Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy SafetyTo: Energy Safety
Prepared by: Tram Camba
Job Title: Wildfire Safety – Sr Advisor
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 01:
Regarding SCE's Risk Framework:
a. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for Severe Risk Areas, as shown in Table SCE 6-03:
i. Population egress
ii. High fire frequency location
iii. Burn-in buffer
iv. Significant fire consequence
v. High winds
vi. Communities of Elevated Fire Concern
b. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for High Consequence Areas, as shown in Table SCE 6-03:
i. Not identified in meeting Severe Risk Area criteria (if such differs from ii and iii)
ii. Destructive fire consequence
iii. Locations subject to PSPS events
c. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for Other HFRA, as shown in Table SCE 6-03:
i. Not identified in meeting Severe Risk Area of High Consequence criteria (if such differs from ii)
ii. Small fire consequence
d. Define and explain what is meant by "Not identified in meeting Severe Risk Area criteria" for High Consequence Areas.
e. Define and explain what is meant by "Not identified in meeting Severe Risk Area or High Consequence criteria" for Other HFRA criteria.
f. What is the expected timeline for hardening the miles identified under "Other HFRA"?

Response to Question 01:

a. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for Severe Risk Areas, as shown in Table SCE 6-03:
i. Population egress
ii. High fire frequency location

iii. Burn-in buffer
iv. Significant fire consequence
v. High winds
vi. Communities of Elevated Fire Concern

The percentage and number of circuit miles within Severe Risk Areas criteria #1-#4 are shown below.

Severe Risk Areas	Total Circuit Miles (Rounded)	Percentage to Total Severe Risk Areas Miles	Percentage to Total Miles in HFRA (Distribution)
Criteria #1: Egress Constraints, High Fire Frequency & Burn-In	1,200	41%	13%
Criteria #2: Significant Fire Consequence	900	31%	9%
Criteria #3: Communities of Elevated Fire Concern (CEFC)	550	19%	6%
Criteria #4: High Wind Locations	300	10%	3%
Total Severe Risk Areas Miles	**2,950**	**100%**	**31%**
Total Miles in HFRA (Distribution)	**9,600**		

These numbers are current as of April 2023. In some cases, a location may meet more than one criterion. In such instances, the location is included in the total based on the sequence as shown in the table above. For example, if a location meets both criteria #1 and #2, it will be listed within the total for criteria #1 and not in the total for criteria #2. They are subject to change pending further SME review, as described in section 6.2.1.2 of the 2023-2025 WMP.

b. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for High Consequence Areas, as shown in Table SCE 6-03:

i. Not identified in meeting Severe Risk Area criteria (if such differs from ii and iii)

ii. Destructive fire consequence

iii. Locations subject to PSPS events

The percentage and number of circuit miles within High Consequence Areas criteria #1-#3 are shown below. All 4,400 miles are in High Consequence Areas criteria #2 because the ordering of severity considers destructive fire consequence first, then high wind locations (similar to the explanation above). Since all 4,400 miles have consequence between 300 and 10,000, they are all bucketed in criteria #2. Also, please see the response in subpart (d) for an explanation of "Not identified in meeting Severe Risk Area criteria."

High Consequence Areas	Total Circuit Miles (Rounded)	Percentage to Total High Consequence Areas Miles	Percentage to Total Miles in HFRA (Distribution)
Criteria #1: Not identified in meeting Severe Risk Area criteria	N/A	N/A	N/A
Criteria #2: Destructive fire consequence	4,400	100%	46%
Criteria #3: High Wind Locations	-	0%	0%
Total High Consequence Areas Miles	**4,400**	**100%**	**46%**
Total Miles in HFRA (Distribution)	**9,600**		

c. Provide the percentage and number of circuit miles for system hardening (including a breakdown for both covered conductor and undergrounding) that apply to each of the following criteria for Other HFRA, as shown in Table SCE 6-03:
i. Not identified in meeting Severe Risk Area of High Consequence criteria (if such differs from ii)
ii. Small fire consequence

The percentage and number of circuit miles within Other HFRA criteria #1-#2 are shown below. Please see the response in subpart (e) for an explanation of "Not identified in meeting Severe Risk Area or High Consequence criteria."

Other HFRA	Total Circuit Miles (Rounded)	Percentage to Total Other HFRA Miles	Percentage to Total Miles in HFRA (Distribution)
Criteria #1: Not identified in meeting Severe Risk Area or High Consequence criteria	N/A	N/A	N/A
Criteria #2: Small fire consequence	2,250	100%	23%
Total Other HFRA Miles	**2,250**	**100%**	**23%**
Total Miles in HFRA (Distribution)	**9,600**		

d. Define and explain what is meant by "Not identified in meeting Severe Risk Area criteria" for High Consequence Areas.

SCE includes the clause "Not identified in meeting Severe Risk Area criteria" for High Consequence Areas so that the count of the locations within each risk tranche is mutually exclusive. For instance, it is possible that a location is both egress-constrained and has 1,000 acres burn consequence within an 8-hour unsuppressed model simulation. In this case, this location would meet the Severe Risk Area Criteria #1 since it is egress constrained. Although this location has an acres burned consequence between 300 and 10,000, which is a High Consequence Area characteristic, SCE would not count it in the High Consequence risk tranche because it was already counted in the Severe Risk Area risk tranche.

e. Define and explain what is meant by "Not identified in meeting Severe Risk Area or High Consequence criteria" for Other HFRA criteria.

Similar to the explanation in subpart (d) above, SCE includes the clause "Not identified in meeting Severe Risk Area or High Consequence criteria" for Other HFRA so that the count of the locations within each risk tranche is mutually exclusive. Miles that fall within this classification do not meet the criteria to be classified as either Severe Risk Area or High Consequence. For example, it is possible that a location is in a Community of Elevated Fire Concern (CEFC) and has a 200 acres burn consequence within an 8-hour unsuppressed model simulation. In this case, this location would meet the Severe Risk Area Criteria #4. Although this location has an acres burned consequence less than 300, which is an Other HFRA characteristic, SCE would not count it in the Other HFRA risk tranche because it was already counted in the Severe Risk Area risk tranche.

f. What is the expected timeline for hardening the miles identified under "Other HFRA"?

Under the current model, SCE expects to harden approximately 60% of the Other HFRA miles by the end of 2028. The remaining miles may be addressed through other non-wildfire programs such as the Overhead Conductor Program. It is also possible that newer risk models become available in the future to account for factors such as climate change, which may elevate the risk of the Other HFRA miles and shift them into the Severe Risk or High Consequence Areas. In that case, SCE may address those elevated miles sooner rather than later.

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Berta Sandberg
Job Title: Senior Advisor
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 02:
Regarding Table 8-3 of SCE's WMP:
a. SCE provides its risk calculation via the percentage of work completed within a Severe Risk Area (SRA) or High Consequence Area (HCA). Provide an updated Table 8-3 via Excel with an additional column with a value for the percentage of work being done in the top 20% risk ranked areas based on SCE's risk model output. Additionally, describe what risk model(s) SCE used to determine the risk ranking for this calculation.

Response to Question 02:

Please see the attached excel spreadsheet. SCE has based the analysis on its IWMS Risk Framework.

SCE notes that the "Top 20%" value provides a partial picture of a mitigation program's scope and prioritization, as a mitigation program could address a large amount of risk, and hence the share toward the top 20% risk ranked areas would be relatively small. For example, while 22% of SCE's 2023-2025 covered conductor scope is in the top 20% of the remaining overhead bare primary conductor risk ranked in HFRA, over 60% of that top 20% will be addressed by this covered conductor scope from 2023-2025. SCE plans to address a significant majority of remaining overhead bare conductor miles in the top 20% with targeted undergrounding.

Because mitigations are designed to address specific types of assets and risk issues, the maximum risk that can be addressed by each mitigation program is defined relative to where it can be deployed. For example, covered conductor and targeted undergrounding are limited to areas with remaining uncovered overhead conductor in HFRA, and SCE has calculated how much of its 2023-2025 scope will address the risk ranked top 20% of those remaining uncovered miles.

Please see below for how SCE determined the total risk population for different mitigations.

- The total risk population for Covered Conductor (SH-1) and Targeted Undergrounding (SH-2) is based on remaining overhead bare primary conductors in HFRA.
- The total risk population for Long Span Initiative (SH-14) is based on bare conductor spans identified via LiDAR as having potential conductor clash issues that have not yet been remediated.
- The total risk population for Vibration Damper Retrofit (SH-16) is based on covered conductor spans installed prior to Q4 2020 (i.e., before SCE implemented revised installation practices) with a high or medium vibration susceptibility risk, in which wind

conditions may reduce the covered conductor's useful life.
- The total risk population for REFCL Ground Fault Neutralizer (SH-17) is based on circuits tied to substations with fewer than 5 miles of underground single-phase cables[1] and more than 10 miles of HFRA circuitry fed out of the substation.

SCE has not calculated the "Top 20%" value for programs that will be sunsetting by 2025, as these programs are nearing the end of deployment and risk prioritization is not a driving consideration in scoping decisions. Programs meeting these criteria include:

- Branch Line Protection strategy (SH-4)
- Circuit Breaker Relay Hardware for Fast Curve (SH-6)
- Tree Attachments Remediation (SH-10)
- Vertical Switches (SH-15)

SCE has also not calculated the "Top 20%" value for programs that are pilots or new technologies in the testing phase or for which scope has not been fully developed. Programs meeting these criteria include:

- Transmission Open Phase Detection (SH-8)
- REFCL Grounding Conversion (SH-18)

Finally, SCE has not calculated the "Top 20%" value for programs that are largely informed by PSPS reduction considerations. Programs meeting these criteria include:

- Remote Controlled Automatic Reclosers Settings Update (SH-5)

[1] Circuits tied to substations known to have single-phase cables that can be easily upgraded were included in the total population.

SEE SEPARATE ATTACHMENT

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Andrew Swisher
Job Title: Consulting Engineer
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 03:
Regarding SCE's Branch Line Protection Strategy:
a. In Table 8-3, SCE provides two target numbers for 2023 for installing or replacing fusing, with a base target of 500 and a strive target of 570. Given SCE does not provide targets past 2023, and given any of the 570 fuses are not completed in 2023, will SCE install or replace these fuses in future years?
b. Why is SCE sunsetting this program in 2023?
c. What does SCE mean by "completed via opportunity work"? How many fuses does SCE estimate this would relate to per year?

Response to Question 03:

a. In Table 8-3, SCE provides two target numbers for 2023 for installing or replacing fusing, with a base target of 500 and a strive target of 570. Given SCE does not provide targets past 2023, and given any of the 570 fuses are not completed in 2023, will SCE install or replace these fuses in future years?

SCE expects to complete the fusing mitigation installation or replacement targets of between 500-570 locations as identified in the WMP. If there is select fuse scope that is not completed in 2023, it would then be evaluated for targeted or opportunity replacement in future years. SCE's fusing mitigation efforts were initiated in 2018 with the main focus on application of branch line fuses where fusing did not exist through 2019. SCE's WMP strategy from 2020-2023 has been mainly focused on replacement of existing fuses through targeted scope work efforts. During the years 2018-2023, and prior years, SCE has additionally completed opportunity-based fuse replacements, and is shifting the fusing mitigation program primarily to this approach for 2024+ in the WMP.

b. Why is SCE sunsetting this program in 2023?

SCE is sunsetting the targeted wildfire mitigation effort where the fuse installation replacements are the primary driver for the scope of work at a given location. The fusing replacements have historically been selected where the fusing work is the primary driver for work at the specific location. The fusing installation locations are selected based on the fuse type and ignition risk at the installation. Please see the response for part c of this question for further details on the shift in replacement strategy for the remaining installations of fuse types of interest, such as fuse links.

c. What does SCE mean by "completed via opportunity work"? How many fuses does SCE estimate this would relate to per year?

The reference to Table 8-3 for quoted text "completed via opportunity work" is meant to provide recognition that fuses will continue to be replaced after 2023 via methods other than pre-defined scope, as has been conducted in prior years, for the targeted replacements. Opportunity work for fuse replacement includes various operational activities such as bundling fuse replacement with covered conductor, replacement of fuses which operate (melt) to isolate a fault, or replacement of a car hit pole which also contained fuses. SCE has not conducted detailed analysis to quantify opportunity fuse replacement quantities. However, SCE estimates the selective HFRA fuse applications for opportunity replacements likely range from several hundred to potentially up to a thousand or more installations annually.

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Arianne Luy
Job Title: Engineering Manager
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 04 a. :
Regarding SCE's Long Span Initiative:
a. Provide more details on SCE's short- and long-term plans for this initiative:
i. How long will the conductor spacers interim strategy remain installed?
ii. How is SCE identifying locations for this project, including how risk informs prioritization?
iii. Are the 2,900 spans planned to be mitigated during this 3-year WMP period all of the spans in the SCE HFRA territory? If not, how many are outside of the HFRA, and how/why were those locations selected?

Response to Question 04 a. :

i. How long will the conductor spacers interim strategy remain installed?

In Severe Risk and High Consequence Areas, line spacers will remain installed until SCE proactively hardens the line with TUG or WCCP. SCE compares the LSI scope with TUG and WCCP plans to avoid installing LSI measures when TUG or WCCP installation is imminent. In Other HFRA areas, line spacers will remain installed until SCE replaces retired or damaged bare wires with covered conductor over time pursuant to its standard in HFRA.

ii. How is SCE identifying locations for this project, including how risk informs prioritization?

SCE uses LiDAR to identify spans with potential conductor clash issues. These spans are then identified to be remediated through the LSI program. The spans within the scope are prioritized using the Integrated Wildfire Mitigation Strategy (IWMS) and the LSI Risk Model. The IWMS Risk Framework supports SCE's strategy to deploy mitigations commensurate with the level of consequence from a safety, financial, and reliability perspective within each location of its high fire risk area. The LSI Risk Model is a machine-learning model that incorporates various features such as wind data and LiDAR measurements to predict the probability of clashing for each span. These two risk-informed features (LSI Risk Model and IWMS) are combined to prioritize spans with both the highest probability of clashing as well as the highest ignition consequence.

iii. Are the 2,900 spans planned to be mitigated during this 3-year WMP period all of the spans in the SCE HFRA territory? If not, how many are outside of the HFRA, and how/why were those locations selected?

The LSI program only focuses on remediating spans at risk of conductor clashing in HFRA. The 2,900 spans planned to be remediated do not constitute the entirety of spans existing in SCE's HFRA.

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Arianne Luy
Job Title: Engineering Manager
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 04b:
Regarding SCE's Long Span Initiative:
b. In response to CalAdvocate's Data Request 2 Question 1, SCE provided a Compliance Assessment Report specific to its Long Span Initiative, which includes the following two findings:
• Unable to Validate Work Completion from a Desktop Review Due to Limited Information
• Field Verification Revealed Acceptable LSI Remediation Work Did Not Appear To Be Complete
What actions has SCE taken/will SCE take to remediate the issue and reduce such occurrences in the future? How is SCE tracking accuracy to ensure the issues are remediated moving forward?

Response to Question 04b:
Please see the information below on actions SCE has or will take to address the following findings.

Finding 1: Unable to Validate Work Completion from a Desktop Review Due to Limited Information

- SCE will begin to incorporate additional information into its business records to better facilitate desktop reviews by Q4 2023. This data may include photos of completed work, field notes, or written description of the work completed. Additionally, the long text associated with the LSI notification will include a description of the final repair.

Finding 2: Field Verification Revealed Acceptable LSI Remediation Work Did Not Appear To Be Complete

- SCE published the LSI remediation guideline standard to provide clarity on acceptable remediations for the LSI program on April 28, 2023. This standard specifies three main types of remediation: insulated wire spacers, alternative construction, or covered conductor. The guidelines specify the appropriate remediation and completion expectation based on field conditions.

By improving its validation process and providing prescriptive guidelines on acceptable remediations for LSI, SCE will address the identified issues and improve its accuracy.

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Arianne Luy
Job Title: Engineering Manager
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 05:
Regarding SCE's Undergrounding Program:
a. In response to CalAdvocate's Data Request 8 Question 9, SCE states that:
"The vast majority of our undergrounding program is to convert bare overhead lines to undergrounding, except for rare circumstances where we would underground lines that already have covered conductor."
Provide the mileage and location for any undergrounding projects planned for lines that already have covered conductor. Additionally, explain the criteria used for determining use of undergrounding for these projects, including any RSE, cost/benefit, and risk reduction effectiveness calculations used.

Response to Question 05:
The following table provides the circuits and mileage for 2024 to 2025 undergrounding projects planned for lines that already have covered conductor.

Circuit	Total Installed CC removal (mi)	Total OH removed for TUG project (mi)
Merlin	0.74	13.78
Cuthbert	0.51	6.3
Plateau	1.11	15.59
Snowcreek	0.07	1.77
Poultry	0.4	14.59
Paradise	0.1	12.1
Total	**2.93**	**64.13**

The majority of covered conductor installed in these locations were not driven by the Wildfire Covered Conductor Program (WCCP), but by SCE's preventative maintenance/inspection programs or line extensions (new service connections) due to covered conductor being the standard for conductor replacements and new overhead conductor installations in HFRA. After SCE performed its IWMS subject matter expert and feasibility reviews of these areas, it determined that on balance, it was reasonable to remove a small section of overhead covered conductor for each TUG project, given the severity of risk in the area and operational considerations.

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Dean Schultz
Job Title: Advisor
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 06:
Regarding SCE's Community Outreach and Engagement Targets:
SCE states that it plans to conduct "PSPS-related customer studies" (at least five in 2023 and three in 2024 and 2025).
a. How are these studies different from SCE's annual PSPS Tracker survey and other community outreach surveys?
b. What are the specific areas of focus for these studies?
c. Will the findings of these studies be published and made publicly available, or are the studies for internal use only? If the former, where does SCE intend to publish?
d. How will the findings be used or incorporated into SCE's community outreach program(s)?

Response to Question 06:
a. How are these studies different from SCE's annual PSPS Tracker survey and other community outreach surveys?

The five PSPS-related customer studies that SCE plans to conduct in 2023 are described below.

One of the five studies is "SCE's annual PSPS Tracker survey" which is named in the question above and listed as the second item below – it is an internal non-mandated study in its fourth year in 2023, focused primarily on customers with direct PSPS experiences in the past wildfire season.

The much larger-scale study shown in the first bullet below is the CPUC-mandated In-Language Pre-/Post survey of communications and outreach effectiveness – also in its fourth year in 2023 (and similar surveys are also conducted by PG&E and SDG&E). Customers territory-wide and in the High Fire Risk Areas participate in this survey.

- Fourth annual In-Language Wildfire Mitigation / PSPS Communications Effectiveness surveys: Pre-and Post- Wildfire Season (Residential and Business) – mandated by Decision 20-03-004 to evaluate the effectiveness of SCE's wildfire safety / preparedness (including PSPS) communications and outreach. Surveys are administered in English and 19 other "prevalent" languages to Residential and Business customers systemwide (and with an expanded focus on HFRA customers) – and conducted twice annually: prior to (June/July) and after (November/December) the primary wildfire season. Post- survey replicates the Pre-survey questions, but adds a significant focus on PSPS experiences.

- Fourth annual PSPS Tracker surveys (Residential and Business) – conducted post-wildfire season early in the following year to assess customer attitudes / opinions about and actual experiences with SCE's PSPS activity. Surveys are targeted to four types of customers: Notified and de-energized, notified but not de-energized, HFRA customers not notified or de-energized, and non-HFRA customers.

- Voice of the Customer post-PSPS event surveys – brief surveys targeted only to customers shortly after they were either notified about potential PSPS activity or were actually notified and de-energized to evaluate their satisfaction or challenges with specific PSPS experiences.

- Wildfire Safety community meeting feedback surveys – brief surveys targeted only to customers who attended a community meeting to determine its effectiveness and value in delivering PSPS- and safety/preparedness-related information.

- CRC/CCV visit feedback surveys (post-PSPS events) – brief surveys targeted only to customers who visited either a Community Resource Center or Community Crew Vehicle during a period of PSPS activity to determine the usefulness and value of these SCE support services.

These studies provide customer feedback regarding specific PSPS-related experiences and are used by SCE to identify and drive improvement opportunities.

b. What are the specific areas of focus for these studies?

Please refer to response in Question 6.a. where each of the five studies is described in more detail.

c. Will the findings of these studies be published and made publicly available, or are the studies for internal use only? If the former, where does SCE intend to publish?

Findings and full reports from the mandated In-Language Pre-/Post- surveys were included in SCE's formally-filed PSPS Pre- and Post-Season reports to the CPUC in 2022 – and will continue to be made available in 2023 and beyond. The other four studies are principally used for internal purposes.

d. How will the findings be used or incorporated into SCE's community outreach program(s)?

As indicated above, the findings will be (and have been) used to identify strengths and areas for improvement (i.e. what's working vs. what could be better; trending up or down – or unchanged) related to the individual survey objectives – and apply the insights to a wide range of different PSPS focus areas. For example, in terms of communications recall or preparedness (or many other topics), we can determine which segments of customers are indexing above or below average – and then take appropriate actions to correct deficiencies with critical groups (such as AFN customer sub-groups).

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Jonathan Brownstein
Job Title: Manager
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 07:
Regarding SCE's Use of Fast Curve Settings:
a. Provide the following data for all outages experienced in 2023 on circuits with fast curve settings enabled via Excel:
i. Circuit impacted by outage
ii. Circuit segment impacted by outage
iii. Cause of outage (in line with QDR Table 6 drivers)
iv. Number of customers impacted
v. Number of customers belonging to vulnerable populations (such as Access and Functional Needs, Medical Baseline, and Social Vulnerability Index) impacted
vi. Duration of outage
vii. Response time to outage
viii. Customer minutes

Response to Question 07:

SCE interprets Question 7 to request outage data in the first quarter of 2023 for distribution circuits with fast curve capability when fast curve settings were activated and where the fault could have been detected by the fast curve settings. Please see the file titled "*Outages_FC_Installed_Circuits_2023_DR.xlsx"* for the requested information.

SCE's data shows that installation of Fast Curve settings has not affected reliability, as there has been no increase in unplanned outages on Fast Curve-enabled circuits overall in the five years since SCE began deployment of this wildfire mitigation tool, as compared to historical outage data for these circuits.[1] Unplanned outages occur for a variety of reasons (e.g., faults due to animal or vegetation contact) and cannot be causally linked to the operation of fast curve settings. Based on available SCE data, these types of outages would have occurred with or without Fast Curve settings due to hazards beyond SCE's control. The main difference is quicker reaction time to a fault and enhanced public safety. Consequently, the fact that fast curve settings were activated when an

[1] Most Fast Curve-enabled circuits experienced no increase in outages after deployment of Fast Curve Settings as compared to historical average outage count (2015-2017), with a majority of the circuits experiencing fewer outages. For the remainder, no association between outages and Fast Curve settings has been established.

outage occurred does not mean that the outage is caused by the operation of fast curve settings.

SCE uses protection settings on protective devices, such as circuit breakers at substations or remote-controlled automatic reclosers on poles, across its entire electric system to maintain the reliability of power and prevent damage to equipment caused by an electrical disruption or fault, such as a metallic balloon getting caught in a power line. Protective devices detect and respond to fault conditions to prevent a potentially more dangerous and uncontrolled reaction. Fast Curve settings reduce the response time of protective devices and turn off power faster when an electrical disruption or fault is detected on SCE's system as compared to normal operating conditions. This difference in response timing further reduces ignition potential and thus wildfire risk.

SCE's outage data does not associate outages with specific circuit segments. Instead of "Circuit Segment," SCE provides "Restoration Location," meaning the section of the circuit that was used to re-energize customers once repairs were completed.

SCE has provided the data on Critical Care Customers, as SCE does not have a formal definition for vulnerable customers. These values represent customers on the entire circuit and can overestimate the number of customers impacted by outages in cases when the outage is on a localized portion of the circuit and does not impact the entire circuit.

Data for response time to an incident is not readily available, as SCE does not track arrival time of the crew for instances not involving hazard conditions such as 911 or wire down calls.

SEE SEPARATE ATTACHMENT

Southern California Edison
2023-WMPs – 2023-WMPs

DATA REQUEST SET O E I S - P - W M P _ 2 0 2 3 - S C E - 0 0 3

To: Energy Safety
Prepared by: Jonathan Brownstein
Job Title: Manager
Received Date: 5/11/2023

Response Date: 5/16/2023

Question 08:
Regarding SCE's Fast Curve Settings and Customer Reliability:
a. On page 332 of the WMP SCE states:
"When SCE conducted an analysis comparing older Fast Curve settings with newer Fast Curve settings installed since June 2021, we found that Fast Curve installations have not had any significant impact on customer reliability."
Please provide your data that supports this claim along with an interpretation of the data. This data should include the total number of outages for three years prior to installing Fast Curve on the circuit and the outage totals for each year after Fast Curve was installed. The totals provided should be broken down by circuit. Provide these totals for every circuit that has received Fast Curve capabilities. Please do not send raw data. For any outage data that is removed from the totals, explain what the outage data was and why it was removed.

Response to Question 08:

Please see the file titled "*OEIS_P_WMP_2023_SCE_003_DR.xlsx"* which supports the above-quoted statement in SCE's WMP. The data provided reflect unplanned outages[1] at the circuit level that occurred in 2022 on distribution circuits that had Fast Curve settings capability as of 2022, as compared to outages on those same circuits during 2015-2017 timeframe prior to Fast Curve installation. The data is for outages in the June through October timeframe, which is when Fast Curve settings would typically be activated.

Outage data for years 2018-2021 was not used for the analysis, as during these years SCE was expanding deployment of Fast Curve settings to more circuits each year, meaning that many circuits did not have Fast Curve settings capability for the entire relevant time period. To allow for a more complete data set and accurate basis for comparison, SCE compared 2022 unplanned outages on distribution circuits with Fast Curve settings capability with the 2015-2017 outage data for these circuits prior to Fast Curve deployment.

SCE's data shows that installation of Fast Curve settings has not affected reliability, as there has

[1] Proactive/planned de-energizations and fuse/transmission/substation outages are excluded from this data set because these types of outages are not relevant to "SCE's Fast Curve Settings." Fast Curve Settings would not have operated during these types of outages.

been no increase in unplanned outages on Fast Curve-enabled circuits overall in the five years since SCE began deployment of this wildfire mitigation tool, as compared to historical outage data for these circuits.[2] Unplanned outages occur for a variety of reasons (e.g., faults due to animal or vegetation contact) and cannot be causally linked to the operation of fast curve settings. Based on available SCE data, these types of outages would have occurred with or without Fast Curve settings due to hazards beyond SCE's control. The main difference is quicker reaction time to a fault and enhanced public safety. Consequently, the fact that fast curve settings were activated when an outage occurred does not mean that the outage is attributable to the operation of Fast Curve settings. In the WMP regarding lack of "significant impact" refers to a distribution of increase and decrease centered around 0 with no noticeable shift away from a 0 delta.

SCE uses protection settings on protective devices, such as circuit breakers at substations or remote-controlled automatic reclosers on poles, across its entire electric system to maintain the reliability of power and prevent damage to equipment caused by an electrical disruption or fault, such as a metallic balloon getting caught in a power line. Protective devices detect and respond to fault conditions to prevent a potentially more dangerous and uncontrolled reaction. Fast Curve settings reduce the response time of protective devices and turn off power faster when an electrical disruption or fault is detected on SCE's system as compared to normal operating conditions. This difference in response timing further reduces ignition potential and thus wildfire risk.

SCE also provides the following table, which shows circuit performance for 2015-2022 for the 956 circuits that had fast curve capability as of 2022. The average from the 2015-2017 time period (pre-Fast Curve outage data) for these 956 circuits is provided for comparison.

Outages on 956 Circuits with Fast Curve Have Not Increased Compared to Historical Average[7]

Category	2015-2017 (Avg)	2018	2019	2020	2021	2022
Outages	781	696	564	708	731	757
Outages per Circuit	0.82	0.73	0.59	0.74	0.76	0.79

[2] Most fast curve-enabled circuits have not experienced an increase in outages compared to average historical outage count (2015-2017) prior to implementation of fast curve settings. A majority of these circuits experienced fewer outages. For the remainder, no association between outages and fast curve settings has been established.

SEE SEPARATE ATTACHMENT