HFRA, via both ground and aerial inspections.

Status Update: SCE has met target by inspecting ~~184,900~~179,600 ground and ~~180,300~~180,200 aerial structures in HFRA.*

YTD Status

Ground

125%

Aerial

125%

Transmission Ground / Aerial Inspections and Remediations (IN-1.2)[7]

Section 7.3.4.10.1 Page 248

Program Target: Inspect between 16,800 and 22,800 structures in HFRA, via both ground and aerial inspections.

Status Update: SCE met target by inspecting ~20,800 ground and ~~20,800~~20,790 aerial structures in HFRA.**

Distribution Infrared Inspections

100%

Targeted Circuits Inspected

Infrared Inspection of energized overhead distribution facilities and equipment (IN-3)

Section 7.3.4.4 Page 238

Program Target: Inspect approximately 50% of distribution circuits in HFRA.

Status Update: SCE met target by completing inspections on ~ 50% of distribution circuits in HFRA.

Transmission Infrared Inspections

Infrared Inspection, Corona Scanning and High Definition (HD) Imagery of Transmission facilities and equipment (IN-4)

Section 7.3.4.5 Page 239

Program Target: Inspect 1,000 transmission circuit miles on HFRA circuits

Status Update: SCE has met target by inspecting ~1,000 transmission circuit miles in HFRA.

Generation Inspections

Generation Inspections and Remediations (IN-5)

Section 7.3.4.9.2 Page 246

Program Target: Complete inspection of 181 generation-related assets in HFRA.

Status Update: SCE has met target by completing ~230 Generation inspections in HFRA.

Inspection and Maintenance Tools

Inspection and Maintenance Tools (IN-8)

Section 7.3.4.3.1 Page 236

Program Target: Transition Aerial[8] and Transmission ground inspection process to a single digital platform with at least 75% of inspectors trained to use the tool by year end 2021. Deploy scope mapping tool with GIS visualization to Distribution.

Status Update: SCE partially met targets. T&D Aerial completed transition of inspection processes to a single digital platform and met target to train at least 75% of inspectors. Transmission Ground did not complete transition of inspection processes to a single digital platform and did not meet target to train at least 75% of inspectors by year end 2021. However, as of Q1 2022 inspectors were trained and using the tool. Key artificial intelligence/machine learning (AI/ML) models met target. Scope Mapping Tool (SMT) did not meet target to deploy tool to Distribution Planning and Engineering users. Remediation mobile software and iPad devices were deployed for Transmission however target was not met for Distribution users.

[7] Activity included in 2021 Change Orders Report filed on November 1, 2021.

[8] Aerial includes both transmission and distribution.

*Following validation of records, SCE inspected ~179,600 ground and ~180,200 aerial structures in 2021. This is a decrease from the ~184,900 ground and ~180,300 aerial structures inspected reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

**Following validation of records, SCE inspected ~20,790 aerial structures in 2021. This is a decrease from the ~20,800 aerial inspections reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Vegetation Management and Inspections

HTMP

109%
Trees Assessed

Hazard Tree Management Program (VM-1)[9]

Section 7.3.5.16.1 Page 278
Program Target: Assess between 150,000 and 200,000 trees for hazardous conditions and perform prescribed mitigations in accordance with program guidelines and schedules.

Change Orders submitted 11/1/2021 updated year end target to assess between 120,000 and 130,000 trees in hazardous conditions and perform prescribed mitigations in accordance with program guidelines and schedules.

Status Update: SCE has met updated Change Orders target by assessing ~~131,400~~131,300 trees and performing prescribed mitigations in accordance with program guidelines and schedules in 2021.*

Dead and Dying Tree Removal

Dead and Dying Tree Removal (VM-4)[9]

Section 7.3.5.16.2 Page 280
Program Target: Perform Drought Relief Initiative (DRI) annual inspections and perform prescribed mitigations in accordance with program guidelines and schedules.

Status Update: SCE met target by completing first and second pass on ~1,300 circuits and performing prescribed mitigations in accordance with program guidelines and schedules.

Expanded Pole Brushing

82%
Poles Cleared

Expanded Pole Brushing (VM-2)

Section 7.3.5.5.1 Page 265
Program Target SCE plans to pole brush between 200,000 and 300,000 Distribution poles.

Status Update: SCE did not meet 2021 target. This activity cleared ~163,100K of the 200K poles and fell short of meeting the target due to contractor performance, loss of crews, access constraints, and delays in obtaining environmental permitting. The activity cleared or made a reasonable attempt to clear all Non-Exempt & Unknown poles in the 2021 inventory to meet compliance requirements (PRC 4292).

VM Work Management Tool (Arbora)

VM Work Management Tool (Arbora) (VM-6)

Section 7.3.5.19 Page 282
Program Target: 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.

Status Update: SCE did not meet 2021 target. SCE did complete initial discovery and design architecture for the routine Line Clearing portion of this activity and deployed as planned. However, SCE had to re-design architecture for the Hazard Tree Management Program and Dead and Dying Tree Removal due to data volume limitations and inability to calculate and assess risk scores, requiring additional development time. As of the end of Q1 2022, Pilot deployment of HTP was completed with full deployment of HTP will be rolled out in Q2 2022. This will be followed by Routine Line Clearing implementation by the end of 2022.

Expanded Clearances for Legacy Facilities

Expanded Clearances for Legacy Facilities (VM-3)

Section 7.3.5.5.2 Page 266
Program Target: Treat 46 sites

Status Update: SCE met target by treating ~60 sites in 2021.

[9] Activity included in 2021 Change Orders Report filed on November 1, 2021 and pending approval. Per Energy Safety guidance, appropriate to measure activity against updated target.

* Following validation of records, SCE assessed ~131,300 trees and performed prescribed mitigations in 2021. This is a decrease from the ~131,400 assessments reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Emergency Planning and Preparedness
Stakeholder Cooperation and Community Engagement

Community Meetings

Customer Education and Engagement – Community Meetings (DEP-1.2)
Section 7.3.10.1.1 Page 324
Program Target: Host at least 9 virtual community meetings. SCE will complete additional meetings as needed in 2021, based on PSPS impact to communities, up to 18.

Status Update: SCE met target by completing 11 virtual community meetings through 2021.

Customer Research and Education

Customer Research and Education (DEP-4)
Section 7.3.10.1.4 Page 333
Program Target: 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).

Status Update: SCE met target after completing and capturing feedback on 9 PSPS-related surveys to include 2020 events, wildfire community meetings, CRC/CCV visitation surveys, and In-Language Wildfire Mitigation Communications Effectiveness.

Marketing Campaign

Customer Education and Engagement – Marketing Campaign (DEP-1.3)
Section 7.3.10.1.3 Page 331
Program Target: PSPS Awareness target: 50%

Status Update: SCE met target after finishing 2021 with PSPS awareness at ~60%.

Aerial Suppression

Aerial Suppression (DEP-5)
Section 7.3.10.3 Page 337
Program Target: Will 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.

Status Update:. SCE has met target by having 3 Memoranda of Understanding (MOUs) signed by SCE and each respective county. Payments disbursed to all 3 counties in Q2.

SCE Emergency Responder Training

SCE Emergency Responder Training (DEP-2)
Section 7.3.9.1 Page 313
Program Target:
IMT (Incident Management Team): Have all PSPS IMT and Task Force members fully trained and qualified or requalified by July 1, 2021.
UAS (Unmanned Aircraft System): In 2021 SCE plans to expand the program by an additional 50 operators over 2020 levels.

Status Update:
IMT: Activity met target by completing PSPS IMT trainings and qualifications in Q2.
UAS: Activity met target by having 60 Resources pass the FAA 107 exam in 2021, bringing the two-year total to 104.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

Data Governance

Wildfire Safety Data Mart and Data Management

Wildfire Safety Data Mart and Data Management (WiSDM / Ezy) (DG-1)

Section 7.3.7.1 Page 303

Program Target:

WiSDM:

- Complete the WisDM solution analysis and design 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.

Status Update:

- Ezy Data met target to include implementing the cloud platform infrastructure for Ezy Data and enabling an environment for Artificial Intelligence (AI) assisted analytics.
- WiSDM met target in December 2021 after initiating the staggered consolidation of datasets and included two datasets, weather stations and HD cameras, into the WiSDM centralized repository.

WMP Activities Summary

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

PSPS

Customer Care Programs

Customer Care Programs (PSPS-2)[10]

Section 7.3.6.5.2 Page 294

Program Target:

- 2a: Community Resource Centers (CRC): Adjust as needed.
- 2b: Community Resiliency Programs: Targets for Resilience Zones dependent on community leaders identifying potential customers. Targeting to obtain 5 to 10 agreements.
- 2d: Complete installation of microgrid islanding (CREI) capability on second pilot customer.
- Customer Resiliency Equipment:
  - 2c: Critical Care Backup Battery (CCBB): Expand program to eligible medical baseline (MBL) customers who are enrolled in CARE/ FERA and reside HFRA. Expand marketing and outreach plans.
  - 2e: Well Water & Residential Battery Station Rebates: Enhance the programs to increase customer participation by 20% - 40%.

Status Update: SCE partially met targets.

- 2a: 64 CRC sites enrolled (62 of which are indoor) as of end of 2021 based on evaluation of circuits likely to be impacted by PSPS events.
- 2b: Community Resiliency Programs: SCE did not meet its 2021 target. Obtained 4 out of 5 customer agreements. This pilot will be discontinued in 2022 due to lack of participation.
- 2d: Microgrid Islanding (CREI) missed its 2021 target of completing installation due to global supply chain constraints. Due to unforeseen delays with approvals from the school district this activity is projected to be completed by end of Q2 2022.
- 2c: CCBB program: Target met by expanding CCBB program to eligible MBL and established additional partners (CBOs).
- 2e: Well Water & Residential Battery Station Rebate: program: Target met by increasing customer participation by ~~93%~~~131%.*

[10] Activity included in 2021 Change Orders Report filed on November 1, 2021.

* Following validation of records, SCE increased participation by ~131% in 2021. This is an increase from the 93% participation reported in the WMP Progress Update – Q4 2021 submitted on 2/1/2021.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[11]

	SA-8: Fire Science Enhancements
	
	Evaluate current wildfire events in context of 40-year history of wildfires.
		Summary: SCE did not meet target. Vendor developed a climatology output containing a 40-year history of wildfires for multiple variables but unable to complete because vendor work was reprioritized to support other emergent work. Evaluation will take place in 2022.
		
		Progress:
		• No notable progress was made after Q3.
		• While this activity did not meet the year-end target, it was not intended to directly mitigate wildfire risk in 2021.
		
		Risks or Challenges:
		• Vendor redirected to work on initiatives mitigating PSPS risk in 2021; as a result, development of climatological products that support evaluation of current wildfire events was not completed in 2021.
		• Development of climatological products and operationalizing historical weather data output are project plan milestones that were not met in 2021 and will now begin work in Q4 2022.
		
		Actions to Improve Performance / Get Well Plan:
		• Fire Science Enhancements will remain a WMP activity in 2022, but the scope of the activity will expand to also include the following activities from 2021 WMP:
		  ○ FPI (SA-2)
		  ○ Fire Spread Modeling (SA-4)
		  ○ Fuel Sampling (SA-5)
		  ○ Remote Sensing (SA-7)
		  ○ Fire Science Enhancements (SA-8)

[11] Sources: Data as of 12/31/2021 unless otherwise noted.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[12]
	SH-15: Vertical Switches **Install 20 switches in HFRA**	**Summary:** SCE did not meet target of installing 20 switches in HFRA. Installed 16 of 20 vertical switches in 2021. Crews and material for the remaining 4 were reassigned due to storm support restoration efforts. The final 4 installations were completed in Q1 2022. **Progress:** • 16 of 20 vertical switches were installed in 2021. • Crews and material were available for installation and scheduled for installation in December; however, were reassigned due to storm support reprioritization. • Final 4 installations were completed in Q1 2022. **Risks or Challenges:** • Reprioritization of crews for storm support. **Actions to Improve Performance / Get Well Plan:** • Materials and crews are in place for installations rescheduled to Q1 2022.

[12] Sources: Data as of 12/31/2021 unless otherwise noted.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[13]
	IN-8: Inspection and Maintenance Tools **Transition Aerial[14] 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.**	**Summary:** • T&D Aerial completed transition of inspection processes to a single digital platform and met target to train at least 75% of inspectors. Transmission Ground did not complete transition of inspection processes to a single digital platform and did not meet target to train at least 75% of inspectors by year end 2021. However, inspectors were trained and using the tool as of Q1 2022. • Key artificial intelligence/machine learning (AI/ML) models met target. • Scope Mapping Tool (SMT) did not meet target to deploy tool to Distribution Planning and Engineering users. • Remediation mobile software and iPad devices were deployed for Transmission however target was not met for Distribution users. **Progress:** • Transmission Ground implementation and training was completed in Q1 2022. • Key artificial intelligence/machine learning (AI/ML) models met target and are being leveraged to support Aerial Inspection process. • Scope Mapping Tool (SMT) implementation is currently scheduled to continue into 2022. • Remediation mobile software and iPad devices deployment is scheduled to continue through mid-2022 for Distribution users. **Risks or Challenges:** • Transmission Ground implementation and training experienced delays due to offline syncing issues and data volume constraints. • Scope Mapping Tool (SMT) implementation experienced delays due to technical issues between the planned tool and existing datasets. • Remediation mobile software and iPad devices deployment experienced delays due to technology and resource issues. **Actions to Improve Performance / Get Well Plan:** • These activities will continue into 2022 and are currently tracking to meet their respective targets. Scope, schedule, and resources are being closely monitored to ensure key milestones can be achieved.

[13] Sources: Data as of 12/31/2021 unless otherwise noted.
[14] Aerial includes both transmission and distribution.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[15]

	VM-2 Pole Brushing
	
	SCE plans to pole brush between 200,000 and 300,000 Distribution poles
		Summary: SCE did not meet 2021 target. This activity cleared ~163K of the 200K poles and fell short of meeting the target due to contractor performance, loss of crews, access constraints, and delays in obtaining environmental permitting. The activity cleared or made a reasonable attempt to clear all Non-Exempt & Unknown poles in the 2021 inventory to meet compliance requirements (PRC 4292).
		
		Progress:
		• Poles brushed in Q4 equaled ~18,800, bringing the total for 2021 to 163K poles.
		
		Risks or Challenges:
		• Contractor performance, lack of crews, no access poles and environmental delays.
		
		Actions to Improve Performance / Get Well Plan:
		• SCE is addressing lessons learned to address and mitigate some of the challenges experienced in 2021, some include:
		  • All Contractors will attend mandatory pole brushing and environmental training in Q1 2022.
		  • Program will begin RFP for new prime contractor in Q1 2022.

[15] Sources: Data as of 12/31/2021 unless otherwise noted.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[16]
	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**	**Summary**: SCE did not meet its year end target due to mobile product data volume limitations during the pilot. New design architecture will be utilized to remedy the issue but the critical need to calculate and assess risk scores required additional development time, moving timeline to 2022. **Progress:** • The Arbora project had a projected HTMP/DRI Pilot Deployment delivery date of Q4 2021, which has been delayed due to failing user acceptance testing (UAT) Testing and finding of ~40 defects to fix. Full Deployment delivery date is yet to be determined. • This technology-focused activity experienced the same issues as the other IT focused activities; offline syncing issues along with data volume constraints caused delays (vendor's inability to send data for offline use and editing). **Risks or Challenges:** • Vendor inability to send data for offline use and editing. • Failed UAT Testing. **Actions to Improve Performance / Get Well Plan:** • Currently there is no opportunity for an improvement to the timeline due to development delays by SCE technical partners. • SCE working to remedy the defects that were found during UAT testing. Pilot launch timeline has shifted to 2022 but do not currently have pilot or full deployment timeline. • As of the end of Q1 2022, Pilot deployment of HTP was completed with full deployment of HTP will be rolled out in Q2 2022. This will be followed by Routine Line Clearing implementation by the end of 2022.

[16] Sources: Data as of 12/31/2021 unless otherwise noted.

2021 WMP Activity Narratives

Off-track or other notable activities

Inactive | Under Review | Complete | On Track | Behind Plan, Likely to Meet Year-end Target | Behind Plan, At-Risk of Not Meeting Year-end Target

YE Status	Current Target	Narrative[17]
	PSPS-2: Resiliency Zone[18] (RZ) **Targets for Resilience Zones dependent on community leaders identifying potential customers.** **Targeting to obtain 5 to 10 Agreements.**	**Summary:** SCE did not meet its 2021 target. Obtained 4 out of 5 customers. This pilot will be discontinued in 2022 due to lack of customer participation. **Progress:** • Outreach was conducted to 17 potential customer sites including 3 Tribal Nations throughout 2021. **Risks or Challenges:** • This activity was dependent on community leaders providing resiliency zone sites and customers' willingness to participate in the program; willingness levels and leader input varied. • In some instances, customers had already installed their own switching equipment and purchased generators • Tribal Nations did not participate in the program as expected. **Actions to Improve Performance / Get Well Plan:** • As this activity was a pilot and based on performance, this activity will not be continued in 2022. • SCE will continue to support the current 8 signed customer agreements.
	PSPS-2d: Microgrid Islanding (CREI) **Complete installation of microgrid islanding (CREI) capability on second pilot customer.**	**Summary:** SCE did not meet target In 2021. Activity progress included a signed customer agreement with an elementary school in the Rialto Unified School District and approval of the Single Line Diagram (SLD) and budget. The developer was due to receive project equipment (battery, transfer switch, etc.) at the end of October but equipment delivery was delayed due to global supply chain constraints that prevented a 2021 installation. Target completion in late Q1 or early Q2 2022. **Progress:** • Developer provided an updated project timeline; new project completion date shown as late Q1 2022. • Storage battery has been received and stored in warehouses in the U.S. by end of 2021. **Risks or Challenges:** • Installation was not completed in 2021 due to global supply chain constraints. **Actions to Improve Performance / Get Well Plan:** • Developer is working with its suppliers to implement a plan to ensure all materials are received for an end of Q1 2022 project completion date. • This activity will continue to be monitored for progress in 2022 but will not be included as a 2022 WMP activity.

[17] Sources: Data as of 12/31/2021 unless otherwise noted.

[18] Activity included in 2021 Change Orders Report filed on November 1, 2021.

ATTACHMENT B

SCE 2021 WMP Cost Variance Explanation

Mitigation	2021 WMP - WSD Initiative Activity	2021 WMP Identifier	2021 WMP - WSD Initiative #	Sum of 2021 CAPEX Planned	Sum of 2021 CAPEX Actuals	Sum of CAPEX $ Variance (Overrun)/Underrun	Sum of CAPEX % Variance	Sum of 2021 OPEX Planned	Sum of 2021 OPEX Actuals	Sum of OPEX $ Variance (Overrun)/Underrun	Sum of OPEX % Variance	Variance Comments >20%, AND > $1M, AND all Underrun Costs
Alternative Technologies	Alternative Technology Pilot Programs	7.1.D	7.1.D	$ 8,357	$ 5,683	$ 2,674	32%	$ -	$ -	$ -	0%	Underrun driven primarily by: timing of Ground Fault Neutralizer costs shifting to 2022 based on design changes, lower volume of relay upgrades found from field inspections for High Impedance Relay Evaluations Program than forecasted, and costs for work performed for the Isolation Transformer Program recording to a different internal account (Plant Betterment).
Asset Management & Inspections	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	IN-1.1	7.3.4.9.1	$ 147,938	$ 82,458	$ 65,480	44%	$ 104,185	$ 85,906	$ 18,279	18%	SCE performed ~179,600 ground inspections and ~180,200 aerial inspections on structures in HFRA, meeting the WMP targets for inspecting between 163,000 and 198,000 structures in HFRA, via both ground and aerial inspections. SCE was able to bundle Distribution remediation work (remediations completed with other programs for operational efficiency such as covered conductor) and had fewer remediations to complete due to lower inspection find rates than forecast. Both of these factors contributed to lower spending relative to forecast. Note that this underspending was partially offset by the inclusion of HFRA compliance remediations (e.g., Breakdown Maintenance, and Preventative Maintenance) in the recorded amounts to align with SCE's 2021 GRC Decision.
Asset Management & Inspections	Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	IN-1.2	7.3.4.10	$ 50,758	$ 13,380	$ 37,378	74%	$ 25,181	$ 24,098	$ 1,083	4%	SCE performed ~20,800 ground inspections and ~20,790 aerial inspections on transmission structures in HFRA, meeting the WMP targets for inspecting between 16,800 and 22,800 structures in HFRA, via both ground and aerial inspections. Spending below forecast was driven primarily due to lower remediations, driven by a lower find rate and execution limitations due to internal and external (GO95) exceptions.
Asset Management & Inspections	Infrared inspections of distribution electric lines and equipment:	IN-3	7.3.4.4	$ -	$ -	$ -	0%	$ 427	$ 464	$ (37)	9%	
Asset Management & Inspections	Infrared inspections of transmission electric lines and equipment:	IN-4	7.3.4.5	$ -	$ -	$ -	0%	$ 209	$ 94	$ 115	55%	SCE met the WMP target by inspecting ~1,000 transmission circuit miles in HFRA. SCE identified process efficiencies by bundling work between IN-4 for IR inspections and SH-13. This resulted in fewer crew deployments while still meeting compliance requirements. Team also implemented process improvement solutions to streamline invoicing procedures.
Asset Management & Inspections	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	IN-5	7.3.4.9.2	$ -	$ -	$ -	0%	$ 315	$ 149	$ 166	53%	SCE completed ~230 generation inspections in HFRA, exceeding its WMP target of 181 generation asset inspections in HFRA. Spending below forecast was due to fewer resource hours charging to the program than initially anticipated in 2021, resulting in lower costs incurred.
Asset Management & Inspections	Improvement of Inspections	IN-8	7.3.4.3	$ 17,422	$ 18,611	$ (1,189)	7%	$ 6,183	$ 3,727	$ 2,456	40%	In 2021, SCE intended to migrate aerial and transmission ground inspections to a single digital platform with at least 75% of inspectors trained to use the tool by year-end. T&D aerial accomplished its WMP target by completing transition to a single digital platform and training 75% of inspectors. SCE experienced technical issues with vendor product development which caused a schedule delay resulting in costs deferred to 2022. Additionally, process enhancements were added to the automation scope for the Scope Mapping Tool (SMT) to help distribution and engineering planning bring more efficiency into the workflow which also delayed deployment. Contractor adoption of iPad deployment for remediation mobile software faced contractor user adoption challenges which slowed deployment.
Data Governance	Centralized repository for data	DG-1	7.3.7.1	$ 15,709	$ 9,292	$ 6,417	41%	$ 1,052	$ -	$ 1,052	100%	SCE met its WMP targets for both the WiSDM and Ezy Data components of our Data Governance activity. Spending below forecast is primarily a result of the following: CAPEX: Underrun due to Ezy Data scheduling delays driven by interdependencies with the InspectForce program, technical issues, and some project scope deferred to 2022. WiSDM underrun driven by resource constraints, internal reprioritization efforts to support the PSPS Action Plan requirements mandated from the CPUC, and a technology strategy shift for the WiSDM Program resulting in reduced spending for 2021. OPEX: Underrun due to Ezy Data: 1) software interdepency technical challenges encountered with the InspectForce program, which resulted in scheduling delays on the Ezy Data project, and 2) reclassification of licensing fees from O&M to Capital, following internal capitalization assessement.
Data Governance	Centralized repository for data	N/A	7.3.7.1	$ -	$ 24	$ (24)	0%	$ -	$ -	$ -	0%	
Emergency Planning & Preparedness	Adequate and trained workforce for service restoration: SCE Emergency Response Training	DEP-2	7.3.9.1	$ -	$ -	$ -	0%	$ 2,545	$ 377	$ 2,168	85%	The Incident Management Team (IMT) completed PSPS IMT training and qualification in Q2 in alignment with the WMP target to complete by July 1, 2021. Additionally, the Unmanned Aerial Systems (UAS) achieved 60 additional personnel resources passing the FAA 107 Exam, exceeding the WMP target of 50 personnel resources. The program cost underrun resulted from COVID restrictions across all SCE Training Programs which limited in-person field training on patrolling and live field observations for senior patrols, journeyman, and troubleman positions.
Emergency Planning & Preparedness	Preparedness and planning for service restoration	N/A	7.3.9.5	$ 200	$ -	$ 200	100%	$ 11,568	$ 3,530	$ 8,038	69%	**CAPEX:** Underrun driven by vendor execution delays pertaining to this activity, which delayed certain scope into 2022. **OPEX:** Underrun driven primarily due to fewer PSPS events than forecast.
Grid Design & System Hardening	Covered Conductor Installation	SH-1	7.3.3.3.1	$ 753,659	$ 897,600	$ (143,941)	19%	$ -	$ 545	$ (545)	0%	SCE exceeded its program target of 1,000 circuit miles of covered conductor by installing ~1,500 circuit miles. Program overrun resulted from ability to perform additional scope, accelerated scope pertaining to PSPS Action Plan mitigations, and increased unit cost.
Grid Design & System Hardening	Tree Attachment Remediation	SH-10	7.3.3.3.2	$ 22,231	$ 21,940	$ 291	1%	$ -	$ -	$ -	0%	Although SCE met its WMP target, it was not able to reach its strive target due to COVID and Weather/Wildfire restrictions, thus resulting in an underrun. This underrun was partially offset by a higher unit cost compared to original plan.
Grid Design & System Hardening	Updates to grid topology to minimize risk of ignition in HFTDs	SH-11	7.3.3.17.1	$ 4,450	$ 190	$ 4,260	96%	$ 820	$ 132	$ 688	84%	Although SCE met its WMP target of performing evaluations, plans, and assessments on hardening legacy facilities, it was not able to begin executing on the construction, leaving minimal capital charges for this activity in 2021.
Grid Design & System Hardening	Grid topology improvements to mitigate or reduce PSPS events	SH-12	7.3.3.8.1	$ 4,000	$ -	$ 4,000	100%	$ -	$ -	$ -	0%	Although SCE met its WMP target of performing an assessment of a vendor bid, it was not able begin construction due to land procurement contract delays, thus resulting minimal capital charges for this activity in 2021.
Grid Design & System Hardening	Transmission tower maintenance and replacement	SH-13	7.3.3.15	$ -	$ -	$ -	0%	$ 1,000	$ 723	$ 277	28%	SCE exceeded its WMP target to remove C-hoooks on at least 40 structures in HFRA by removing ~50 C-hooks. Team was able to find process efficiencies by bundling work. This resulted in fewer crew deployments while still meeting compliance requirements. Note: For purposes of this Compliance Report, costs for this activity have been displayed, but typically are captured in IN-1.2 HFRI Transmission Remediations as displayed in Table 12.
Grid Design & System Hardening	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	SH-14	7.3.3.12	$ 5,943	$ 92	$ 5,852	98%	$ 2,221	$ -	$ 2,221	100%	Although SCE met its WMP target, it was not able to reach its strive target due to program strategy changes. Further savings were realized by utilizing infrastructure scenario planning and assessments, and survey process tools.
Grid Design & System Hardening	Updates to grid topology to minimize risk of ignition in HFTDs	SH-15	7.3.3.17.1	$ 853	$ 602	$ 251	29%	$ -	$ -	$ -	0%	SCE installed 16 vertical switches in 2021. Crews and material for the remaining 4 were deferred due to storm restoration efforts. SCE has since completed installation of these 4 units in Q1 2022.
Grid Design & System Hardening	Undergrounding of electric lines and/or equipment	SH-2	7.3.3.16	$ 26,350	$ 6,586	$ 19,764	75%	$ -	$ -	$ -	0%	SCE met its WMP target (underground 4 circuit miles) by undergrounding 5.8 circuit miles, but did not fully reach its strive target (6 circuit miles). Program cost savings were found from lower CAPEX spend vs. original planned cost pers which were derived from SCE's Rule 20 undergrounding program.

Mitigation	2021 WMP - WSD Initiative Activity	2021 WMP Identifier	2021 WMP - WSD Initiative #	Sum of 2021 CAPEX Planned	Sum of 2021 CAPEX Actuals	Sum of CAPEX $ Variance (Overrun)/Underrun	Sum of CAPEX % Variance	Sum of 2021 OPEX Planned	Sum of 2021 OPEX Actuals	Sum of OPEX $ Variance (Overrun)/Underrun	Sum of OPEX % Variance	Variance Comments >20%, AND > $1M, AND all Underrun Costs
Grid Design & System Hardening	Expulsion Fuse Replacement	SH-4	7.3.3.7	$ -	$ (479)	$ 479	0%	$ 1,154	$ 36	$ 1,118	97%	SCE met its WMP target (install/replace 330 fuses) by completing installation or replacement of ~340 fuses, but did not reach its strive (421 fuses). Spending below forecast for this program was also due to bundling of costs for Current Limiting Fuses with other projects. There was a net credit from purchased material in 2020 that was returned in 2021.
Grid Design & System Hardening	Installation of system automation equipment	SH-5	7.3.3.9	$ -	$ 2,136	$ (2,136)	0%	$ -	$ -	$ -	0%	SH-5 targets were dependent on outcomes from SH-7. SH-7 determined RARs/RCSs to be necessary. SCE's PSPS Action Plan included the installation of 18 devices. Because this activity did not have a forecast at the time of WMP filing, the amount incurred represents the full variance.
Grid Design & System Hardening	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	SH-6	7.3.3.2	$ 12,898	$ 5,153	$ 7,745	60%	$ -	$ 14	$ (14)	0%	SCE exceeded both its WMP target (60 relay units in HFRA) and strive target (86 relay units in HFRA) by replacing/upgrading ~95 relay devices. Program cost efficiencies were found by bundling Substation Infrastructure Replacement projects and maximizing engineering benefits on larger substation projects containing higher volume of relay installations.
Grid Design & System Hardening	Updates to grid topology to minimize risk of ignition in HFTDs	SH-8	7.3.3.17.1	$ -	$ -	$ -	0%	$ 400	$ 946	$ (546)	136%	
Grid Operations & Operating Protocols	PSPS events and mitigation of PSPS impacts	PSPS-2	7.3.6.5	$ 7,247	$ 14,502	$ (7,255)	100%	$ 48,526	$ 52,261	$ (3,735)	8%	**CAPEX:** Overrun mainly due to implementation of PSPS Action Plan mitigations to meet CPUC mandated requirements, which were not included at time of WMP filing.
Resource Allocation Methodology	Allocation methodology development and application	N/A	7.3.8.1	$ -	$ -	$ -	0%	$ 7,917	$ 33,845	$ (25,927)	327%	Overrun mainly due to: 1) Additional environmental support required for SCE's pole brushing program; 2) increased costs across various Vegetation Management Programs driven by enhanced environmental controls to mitigate environmental risks and help ensure compliance with regulatory requirements (e.g., including the enhancement of Environmental Sensitive Area (ESA) layer to capture additional data for biological resources & endangered species, waters & wetlands data buffers, waters features, SCE structures, circuit & SCE roads); 3) Incremental environmental reviews and enhanced processes associated with vegetation remediation activities; and 4) Additional costs incurred for Professional Safety Solutions and consulting resources in support WMP efforts. *Note: 2021 Planned Environmental costs were reported under 7.3.8.1 in Table 12, and were remapped to 7.3.5.1 for 2022 WMP Filing of Table 12.*
Situational Awareness	Weather forecasting and estimating impacts on electric lines and equipment:	SA-3	7.3.2.6.1	$ 4,550	$ 1,161	$ 3,389	74%	$ 2,335	$ 567	$ 1,768	76%	SCE met its target for this activity in 2021. SCE spent less than originally forecast as: 1) the Operational Analytics Project was deferred to 2022 due to re-prioritization of resources to address SCE's emergent PSPS Action Plan requirements from CPUC; 2) the delivery of supercomputers was delayed until the third quarter of 2021 due to supplier constraints, resulting in project scope being limited to integration activities only; and 3) a shift in accounting for Weather and Fuels Modeling Program (Next Gen weather software) from capital to O&M following internal capitalization accounting evaluation.
Situational Awareness	Weather forecasting and estimating impacts on electric lines and equipment:	SA-3	7.3.2.6.1, 7.3.1.1, 7.3.1.3, 7.3.1.5	$ 2,002	$ 2,340	$ (337)	17%	$ 1,917	$ 2,448	$ (531)	28%	
Situational Awareness	Weather forecasting and estimating impacts on electric lines and equipment:	SA-4	7.3.2.6.2, 7.3.1.1, 7.3.1.3, 7.3.1.5	$ -	$ -	$ -	0%	$ 1,569	$ 1,972	$ (404)	26%	
Situational Awareness	Continuous Monitoring Sensors	SA-9	7.3.2.2	$ 9,554	$ 8,362	$ 1,192	12%	$ 252	$ 135	$ 117	46%	While SCE met its WMP target of installing 120 Distribution Fault Anticipation (DFA) units by completing installation of 130 DFAs units, it did not meet our stretch target of installing 150 units. This was due in part due to resource constraints and lower vendor contract costs for program rollout than planned.
Situational Awareness & Forecasting	Advanced weather monitoring and weather stations:	SA-1	7.3.2.1	$ 5,273	$ 5,607	$ (334)	6%	$ 7,360	$ 5,017	$ 2,343	32%	While SCE exceeded its WMP target by installing ~400 weather stations in 2021, we did not meet our stretch target of 475 weather stations. Underrun of O&M was also due to legacy weather station retrofits (maintenance work) which was reclassified as capital following internal capitalization evaluation.
Situational Awareness & Forecasting	Forecast of a fire risk index, fire potential index, or similar	SA-5	7.3.2.4.2	$ -	$ -	$ -	0%	$ 320	$ 209	$ 111	35%	SCE met the WMP target for "periodic fuel sampling across SCE's HFRA" by having the vendor supply fuel sampling reports every 2 weeks through year end. Spending below target primarily due to lower than forecast costs associated with training and sampling sites.
Situational Awareness & Forecasting	Forecast of a fire risk index, fire potential index, or similar	SA-7	7.3.2.4.3	$ -	$ -	$ -	0%	$ 1,467	$ 17	$ 1,449	99%	SCE met the WMP target to complete its first wind profiler project to validate weather model performance, and align existing weather models and weather station outputs. O&M spending was less than forecast as UCSD ultimately paid for fire detection costs that SCE has originally forecasted in this activity.
Situational Awareness & Forecasting	Forecast of a fire risk index, fire potential index, or similar	SA-8	7.3.2.4.4	$ -	$ -	$ -	0%	$ 891	$ 556	$ 335	38%	Vendor made progress in evaluating wildfire events in 40-year history of wildfires, but efforts were reprioritized to support other emergent work due to resource constraints. In addition, certain project payments were deferred to 2022.
Stakeholder Cooperation & Community Engagement	Community engagement	DEP-1.2	7.3.10.1.1	$ -	$ -	$ -	0%	$ 110	$ 11	$ 99	90%	SCE hosted 11 virtual community meetings, exceeding its WMP target of at least 9 meetings. However, SCE did not reach its stretch target of up to 18 meetings, resulting in a cost underrun for this activity. Use of virtual meetings incurred less cost than in-person meetings (avoided facility rental, employee lodging and expenses, refreshment, etc., where applicable).
Stakeholder Cooperation & Community Engagement	Community engagement	DEP-1.3	7.3.10.1.3	$ -	$ -	$ -	0%	$ 3,821	$ 1,854	$ 1,967	51%	SCE's marketing campaign improved customer awareness and exceeded the WMP target of 50% awareness by achieving 60% awareness. Initiative cost savings were driven by ~460k (10%) fewer newsletters than initially forecasted and per-unit cost savings driven by the large distribution volume.
Stakeholder Cooperation & Community Engagement	Community engagement	DEP-4	7.3.10.1.1	$ -	$ -	$ -	0%	$ 1,434	$ 856	$ 578	40%	SCE administered 9 PSPS-related surveys to capture feedback on 2020 events, wildfire community meetings, CRC/CCV visitation surveys, and in-language wildfire mitigation communication effectiveness. This exceeded the program target of at least 4 PSPS-related surveys to capture the listed information. Program cost underrun resulted from bundling of costs between the Social Media, Search Enging Marketing, and Online Advertising with In-Language Communications.
Stakeholder Cooperation & Community Engagement	Community engagement	DEP-5	7.3.10.3	$ -	$ -	$ -	0%	$ 18,000	$ 17,545	$ 455	3%	SCE met its target to provide aerial suppression support resources in partnership with CAL FIRE and local county fire departments. SCE recorded a minor underrun due to a credit SCE received from Los Angeles, Orange and Ventura Counties, for a ten day period when the aerial assets were deployed to northern California to fight the Caldor fire.
Vegetation Management & Inspections	Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment.	7.3.5.2	7.3.5.2	$ -	$ -	$ -	0%	$ 9,583	$ 15,914	$ (6,331)	66%	Overrun in HFTD work due to premium time incurred, including use of 6/10 scheduled work week in order to complete critical planned work, and deeper trims.

Mitigation	2021 WMP - WSD Initiative Activity	2021 WMP Identifier	2021 WMP - WSD Initiative #	Sum of 2021 CAPEX Planned	Sum of 2021 CAPEX Actuals	Sum of CAPEX $ Variance (Overrun)/Underrun	Sum of CAPEX % Variance	Sum of 2021 OPEX Planned	Sum of 2021 OPEX Actuals	Sum of OPEX $ Variance (Overrun)/Underrun	Sum of OPEX % Variance	Variance Comments >20%, AND > $1M, AND all Underrun Costs
Vegetation Management & Inspections	Vegetation management to achieve clearances around electric lines and equipment	7.3.5.20	7.3.5.20	$ -	$ -	$ -	0%	$ 119,459	$ 213,071	$ (93,612)	78%	Overrun in HFTD work due to premium time incurred, including use of 6/10 scheduled work week in order to complete critical planned work, and higher Palm skirting costs.
Vegetation Management & Inspections	Detailed inspections and management practices for vegetation clearances around transmission electrical lines and equipment	7.3.5.3	7.3.5.3	$ -	$ -	$ -	0%	$ 1,756	$ 1,496	$ 260	15%	Overrun in HFTD work due to premium time incurred, including use of 6/10 scheduled work week in order to complete critical planned work, and deeper trims.
Vegetation Management & Inspections	Remote sensing inspections of vegetation around distribution electric lines and equipment.	N/A	7.3.5.7	$ -	$ -	$ -	0%	$ -	$ 1,181	$ (1,181)	0%	Overrun due to accelerated work from 2022 into third quarter of 2021. LiDAR budget originally planned and scheduled to begin in 2022.
Vegetation Management & Inspections	LiDAR inspections of vegetation around transmission electric lines and equipment	N/A	7.3.5.8	$ -	$ -	$ -	0%	$ 1,485	$ 3,180	$ (1,695)	114%	Overrun primarily due to 2020 carry over work and higher than forecast costs for helicopter services.
Vegetation Management & Inspections	Removal and remediation of trees with strike potential to electric lines and equipment (HTMP)	VM-1	7.3.5.16.1	$ -	$ -	$ -	0%	$ 80,722	$ 32,432	$ 48,290	60%	SCE met its WMP target to assess between 120,000 and 130,000 trees for hazardous conditions and perform mitigations as necessary, by completing ~131,000 tree assessments. Note that the WMP target is based on the Change Order submitted 11/1/2021. Although SCE exceeded the number of circuits patrolled in 2021, SCE found fewer trees with strike potential (subject trees) than originally forecasted, therefore fewer assessments were performed, and found a lower than anticipated number of subject trees that required subsequent mitigation. The original forecast was based on average historical prescription rate of 8% but the actual prescription rate for assessments performed in 2021 was closer to 5%. Additionally, compliance with environmental regulations resulted in delays for subsequent tree removals and mitigations in 2021. Additional drivers for spending below forecasted amounts include fewer than anticipated Palm field inspections within HFTD; lower customer enrollment and utilization of property owner incentives; contractor stand-down which haulted execution of work for a number of weeks, and limitations of tree removal with environmental holds.
Vegetation Management & Inspections	Fuel management (including all wood management) and management of “slash” from vegetation management activities (Expanded Pole Brushing)	VM-2	7.3.5.5.1	$ -	$ -	$ -	0%	$ 8,272	$ 11,026	$ (2,754)	33%	Spending above forecast for this activity was primarily due to higher than anticipated brushing rates. Forecasted pole brushing amounts were based on 2020 pole brushing rates; however, SCE experienced higher actual brushing rates due to increased labor costs and mid-year scheduling adjustments due to emergent risks (Areas of Concern poles).
Vegetation Management & Inspections	Fuel management (including all wood management) and management of “slash” from vegetation management activities (Expanded Clearances for Legacy Facilities)	VM-3	7.3.5.5.2	$ -	$ -	$ -	0%	$ 900	$ 349	$ 551	61%	SCE treated ~60 sites for Expanded Line Clearances on legacy facilities, exceeding the program WMP target of 46 sites. The initiative recorded an underrun due to United States Forest Service(USFS) permit approval delays for Big Creek 1 Project. USFS put a halt on all vegatation permit approvals, primarily due to the overwhelming amount of vegetation work resulting from the Creek fire.
Vegetation Management & Inspections	Removal and remediation of trees with strike potential to electric lines and equipment (Dead and Dying Tree Removal/DRI)	VM-4	7.3.5.16.2	$ -	$ -	$ -	0%	$ 43,445	$ 16,165	$ 27,279	63%	SCE met target by completing a first and second pass on ~1,300 circuits and performing prescribed mitigations. Program cost underrun due to lower than expected prescription rates and fewer dead trees requiring removal.
Vegetation Management & Inspections	Quality assurance / quality control of inspections	7.3.5.13	7.3.5.13	$ -	$ -	$ -	0%	$ 5,547	$ 3,221	$ 2,326	42%	Underun due to significant stand-down of primary vendor, haulting execution of work for 10 weeks. SCE had two of its primary VM contractors stand down due to safety concerns. Contractors have provided safety plans to address these concerns, and subsequently returned to work. As a result the volume of completed work was less than initially forecasted in 2021.
Vegetation Management & Inspections	Vegetation inventory system (Arbora)	VM-6	7.3.5.19	$ 9,940	$ 11,005	$ (1,065)	11%	$ 4,152	$ 635	$ 3,518	85%	SCE achieved partial deployment of the Work Management Tool (Arbora) by completing the initial discovery and design architecture for Routine Line Clearing. An architecture redesign was required for Hazard Tree Management Program (HTMP) and Dead and Dying Tree Removal (DRI) due to data volume limitations and an inability to calculate and assess risk scores. This caused the project schedule to be delayed and costs to be deferred to 2022, resulting in project cost underrun in 2021. In addition, there was a licensing fee reclassification from O&M to capital, which further contributed to the underrun in O&M.