Decision 19-05-038 May 30, 2019

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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

DECISION ON SOUTHERN CALIFORNIA EDISON COMPANY'S 2019 WILDFIRE MITIGATION PLAN PURSUANT TO SENATE BILL 901

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DECISION ON SOUTHERN CALIFORNIA EDISON COMPANY'S 2019 WILDFIRE MITIGATION PLAN PURSUANT TO SENATE BILL 901

Summary

Catastrophic wildfires have devastated California in recent years. The Legislature enacted Senate Bill (SB) 901 in 2018 mandating action by this Commission on Wildfire Mitigation Plans submitted by the electrical corporations we regulate. This is one in a series of decisions we are issuing to act on the 2019 Plans of the three large California investor owned electric utilities, the three small/multijurisdictional utilities, and two independent transmission owners. This decision acts specifically on the Wildfire Mitigation Plan of Southern California Edison (SCE).

SCE's Plan contains each of the elements required in Senate Bill (SB) 901, Public Utilities Code Section 8386(c). This decision requires SCE to meet certain reporting requirements, capture data, improve its metrics for evaluating performance, and update its next Wildfire Mitigation Plan in the areas of inspection and maintenance, vegetation management, system hardening, and situational awareness.

There are several aspects of the company's planned mitigation that require improvement or other follow-up activity. These include:

1) The utility's reliance on two sets of fire threat maps - the Commission's map adopted in Rulemaking (R.) 15-05-006, and SCE's own self-defined map that is far larger. This decision requires the utility to address the issue;
2) Explanation of the Enhanced Overhead Inspection program to ensure it does not simply consist of drive-by patrols; and
3) Verification that SCE's covered conductor program will occur in the Commission-adopted "High Fire-Threat Districts" during this Wildfire Mitigation Plan cycle.

Along with this decision, the Commission is issuing a separate guidance decision that binds all electrical corporations that filed Wildfire Mitigation Plans. Thus, SCE is bound by both the requirements of this decision and the general guidance decision.

1. Overview of Wildfire Mitigation Plan

According to Southern California Edison (SCE), the primary objective of its 2019 Wildfire Mitigation Plan (WMP or Plan) is to reduce the risk of potential wildfire-causing ignitions associated with SCE's electrical infrastructure in its self-identified "High Fire Risk Areas" (HFRA). SCE includes areas in its HFRA that differ from the areas identified as Tier 2 and 3 in the Commission's fire threat map proceeding.[1] We discuss the distinction between SCE's HFRA and the Commission's fire map in more detail below.

Additional objectives SCE identifies for its 2019 WMP include protecting public safety; implementing measures that further harden SCE's electric system against wildfires and improve system resiliency; enhancing wildfire suppression efforts by improving fire agencies' ability to detect and respond to emerging fires in coordination with utility emergency management personnel; reducing the impact of wildfires and wildfire mitigation efforts on the public; and effectively communicating with customers, community groups, and other stakeholders about how to prepare for, prevent, and mitigate wildfires in SCE's HFRA (including de-energization of power lines).

[1] Decision Adopting Regulations to Enhance Fire Safety in the High Fire-Threat District, Rulemaking (R.) 15-05-006/Decision (D.) 17-12-024.

2. Elements of SCE's WMP

Party comments on SCE's WMP focus on the following proposed mitigation elements: inspection and maintenance, system hardening, and vegetation management. Parties also commented on situational awareness, de-energization, customer outreach and notification, reporting and metrics, and future WMPs.

The SCE WMP programs that will take the greatest amount of time and effort and that garnered the largest amount of party comment are SCE's new "enhanced" inspection and maintenance program, its system hardening proposal (which will result in the installation of 96 miles of covered conductor in 2019 alone), and its vegetation management program. These are clearly the most costly and labor-intensive aspects of SCE's Plan.

Situational awareness involving the use of cameras, weather stations, and data predicting when and where catastrophic wildfires are most likely to occur is also a significant part of SCE's WMP, but engendered few comments because it is relatively quick and easy to install, relatively marginal in cost, and instrumental in improving utility fire monitoring and response capabilities.

Parties also commented on de-energization, which we touch on here but defer in large part to the Commission's de-energization proceeding, R.18-12-005. Parties also made suggestions on customer outreach and notification, reporting and metrics, and future WMPs. We discuss the individual elements of SCE's proposal and parties' comments on each below.

3. SCE's High Fire Risk Areas vs. CPUC Fire Maps

Fire maps present one issue that SCE should address in more detail with its next WMP. While parties did not focus on this issue, SCE has its own "High Fire Risk Areas" (HFRA) and states throughout its Plan that its wildfire

mitigation efforts will occur in those areas. However, SCE's HFRA is not the same as the CPUC High Fire-Threat District (HFTD), which includes Zone 1 (High Hazard Tree Mortality Zone), Tier 2 (elevated fire-threat), and Tier 3 (extreme fire-threat). The Commission determined in D.17-12-024 that these are the areas in California with an increased risk for utility-associated wildfires. HFRA area represents approximately 35% of SCE's entire service territory, nearly 23% of which is comprised of SCE-defined non-HFTD areas.

While SCE's WMP proposes to deploy resources in its own self-identified HFRA, rather than the Commission's HFTD, there is no practical difference at this time, as SCE states that it will primarily focus on Tier 3 zones for the duration of this WMP. Tier 3 zones are identified in the Commission's fire maps adopted in D.17-12-024 as posing "extreme" fire threat, the highest threat areas. The Commission supports such deployment.

Prior to the creation of the CPUC HFTD Map, SCE states that it utilized multiple sources to specify which areas in SCE's service area historically represented a high fire risk. Currently, SCE maintains HFRA maps that are based on a combination of historical map boundaries (based on past fire management and response experiences), the California Department of Forestry and Fire Protection's (CAL FIRE) Fire Hazard Severity Zone (FHSZ) maps, and most recently the CPUC HFTD map. SCE considers all three categories (*i.e.*, Tier 2, Tier 3, and historical high fire risk areas) to be "HFRA." According to SCE, the HFRA contains areas the company found to have the highest potential frequency and consequences of wildfire ignition events because of the topographical and climatological risk factors in the area.

SCE states that in September 2018, it began an evaluation of whether the HFRA not designated as Tier 2 and Tier 3 zones still present high fire risk. SCE

expects to complete the evaluation by June 1, 2019.[2] Afterwards, SCE will document the reasons why it decides to include or exclude these areas from its HFRA.

SCE states that activities in Tier 3 areas will generally be deployed first. For example, SCE's Wildfire Covered Conductor Program will largely be implemented in Tier 3 in 2019, with zero planned circuit miles outside of Tier 2 and Tier 3. SCE generally has minimal wildfire mitigation activities planned for areas outside of the Commission's Tier 2 and Tier 3 zones in 2019.[3] As a result, the distinction between SCE's HFRA and the Commission's HFTD will have minimal impact for the period covered by the current WMP.

In next year's WMP, or sooner if it wishes,[4] SCE should propose a process for bringing its HFRA in compliance with HFTD, or discuss in more detail why it should not be required to do so. It should also include its report on the outcome of the evaluation noted above. It is not clear from SCE's WMP whether it continues to maintain an HFRA because it disagrees with the HFTD, or simply has not brought its own mapping into compliance with the HFTD requirements.

SCE should not be allowed to work from two separate "high fire threat" maps – SCE's own HFRA, and the Commission's HFTD – without justification and studies to support its own mapping, or independent vetting of HFRA for

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[2] *See* SCE Response to ALJ Thomas' Ruling Seeking Additional WMP Information, issued on March 5, 2019, Answer to Question 4.

[3] *Id.*

[4] In comments on the proposed decision, SCE stated that its evaluation has determined that 95% of the square mileage associated with SCE's non-CPUC HFRA should be removed or reclassified as non-HFRA, so the fire map reconciliation process may be relatively easy, but we do not decide the issue here.

scientific rigor and reasonableness, as was done in R.15-05-006. Furthermore, if the aforementioned process were to find that SCE's HFRA is indeed better representative of areas with elevated or extreme fire risk, then SCE should seek an amendment to the HFTD map to include any such areas.

It is important to understand that any regulations adopted in R.15-05-006 apply specifically to areas defined by HFTD tiers and would not equally apply to SCE-identified HFRA areas. Having this type of disjointed, self-imposed, unreviewed, and unclear definition of fire risk area unnecessarily complicates enforcement of fire safety regulations.

To the extent SCE targets areas of its HFRA in this cycle that are not in the HFTD, it should, within 30 days of issuance of this decision, list all of the work it plans in this WMP cycle in areas that are in HFRA and not HFTD. We will not disallow the work at this time, but recommend that SCE focus its efforts in the HFTD this cycle.

To be clear: we have no objection to the extent SCE's HFRA includes small "buffer" zones immediately adjacent to and at the outer edges of Tier 2 and Tier 3 zones in HFTD areas. The buffer may account for utility infrastructure that is just outside the boundary of an HFTD tier, but whose failure could result in an ignition in the HFTD. For example, if a 50-foot pole is located just outside the edge of a HFTD tier boundary but could break and fall into an HFTD area, then the facilities and equipment on that pole should be treated in the same manner as one in the HFTD. Such buffering addresses spatial imprecision of satellite imagery with respect to actual location of utility lines and the impacts that may have on the boundary edges of HFTD tiers. At most, these buffer zones would be 100-200 feet and marginally expand the existing HFTD, but not cover anywhere near the land area contemplated by SCE's HFRA.

4. Inspection and Maintenance

4.1. SCE's Proposed Inspection and Maintenance Program

SCE lists the following inspection programs in its WMP and asserts that the programs comply with General Orders (GO) 95, 128, and 165. The program that garnered the greatest number of responses from parties is its Enhanced Overhead Inspection and Remediation program, which we discuss in more detail later in this section. SCE lists the following inspection and maintenance programs:

Enhanced Overhead Inspections and Remediation, which will conduct inspections of all overhead transmission and distribution structures and equipment in HFRA for potential ignition risks;

Overhead Detail Inspection Program, which performs a close inspection of SCE's overhead electrical distribution facilities, such as poles, capacitors, switches, transformers, conductors, guy wires and risers;

Annual Grid Patrol, which visually inspect SCE's overhead and above-ground equipment associated with otherwise undergrounded electrical distribution facilities every year to identify and document obvious safety and reliability conditions that require corrective action;

Underground Detail Inspection Program, which performs an in-depth inspection of SCE's underground distribution facilities and pad-mounted equipment including structures, switches, transformers, visible cables, and associated components;

Transmission Inspection and Maintenance Program, which performs scheduled inspections of sub-transmission and transmission assets in compliance with GO 165, and performs transmission maintenance in accordance with GO 95, 128 and SCE's standards;

Substation Inspection and Maintenance, which performs scheduled inspections in conformance with GO 167, and performs maintenance and testing of equipment;

Pole Inspections, which include SCE's Intrusive Pole Inspection Program that evaluates SCE's wood poles and its Pole Loading Program that assesses the poles' structural loading capabilities;

Quality Oversight/Quality Control Group, which performs independent evaluation of SCE's inspection and maintenance activities to ensure compliance with GO 95, 128, 164, 174 and SCE's standards;

Distribution Infrared Inspection Program, which provides routine, ground-based infrared inspections of overhead distribution facilities in HFRA; and

Transmission Infrared and Corona Inspection Initiative, which inspects all overhead transmission facilities and equipment located in HFRA using specialized infrared and ultraviolet (Corona) light cameras mounted to helicopters.

4.2. Parties' Comments - Inspection and Maintenance

The Utility Reform Network (TURN) and California Environmental Justice Alliance (CEJA) express concern that SCE's Enhanced Overhead Inspection (EOI) program will duplicate SCE's existing inspection program, the Overhead Detail Inspection (ODI) program. TURN asserts that the scope of work for the EOI is very similar to the scope of work required for ODI. TURN is concerned that SCE

may be simply redoing its ODI in HFRA.[5] TURN recommends that the Commission find that utility spending on additional detailed inspections will need to be closely examined in any future review of memorandum account balances to ensure ratepayers are not paying for utility mismanagement. In its reply, SCE states that the EOI is a different program from ODI, and it employs a risk-based approach.

CEJA is also concerned that SCE is planning to spend more money on inspections when it is not clear whether the prior inspections were deficient. In response to a data request from CEJA regarding the effectiveness of past inspections, SCE states that it has not completed an analysis of how effective its inspections have been in identifying equipment prior to failure but expects that the EOI will improve SCE's ability to detect potentially problematic equipment.

CEJA recommends that the Commission require that the inspections SCE plans to perform be consistent with SDG&E's current inspection practices. CEJA asserts that SDG&E's practices were designed to meet the compliance requirements of a previous Commission decision, represent the industry's best practices, and should be used as the baseline for this WMP cycle. CEJA recommends that to the extent SCE proposes to perform inspection activities beyond what SDG&E does, these activities should be characterized as a pilot program, such that SCE needs to monitor and audit the effectiveness of these activities before they can be approved in the next WMP cycle. In its reply, SCE

[5] The Overhead Detail Inspections, as required by GO 165, must be performed every five years. As part of the inspections, GO 165 also requires the utilities to fix all identified "corrective actions" so that all structures and equipment function properly and safely.

states that its inspection practices align with that of SDG&E in following the requirements outlined in GO 95 and 165.

4.3. Discussion – Inspection and Maintenance

While parties raise questions about whether SCE's Enhanced Inspections will duplicate existing efforts, without better data we are not prepared to stop SCE from carrying out its new inspection program at this time. We note, however, that SCE is required under SB 901 to prove the effectiveness of its inspection program and include a description of how it will do so in its WMP. Pub. Util. Code Section 8386(c)(19)(C) requires SCE to "[m]onitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules."

SCE's Enhanced Inspection Program should not consist simply of perfunctory "drive-by" patrols. Given the volume of planned inspections, it is possible that this may be all SCE is planning; it states, "SCE will complete enhanced overhead inspections on all transmission and distribution circuits within HFRA, including the approximately 450,000 transmission and distribution pieces of equipment on those circuits ... by the height of the upcoming fire season."[6] It is unclear how SCE can perform detailed inspections of this volume of equipment in so short a time. Elsewhere in the WMP, SCE states that the Enhanced Overhead Inspection program will result in actions to trim and

[6] Southern California Edison's WMP at 15. Citation to party comments contain the filer's abbreviated name and the page reference. Intervenor comments were all filed on March 13, 2019, and electrical corporation reply comments filed on March 22, 2019. Citations to SCE's WMP contain the title "SCE's Plan" and the page reference.

remove vegetation and harden the system, indicating the inspection will be more than cursory.[7] SCE should, within 30 days of issuance of this decision, file a Tier 1 Advice Letter further describing its EOI to clarify (in more detail than provided in the WMP) how it differs from SCE's existing inspections, what the enhanced inspections involve, including a description of the specific activities that will be performed, data that will be collected, and any databases that will be created or supplemented as part of these inspections. In comments on the proposed decision, SCE stated that the inspections would be more involved than "drive by" patrols, and it should include this detail in the Advice Letter.

We will allow SCE to carry out its Enhanced Overhead Inspection program for this WMP cycle, but expect it to report fully on the effectiveness of the program in accordance with the reporting requirements in this decision.

We are not prepared at this time to order that SCE conform its inspection program to that of SDG&E, as CEJA requests. Nothing in SB 901 requires that all Investor-Owned Utilities (IOUs) have identical programs. By the same token, all inspection programs must meet the requirements of existing law and regulation, including the Commission's GOs, and SCE's Plan is no exception. Nothing in this decision relieves SCE of the requirement to conform its WMP activities to existing law, regulation and General Orders.

In the reporting and metrics section of this decision, we discuss follow-up activity SCE must take to ensure it is complying with law, keeping good data that will allow evaluation and refinement of SCE's next WMP, reporting results,

[7] *Id.* at 44.

and working with the Commission's Safety and Enforcement Division before filing its next Plan.

Finally, while not raised by the parties, SCE states that ignition risks are far greater on its distribution system than on transmission, but many of the enhanced inspection and maintenance programs (*e.g.*, LiDAR) focus on its transmission system. We expect SCE to address this issue in its next WMP.

5. System Hardening

5.1. SCE's Proposed System Hardening

SCE states that its system hardening activities primarily target its distribution system because of the higher risk of fire ignition from distribution assets. The largest program is its Wildfire Covered Conductor Program, in which SCE aims to replace standard bare overhead conductors with covered conductors to reduce ignition risks resulting from contact with objects. SCE aims to install at least 96 circuit-miles of covered conductors in 2019.[8]

While cost is not addressed in this decision, installing covered conductors is costly. SCE's 2019 goal of reconductoring 96 circuit-miles, which make up approximately 0.5% of its HFRA area, costs approximately $ 47.4 million in capital expenditure. But SCE is also working to accelerate and expand its covered conductor program, aiming to reconductor 1.5% percent of its HFRA in 2019, at an estimated cost of $133.7 million in capital expenditure.[9]

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[8] While SCE asserts it will install conductor in "HFRA," as discussed above in the section entitled "SCE's High Fire Risk Areas vs. CPUC Fire Maps," its effort during 2019 will focus on HFTD Tier 3. Were this not the case, we might consider limiting deployment to Tier 3 (or Tier 2), but based on SCE's response, we do not address the HFRA vs. HFTD issue here.

[9] SCE has also requested approval for several activities included in its WMP, and the estimated costs associated with those activities, in A.18-09-002, its Grid Safety and Resiliency (GSRP)

Footnote continued on next page

Other system hardening programs SCE outlines are the following:

Design and Construction Standards, used for designing, engineering, and constructing SCE's assets, have been modified with a focus on mitigating wildfire risks. These standards include the use of covered conductors, composite poles and crossarms, current limiting fuses, ester fluid instead of mineral oil for overhead transformers, and overhead line spacers.

Undergrounding Overhead Conductor Program places overhead distribution lines underground to reduce the risk of wildfires and increase reliability during high winds and storms. In 2019, SCE will conduct an evaluation to determine if there are sections of its HFRA that should be undergrounded.

Equipment changes, which include changing the distribution transformer fluid with ester-based insulating fluids, using overhead line spacers and wildlife protection covers to improve conductor resiliency, and expanding the use of CAL FIRE-exempt equipment such as surge arresters and bolted wedge connectors.

Fire-Resistant Composite Poles and Composite Crossarms, which are designed to withstand wildfires and will harden the distribution system and reduce the risk of a wire-down event. If poles in HFRA need replacement, SCE will replace the existing poles with fire-resistant composite poles that have a fire protective shield. SCE may replace up to approximately 2,300 wood poles under this program.

Protection and Isolation program, which will install new or replace some existing devices that will minimize fault energy. These devices include

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application. That proceeding is ongoing, and nothing in this decision should be construed as prejudging the proceeding's outcome.

current-limiting fuses, CAL FIRE-exempt expulsion fuses, and single-phase reclosers, fast curve settings to circuit breakers, and remote automatic reclosers in HFRA. In 2019, SCE plans to install or replace devices in at least 7,500 branch line locations in HFRA.

5.2. Parties' Comments – System Hardening

The parties' key concerns regarding system hardening focus on covered conductors and pole replacements. TURN asks the Commission to find that the utilities have not explained their circuit prioritization methods for installation of covered conductor and that the issue of whether the utilities have proposed the appropriate mileage and/or circuit locations for 2019 will need to be addressed in appropriate application proceedings. TURN recommends that to the extent utilities start installing covered conductor, they should focus on areas in Tier 3 which have the highest risk scores (likelihood times consequence), including in the consequence calculation factors such as population density and egress limitations. SCE responds that it does have a circuit prioritization methodology, which it presented in the Grid Safety and Resiliency Program (GSRP) proceeding. This prioritization methodology considers factors such as HFRA Tiers and specific circuit characteristics.

Protect our Communities Foundation (POC) and CEJA dispute the effectiveness of pole replacement and covered conductor programs. In its reply, SCE explains that covered conductors have been used extensively on the east coast and South Korea to mitigate vegetation contact faults. SCE also states that its pole replacement program is not primarily targeted at reducing ignition risk, but at fortifying poles to bear the load of new conductors and increasing the chance infrastructure will survive wildfire.

The Commission's Office of the Safety Advocate (OSA) is concerned that SCE's 5-year schedule for system hardening is too long and recommends that SCE accelerate and shorten the schedule. Similarly, Mussey Grade Road Alliance (MGRA) recommends that SCE accelerate the installation of covered conductors where contact with vegetation is a risk. MGRA also recommends undergrounding the distribution system if tree health and other factors such as population and aesthetics favor it.

OSA recommends that SCE prioritize the replacement of the existing small conductors located within the highest risk areas (Zone 1, Tier 2 and Tier 3 of HFTD), because they can lead to downed wires and faults when broken. SCE agrees that small conductor should no longer be used for primary voltages and states that it revised its overhead conductor standards in 2015 to not install new small conductors. SCE is actively replacing small conductors across its system.

TURN also asserts that SCE does not justify replacing mineral oil-insulated transformers with ester fluid insulated transformers.

5.3. Discussion – System Hardening

SCE's states that its plan for 2019 is to install covered conductor in the highest fire threat zone – Tier 3, where the Commission has deemed the risk of wildfire "extreme." We support a focus on Tier 3 during this WMP cycle. As the Commission stated in D.17-12-024, its Decision Adopting Regulations to Enhance Fire Safety in the High Fire-Threat District, Tier 2 and 3 represent the zones with the highest potential impacts from wildfire. Locations in Tier 3 present "extreme" risk (the highest risk areas) and in Tier 2 present "elevated" risk. Tier 3 contains the areas with the greatest threat to people and property.

> Tier 2 will consist of areas on the CPUC Fire-Threat Map where there is an elevated risk (including likelihood and potential impacts on people and property) from wildfires

> associated with overhead utility power lines or overhead utility power-line facilities also supporting communication facilities.
>
> Tier 3 will consist of areas on the CPUC Fire-Threat Map where there is an extreme risk (including likelihood and potential impacts on people and property) from wildfires associated with overhead utility power lines or overhead utility power-line facilities also supporting communication facilities. Tier 3 is distinguished from Tier 2 by having the highest likelihood of utility-associated fire initiation and growth that would impact people or property, and where the most restrictive utility regulations are necessary to reduce utility fire risk.[10]

To the extent SCE plans to focus its covered conductor program in Tier 3 during this WMP cycle, therefore, it is focusing on areas the Commission has deemed to present the greatest wildfire risk. If SCE plans to deploy covered conductor outside Tier 2 and 3 in future years, we will examine the data supporting such deployment at that time. If SCE plans to install covered conductor outside Tier 2 and 3 this cycle, it should file a Tier 1 Advice Letter within 30 days outlining and justifying its plans.

Thus, we agree with TURN's basic argument that SCE's Plan – and all other WMPs – should focus on the areas that present the greatest risk of wildfire and the greatest consequences if nothing is done. However, accepting this approach does not lead us to deny SCE's request, because SCE will focus this cycle on Tier 3, the area with the greatest risk and consequences.

[10] D.17-12-024 at 9.

6. Vegetation Management Plan

6.1. SCE's Proposed Vegetation Management Program

SCE's vegetation management program involves tree inspection, pruning and removal, and weed abatement for vegetation in close proximity to SCE's distribution and transmission lines. SCE asserts that its vegetation management program complies with vegetation-related regulations, including but not limited to General Order 95, Rule 35; California Public Resources Code Sections 4291-93,[11] and North American Electric Reliability Corporation (NERC) Reliability Standard FAC-003.

However, SCE's vegetation management program is currently undergoing a comprehensive redesign and restructuring. SCE anticipates deploying the new program in early 2019 and continuing into 2020. Changes include additional quality control activity consisting of post trim audits; increased focus on hazard tree removals; and increased identification and removal of vegetation overhangs. Specifically, SCE plans the following:

Hazard Tree Removals. SCE proposes to expand its vegetation management activities to begin assessing the structural condition of trees in HFRA that are not dead or dying but could nevertheless fall into or otherwise impact electrical facilities and potentially lead to ignitions and outages. These trees can be located up to 200 feet on either side of SCE's electrical facilities, an area designated as the "Utility Strike Zone." SCE's assessment methodology, which it says is based upon American National Standards Institute (ANSI) A300 and the International Society of Arboriculture Tree Risk Assessment Qualification Training Manual,

[11] Cal. Pub. Res. Code § 4292 requires a clearing of not less than 10 feet in each direction from the outer circumference of electric poles or tower.

considers the attributes of the tree, the site conditions, impact to infrastructure, and the likelihood of failure.

Expanded Pole Brushing. SCE is expanding its pole brushing (*i.e.*, brush clearance around poles) activities to inspect and clear brush to a 10-foot radial clearance on at least 25,000 additional poles within HFRA in 2019. According to SCE, this work goes beyond that required by Public Resources Code § 4292, but surrounding brush is being cleared or maintained to further reduce ignition risk and increase grid resiliency.

Expanded Clearance Distances at Time of Maintenance. SCE is expanding, where possible, the clearance distance in HFRA at time of maintenance to at least 12 feet for line voltages between 2.4 and 69 kilovolts. SCE states that it is making this change consistent with recommended guidance in D.17-12-024, the Commission's HFTD decision. Once SCE deploys the new vegetation management program starting in 2019, it anticipates it will take 12 to 18 months to achieve the increased clearance distance at time of maintenance in all HFRA.

Drought Relief Initiative Quarterly Inspections and Tree Removals. SCE's Drought Relief Initiative conducts quarterly inspections in Tier 2 and Tier 3 areas within SCE's HFRA for tree mortality to identify and remove dead, dying or diseased trees that were affected by the drought and bark beetle infestation.

Light Detection and Ranging Technology (LiDAR) Inspection Program. SCE is using LiDAR to assess vegetation clearances of transmission lines in rugged and hard-to-access areas. LiDAR measures distance by using pulsed laser light. In 2019, SCE plans to conduct LiDAR inspections of approximately 1,000 conductor miles in its HFRA.

6.2. Parties' Comments - Vegetation Management

The parties' primary comments regarding SCE's new vegetation management program are that 1) SCE's tree trimming and removal practices are excessive and will duplicate results of the covered conductor program; 2) SCE should not cut down healthy trees; 3) SCE should be more transparent with landowners and members of the public about when, where and why it plans to trim and remove trees; 4) SCE should collect better data to document the need for its vegetation management program; and 5) SCE should deliver pruned vegetation to biomass plants and not leave it onsite.

TURN asserts that SCE has not adequately justified the pace and scope of its vegetation management program, including whether the removal of trees is necessary in areas where SCE will also install covered conductors. TURN asserts that the utilities should prioritize the highest risk locations when it trims trees to the proposed 12-foot clearance and should minimize healthy tree removal until its need and cost-effectiveness is established.

SCE states that its enhanced vegetation practices and covered conductor program are complementary to each other. SCE also explains that it follows the recommended clearances set by the guidelines of Rule 35 and GO 95 in HFRA.

CEJA asserts that SCE's enhanced vegetation management program will cut down more trees than necessary, with adverse ecological consequences. CEJA also raises concerns about how SCE chooses trees for trimming or removal. CEJA recommends that future WMP proceedings more closely examine how utilities make decisions for tree trimming or removal and consider making these vegetation management evaluation practices transparent to the public. MGRA also recommends that utilities be transparent with customers on the standards it uses in trimming or removing trees.

In reply, SCE states that it will at times have to remove healthy trees to maintain the clearances specified by regulations. SCE explains that it assesses trees in the utility strike zone for tree health and risks, and mitigates conditions as appropriate.

MGRA and TURN argue that SCE needs to collect more data to better inform its vegetation management practices, including the following: 1) data regarding the effectiveness of the deployment of covered conductors in preventing fires; 2) information about the trees and their species that are in close proximity to electrical lines; 3) data on "near miss" events from vegetation or equipment failure during PSPS events; 4) data correlating vegetation-caused outages and ignitions with weather conditions; and 5) data on how the new minimum and recommended vegetation clearance requirement reduces incidence of ignitions, especially during critical weather conditions.

The California Farm Bureau Federation (Farm Bureau) advocates the utilities' vegetation management program should include other activities such as prescribed fire (*i.e.*, controlled burn), mechanical and manual thinning, grazing, and application of herbicides. SCE explains that it is in the initial program development stages of its Integrated Vegetation Management Plan, which includes targeted ground applications of herbicides.

Green Power Institute (GPI) raises concerns about the disposition of biomass material or vegetation that utilities remove during tree trimming. GPI argues that piles of vegetation pose their own fire hazard and recommends that future WMPs require utilities to send vegetation to biomass plants and prohibit them from leaving cuttings or downed trees on the ground. In reply, SCE states that its contractors remove all pruned vegetation.

6.3. Discussion – Vegetation Management

We agree with the parties that SCE's vegetation management efforts during this 2019 WMP cycle should focus on high risk areas in the Commission's HFTD. We share some of the concerns that the parties raise about the potential overlap between vegetation management and system hardening (especially the covered conductor program).

Our recent decision in the Safety Model Assessment Proceeding (S-MAP)/General Rate Case (GRC) context adopted an approach or tool called Multi-Attribute Value Function (MAVF)[12] that provides a single value to measure the combined effects of each mitigation measure on a certain risk event. The process involves performing risk assessments and ranking risks using safety, reliability, and other attributes. This approach provides a means to compare the programs against each other for effectiveness, especially when multiple overlapping programs are proposed for the same assets and intended to mitigate the same risk event (*e.g.*, increased vegetation clearing coupled with installing covered conductor and expanded de-energization practices). Including such analysis in the WMPs would provide the Commission a transparent and effective way to balance overlapping programs in the WMP and assess which programs are needed and effective. The process of conducting these analyses may allow stakeholders to better understand the cost effectiveness of proposed mitigations.[13]

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[12] D.18-12-014 (adopting a settlement agreement updating the S-MAP procedure).

[13] Other advantages of MAVF are listed in D.18-12-014 at 44.

Future large IOU WMP filings must provide the elements necessary to evaluate mitigation programs and strategies using a singular value to measure the combined effects of various mitigation measures, as now required in S-MAP and facilitated through MAVF.

SCE's proposal to remove healthy trees it characterizes as "hazard trees" or "reliability trees" appears to be modest in scope during this WMP cycle. SCE will focus on trees whose structural condition presents a risk of falling into or otherwise making contact with electrical facilities and potentially leading to ignitions and outages. As noted, these trees can be located up to 200 feet on either side of SCE's electrical facilities, an area designated as the "Utility Strike Zone." However, it appears SCE will only remove healthy trees if the attributes of the tree, the site conditions, impact to infrastructure, and the likelihood of failure require removal. To ensure this is the case, SCE should only remove healthy trees – whether categorized as "hazard trees," "reliability trees," or other name – during this cycle where the utility has evidence that those trees pose a risk to utility electric facilities under wildfire ignition conditions, based on the opinion of a certified arborist.

This caveat also applies to future WMPs. SCE shall use expert input in determining which healthy trees to remove based on the opinion of certified arborists and on evidence that the trees pose a risk to utility electric facilities under wildfire ignition conditions. SCE should also describe "hazard trees" more clearly in its future WMPs, in a manner that explains the conditions that

pose expected risk, and compare its own definition to descriptions in CAL FIRE's Powerline Fire Prevention Field Guide, available on the CAL FIRE website.[14]

SCE should inform local communities and residents of its vegetation management plans, especially when it plans large scale vegetation work in a heavily forested area. Further, SCE should provide its annual schedule of all WMP-listed vegetation management treatments and locations to the Commission and CAL FIRE upon request. SCE shall also provide the Commission and CAL FIRE, on request, any GIS or LiDAR data related to trees it identifies as at risk of potentially contacting conductors during high wind events.

SCE (and other IOUs) must gather data during this WMP cycle in useable and consistent formats. We discuss this data gathering requirements in the guidance decision. The data must be useful not only to SCE, but to the Commission, CAL FIRE, and academics and other professionals working to prevent catastrophic wildfire in the future. The data should include vegetation caused ignitions and outages in HFTD areas, including those on days when the Fire Potential Index is very high or higher. SCE's Enhanced Vegetation Management program should capture data related to trimming and removal that allows for detailed assessment of the effectiveness of the work.

We do not address GPI's biomass recommendations here, as they are more appropriately handled in proceedings focused on biomass power plants.

7. De-Energization

7.1. OIR on De-Energization

The Commission is examining de-energization (also known as Public Safety Power Shut-Off or PSPS) in depth in R.18-12-005, given the significant

[14] *See* http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf126.pdf.

interest in the topic by communities affected by wildfire, cities, counties, first responders, persons with disabilities and medical conditions, and others. In the scoping memo in this proceeding, we explained that in reviewing electrical corporations' de-energization protocols in this decision, we would consider whether the protocols comply with Resolution ESRB-8. To the extent the Commission authorizes new requirements in R.18-12-005, those requirements will automatically apply once adopted. Thus, de-energization is on the list of items that WMPs must cover, and accordingly will be addressed in this proceeding as one element of the plans, but the subject requires more in-depth consideration than it can receive in this proceeding.

Resolution ESRB-8 applies the de-energization, notification and mitigation requirements of D.12-04-024 (which was at the time applicable only to San Diego Gas & Electric Company) to all electric investor owned utilities. Resolution ESRB-8 requires additional coordination, communication and public outreach measures to increase public awareness of potential de-energization events.

7.2. SCE Proposal for De-Energization

SCE's protocol for de-energization or PSPS consists of a set of de-energization criteria and guidelines. The significant variability of weather and environmental conditions across SCE's service territory, coupled with climate change effects and severe drought/bark beetle issues, require flexible de-energization guidelines that SCE can use under a variety of weather and physical circumstances and electrical system operating conditions.

A specialized task force, composed of representatives from key internal departments, is responsible for execution of SCE's PSPS protocol. This group manages and oversees the necessary public safety notifications to critical care customers, essential service providers, business customers and local

governments potentially affected by the PSPS. If extreme fire conditions warrant SCE to de-energize, SCE states that it will make every attempt to notify local government, public safety agencies, and customers.

7.3. Party Comments – De-Energization

Parties furnished significant comment on SCE's de-energization proposal. Small Business Utility Advocates (SBUA) also commented on SCE's recloser policy. While the de-energization proceeding has within its scope virtually all of the issues raised, we list them briefly here.

Parties such as MGRA, the City of Malibu (Malibu) and CEJA request that SCE focus on community outreach, education, and assistance prior to and during de-energization events. MGRA proposes that SCE work with communities to establish PSPS shutoff thresholds. Malibu requests that SCE coordinate with affected counties, cities, and other local agencies in determining whether to call de-energization events.

OSA asserts that SCE's proposed 2-day advance notification to local government, agencies, and essential service providers is not sufficient, and proposes 4 to 7 days of advance notice. In addition, OSA recommends that SCE provide vulnerable customers, such as those who rely on medication that must remain refrigerated, a higher level of notification of PSPS events and that SCE work with local government agencies in identifying these customers.

AT&T and the California Cable Television Association (CCTA) propose that SCE provide communication providers with a series of notifications prior to, during, and after PSPS events to ensure that communication providers can arrange for sufficient resources to keep communication networks operable, particularly for first responders and the public, during PSPS events.

In reply, SCE indicates that it notifies local governments, agencies, fire responders, and essential service providers 48 hours prior to shut off, 24 hours prior to shut off, at the time of shut off or avoided shut off, and restoration. SCE notes that the PSPS OIR will determine the specific details regarding its PSPS notification strategies. SCE will work with the counties' Offices of Emergency Management (OEM) to deploy mobile Community Outreach Vehicles, but will leave the responsibility of providing stationary emergency shelter locations to local and state emergency management partners. SCE is piloting a program to use affordable and clean energy to supply emergency management efforts. But SCE will not be providing backup generation for the essential service providers. SCE states that it has a multifaceted outreach program to educate customers, county OEM, local and tribal governments, public safety agencies and community members about community resiliency.

SCE notes that it not only welcomes collaboration with local jurisdictions on PSPS procedures but also considers public safety officials' input in PSPS decision making. However, SCE explains that the primary factor driving SCE's decisions for de-energization are near-real-time weather observations. SCE explains that it needs the operational discretion and regulatory authority to make "real-time" de-energization decisions when necessary.

SCE disagrees with MGRA about reducing the need for PSPS events by increasing tree trimming and removal guidelines. SCE explains that, during elevated fire weather conditions, vegetation can blow in from far distances. As such, even increased vegetation removal does not warrant increasing PSPS thresholds. But SCE notes that it anticipates minimizing de-energization for areas where the conductors are 100% covered.

In response to GPI's suggestion that utilities de-energize during Red Flag Warning (RFW) conditions, SCE explains that RFW is only one criterion it considers in assessing the need for a PSPS. SCE states that it also considers a number of other variables when assessing risks, such as humidity, relative greenness of fuels, forecast wind speed and forecast wind gusts.

Finally, SBUA focuses on SCE's practice of disabling reclosers during RFW conditions. SBUA opposes the use of recloser shutoff and power shutoff as a standard practice as it believes they may "elevate the risk of catastrophic wildfires" upon re-energization while in contact with vegetation. SCE disagrees, stating that restricting automatic reclosing for circuits or circuit segments mitigates the increased risk of catastrophic wildfires. SCE states that it utilizes remote automatic reclosers (RAR) that can be remotely configured to prevent reclosing during times of elevated fire risk. According to SCE, this configuration provides the benefit of avoiding the repeated energization of potential faulted conditions. Additionally, if a line or line section relays during an RFW or other elevated fire weather condition, the line will not be re-energized until a visual check of all overhead conductors and equipment is completed to further ensure re-energization does not create an ignition risk.

7.4. Discussion – De-Energization

The parties' concerns described above have all been raised in the Commission's de-energization proceeding and can better be addressed in a comprehensive way there.[15] Any decision that the Commission adopts in that proceeding will bind all WMP filers, including SCE.

[15] We do note here, however, that we support SCE's policy of preventing reclosing during times of elevated fire risk.

SCE has satisfied SB 901's general requirement that its Plan include the following discussion of de-energization: "Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure."[16]

8. Situational Awareness and Alternative Technologies

8.1. SCE Proposal – Situational Awareness and Alternative Technologies

SCE states that it will enhance its situational awareness capabilities by using detailed circuit-level information to better understand how weather conditions affect fire safety in high risk areas. To obtain real-time data near circuits in HFRA, SCE is installing weather stations and creating a high-resolution weather model specific to SCE's service territory. Meteorologists and GIS specialists in SCE's newly-established Situational Awareness Center will analyze these circuit-level data for potential weather impacts. SCE is also installing high definition cameras to help high fire risk communities, fire responders and utility staff maintain visual awareness of potential fire events in real time.

Specifically, SCE is engaging in the following activities to enhance its situational awareness capabilities:

Installing weather stations. SCE explains that it needs granular weather data to manage risks in its system, given the size of SCE's service territory and its

[16] Pub. Util. Code § 8386(c)(6).

diverse topography. To obtain such granular weather data, SCE needs a dense network of weather stations to monitor location-specific, real-time conditions in HFRA. These weather stations will monitor wind and relative humidity data on a circuit-by-circuit basis. In 2019, SCE will install at least 315 weather stations in HFRA.

Using the Fire Potential Index (FPI) and Santa Ana Wildfire Threat Index (SAWTI) to monitor fire risks. The Fire Potential Index (FPI) is an internal tool SCE uses to estimate wildfire potential based on actual weather and fuel conditions. In addition to the FPI, SCE also monitors the SAWTI, issued by the United States Forest Service (USFS), which measures the severity of Santa Ana winds with respect to the potential for large fires to occur. In 2019, SCE will begin Phase II of its FPI project intended to increase capability by adding more granular weather data, expanding the coverage to all of SCE's service territory, and integrating historical weather data.

Increasing Meteorological Resources. SCE has a team of in-house meteorologists with specialized understanding of fire-weather characteristics. Using forecasting tools and weather stations, this team of meteorologists will develop comprehensive weather forecasts 4-7 days in advance of any predicted severe weather event.

Deploying and Installing Situational Awareness Cameras. SCE will install pan-tilt-zoom (PTZ) High Definition (HD) cameras throughout its HFRA to enable fire agencies and SCE fire management personnel to address emerging wildfire more quickly. The cameras can help in spotting smoke and assessing conditions in real-time. They allow SCE to verify and assess a fire's severity in real time, eliminating the time needed to send fire crews to perform this assessment. In 2019, SCE will install at least 62 cameras on 31 towers in HFRA.

Installing a High-Performance Computer Cluster (HPCC). In 2019, SCE will install a HPCC that will generate forecasts of weather and fuel conditions at high resolution. The HPCC will comprehensively assess wildfire risk across the area. For example, the HPCC can help compute FPI and can run fire spread models.

Developing Asset Reliability and Risk Analytics Capability. Under this program, SCE seeks to: (1) develop capabilities in predicting an asset's overall wildfire-related risk; and (2) given an asset's risk, prioritize mitigation efforts. SCE will use analytics and composite risk models to guide the prioritization of mitigation efforts. SCE also seeks to use advanced analytic capabilities, artificial intelligence, machine learning, and predictive modeling with real-time data to improve advanced fault detection identification. SCE intends to complete the implementation of the Asset Reliability and Risk Analytics tools in 2019.

In terms of new or alternative technology, SCE states that it will evaluate and consider the following technologies for application on its distribution system: CAL FIRE exempt surge arrester; meter alarming for downed energized conductor; distribution fault anticipation; advanced unmanned aerial study; rapid earth fault current limiter and arc suppression coil; alternate fault detection technology; fire-resistant wood poles with a protective barrier; substation electronic fuses; single phase reclosers; vibration dampers; ridge pin construction; and expanded connector selection.[17]

[17] CAL FIRE exempt surge arresters are designed to limit arcs/sparks or hot particles to prevent the ignition of flammable vegetation.

Meter alarming for downed energized conductor is a machine-learning algorithm that leverages existing smart meter data to detect the presence of downed, energized conductors.

Footnote continued on next page

8.2. Party Comments – Situational Awareness and Alternative Technologies

CEJA is concerned that SCE's situational awareness plan does not include all the elements that SDG&E has in its plan and recommends that the Commission require SCE to follow SDG&E's plan for weather stations, camera networks, fire detection, and wireless fault indicators. SCE responds that its situational awareness program includes many fire detection tools, including

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Distribution Fault Anticipation is a predictive algorithm that leverages electrical system measurements to recognize current and voltage signatures, which are indicative of potential equipment failures.

SCE's Advanced Unmanned Aerial Systems will explore the capabilities of Beyond Visual Line of Sight flight to advance its existing unmanned aerial systems program.

Rapid Earth Fault Current Limiter and Arc Suppression Coils are substation devices that limit ground fault current levels and increase ground fault protection sensitivity. These technologies have the potential to substantially limit the amount of energy released in the event of a downed power line or ground fault.

Alternate Fault Detection Technologies include fault detection schemes that use voltage or other measurements to improve fault detection beyond traditional means.

Fire-resistant poles are created by applying surface treatments, such as wrapping a composite shield around the pole. They enhance the resiliency of SCE's infrastructure and help with rapid restoration.

Substation class electronic fuses can be remotely programmed to activate enhanced fusing protection during high fire risk conditions.

Single phase reclosers are CAL FIRE-exempt electronic reclosers that are capable of de-energizing all three phases due to a single-phase fault to prevent energized wire down situations.

Vibration dampers are hardware attached to conductors to inhibit conductor fatigue from vibration.

Ridge Pin construction, also known as triangular construction, increases the vertical separation between the center phase conductor and the two outside conductors to reduce the potential for conductor-to-conductor contact. This construction, which can be used in difficult terrain conditions where line spacers cannot be installed, can help maintain conductor clearances during turbulent wind conditions.

weather stations and high definition cameras. Cal Advocates is generally supportive of SCE's situational awareness programs.

As for the alternative technologies SCE proposes, Cal Advocates criticizes SCE for not explaining how these programs were developed, who within SCE is responsible for these programs, timelines for completion or cost considerations. Cal Advocates asks that the Commission require SCE to provide these details in SCE's future WMP submissions. In reply, SCE explains that it is still evaluating the 12 alternative technologies it is proposing.

8.3. Discussion – Situational Awareness and Alternative Technologies

Situational awareness is a high-value and fairly low-cost mitigation measure, and we find that SCE's situational awareness is intended to mitigate wildfire risk. We will require SCE – and all of the other IOUs – to capture and share consistent and useful data with the Commission, CAL FIRE and others, as discussed in the guidance decision that accompanies this decision. We also support SCE's proposal to investigate the alternative technologies it lists; SCE is required to provide more detail about alternative technologies in its next WMP, and one of those technologies is discussed in more detail below.

It has become clear during the course of this proceeding that SDG&E is ahead of the other two large IOUs in rolling out wildfire mitigation. This difference is likely due to SDG&E's experience with catastrophic wildfire in 2007. It is commendable that SCE is following in SDG&E's footsteps and has begun broad deployment of weather stations and engaged in efforts to develop fine-scale climatology of its service territory. The weather stations serve two functions: (1) actual measured climatological readings (temperature, relative humidity, wind speed and direction) that can be used to validate and calibrate models depending on weather data, and (2) real-time awareness of conditions on

the electrical system. The climatological studies, coupled with the data gained from weather stations, may allow utilities to build sophisticated and localized models informing fire spread potential, fire ignition potential, and overall system risk associated with weather events. This climatological data may also be used to develop applications that utilities can use to inform operations.

Finally, SCE shall, through the workshop and comment process ordered in the accompanying guidance decision, explain how each of the alternative technologies it is exploring, if implemented, will be analyzed for effectiveness.

9. Emergency Preparedness, Outreach and Response

9.1. SCE's Emergency Preparedness, Outreach and Response Plan

This section discusses SCE's proposals to assist customers with wildfire preparedness before, during and after wildfire. The following section addresses bill protection and other utility-bill related relief that all IOUs are required to provide when disasters strike.

SCE states that its emergency preparedness and response plans follow National Incident Management System (NIMS) and Incident Command System (ICS) principles and protocols, which are developed by the Federal Emergency Management Agency (FEMA). By undertaking comprehensive planning efforts and utilizing these plans, SCE states, it aims to minimize the impacts of these incidents on customers and communities. SCE claims that its emergency preparedness and response plans ensure that critical information for incident response and recovery team members are available and that it implements an efficient, effective, and safe response to any type of incident, disruption, or disaster.

SCE states that it has a comprehensive plan for communicating with its customers during emergencies, especially during outages. SCE's current process includes automated outbound notification to customers through each customer's preferred method of contact when an outage occurs, updating customers with outage restoration times or the conclusion of the outage. SCE asserts that it maintains an adequate and trained workforce ready to provide assistance during emergencies.

SCE has a Storm Plan that describes the operations and policies for responding to emergency electrical disruptions caused by exogenous natural forces and for facilitating safe and efficient restorations.[18] SCE claims that its Storm Plan follows the recovery, restoration, and remediation guidelines established by CPUC standards for disaster and emergency preparedness plans, pursuant to Pub. Util. Code Section 768.6.

Using United States Geological Survey (USGS) modeling, SCE may conduct post-wildfire debris-flow assessments to identify and safeguard SCE assets in high-risk debris-flow areas after wildfires.

9.2. Party Comments – Emergency Preparedness, Outreach and Response

Most of the parties who commented on emergency preparedness and customer outreach focused on de-energization, which is addressed in the de-energization section of this decision and in the de-energization proceeding.

On other topics, GPI suggests that SCE conduct public outreach and education about wildfires outside of the Tier 2 and 3 HFTD zones. SCE agrees

[18] SCE's Storm Plan is included in SCE's annual GO 166 compliance filing. GO 166 governs Standards for Operation, Reliability, and Safety During Emergencies and Disasters.

and will execute a communication campaign in 2019 to all its customers about its wildfire mitigation activities.

CEJA criticizes SCE's lack of a notification system that can alert customers of a wildfire. In response, SCE explains that it has implemented a system for high volume communication and will use this system for wildfires not only in PSPS events but also in the case of wildfire activity. CEJA also criticizes SCE's wildfire plan for not including any outreach related to wildfire planning. CEJA states that SCE needs to educate communities about wildfire threats and emergency preparedness prior to an occurrence of a wildfire. CEJA explains that this is especially important for the more vulnerable population of the community and urges SCE to work with community-based organizations in its outreach efforts.

SCE responds to CEJA by stating that it will attempt to proactively identify customers in disaster areas who are subject to the California Alternative Rates for Energy (CARE) rate schedule as an identifier to implement the protections. SCE states that it communicates to community-based organizations that serve vulnerable customers, provides in-person support at the local assistance centers where these customers are served by county agencies and other providers of support, and proactively sends messages for awareness to areas impacted.

SBUA argues for better IOU outreach and education about wildfires to small business, noting that small businesses play an important role in remote locations and urban neighborhoods that do not have access to commercial centers. SBUA recommends that the Commission require the utilities to develop notification procedures tailored to small business customers, with a prioritized status for small health service providers, including primary care physicians, emergency rooms, and veterinarian services, and critical small commercial

centers. SBUA explains that these categories of small businesses are particularly important during wildfire emergencies for communities that may otherwise have no access to essential goods and services. In response, SCE states that, in 2019, it plans to include its small business customers in focus groups to understand wildfire impacts on these customers and how SCE can assist them with resiliency.

9.3. Discussion – Emergency Preparedness, Outreach and Response

Pub. Util. Code Section 8386(c)(13), (16) and (17) require a WMP to contain emergency preparedness and response plans that comply with mandates involving communications with cities and counties, preparation for and restoration of service after a wildfire, and public outreach. Specifically, the statute requires the WMP sponsor to share its plan with relevant cities and counties to provide input and feedback, and update and improve the plan at least every two years. It also requires the WMP to list persons responsible for plan execution, establish procedures for notifying impacted customers, establish protocols for restoration of service, and create a workforce mobilization plan for its employees before and after a wildfire. The statute mandates that a WMP include a plan for community outreach and public awareness before, during, and after a wildfire in an array of languages including English, Spanish, and the top three languages in California as determined by United States census data.

Since large IOUs such as SCE serve such a large number of Californians, they are a logical and important component of a good wildfire preparedness program. SCE's WMP incorporates an Emergency Preparedness, Outreach and Response Plan as required by SB 901. SCE discusses how it will conduct customer outreach and notifications to prepare customers before, during, and after a wildfire. In its next WMP, SCE shall discuss the strengths and weaknesses

of its emergency preparedness, outreach, and response program as it engages with stakeholders during this upcoming fire season. This will inform our review of what dialogue must continue to improve to ensure all resources are coordinating responsively and effectively in times of crisis. We are especially interested in ensuring the Plan gives customers actionable information that informs them how best to prepare for, respond to, and recover from wildfire.

SCE is required to communicate its WMP's emergency preparedness outreach and response in specific languages. SCE's WMP does not comply with this requirement.

Specifically, Public Utilities Code Section 8386(c)(16)(B) mandates that SCE's plan for community outreach and public awareness before, during, and after a wildfire be communicated in English, Spanish, and the top three primary languages used in the state other than English or Spanish, as determined by the Commission based on the United States Census data. Taking official notice of United States Census data pursuant to Rule 13.9 of the Commission's Rules of Practice and Procedure, the Commission determines that the following languages are the three most common languages used in the state other than English or Spanish: Chinese (including Cantonese, Mandarin and other Chinese languages), Tagalog, and Vietnamese. In addition to those languages, SCE shall provide outreach in Korean and Russian, where those languages are prevalent in its service territory. SCE shall communicate its plan for community outreach and public awareness before, during, and after a wildfire in the above languages.

10. Support to Utility Customers During and After a Wildfire

10.1. SCE Proposal - Support to Utility Customers During and After a Wildfire

In R.18-03-011, the Commission adopted certain customer protections available in emergencies. The protections apply in the event the Governor of California declares a state of emergency because a disaster has either resulted in the loss or disruption of the delivery or receipt of utility service and/or resulted in the degradation of the quality of utility service. SCE states it will implement the customer protections established in D.18-08-004. Those protections include the following: (a) support for low-income customers; (b) billing adjustments; (c) deposit waivers; (d); extended payment plans; (e) suspension of disconnection and nonpayment fees; (f) repair processing and timing; (g) access to utility representatives; (h) outage reporting; and (g) emergency communications.

These protections remain in effect for one year from the date of the disaster event, as specified in the Governor's state of emergency proclamation. SCE asserts that these customer protection programs comply with Commission regulations and requirements, including, but not limited to, Resolution M-4833, Resolution M-4835, and D.18-08-004.

10.2. Discussion - Support to Utility Customer During and After a Wildfire

While parties did not specifically address R.18-03-011, SCE is obligated to comply with the protections afforded in declared emergencies adopted in that proceeding. Further, SB 901 contains several provisions related to an electrical corporation's emergency preparedness, response and communications before, during and after a wildfire.

Public Utilities Code Section 8386(c)(18) requires a WMP to comply with the requirements we adopted in D.18-08-004 (R.18-03-011) requiring emergency

customer support during and after a wildfire. The requirements are: (a) support for low-income customers; (b) billing adjustments; (c) deposit waivers; (d) extended payment plans; (e) suspension of disconnection and nonpayment fees; (f) repair processing and timing; (g) access to utility representatives; and (h) access to outage reporting and emergency communications.

Decision 18-08-004 also requires an electric utility to discontinue billing and prorate any monthly access charge or minimum charges to the customer after a wildfire. Additionally, when implementing support for low-income residential customers, D.18-08-004 also requires an IOU to contact all community outreach contractors and community-based organizations who assist in enrolling hard-to-reach low-income customers into CARE after a wildfire (or other listed emergency). That decision also adopted a method for IOUs to track expenses related to the customer protections.

SCE's WMP complies with each of the requirements set forth above.

11. Metrics, Monitoring and Reporting

This section discusses the proposed metrics, monitoring and reporting contained in SCE's WMP. In a later section of this decision, we set forth additional reporting and follow-up requirements for all IOUs.

A key concern in all utilities' WMPs, including SCE's, is that the "metrics" are based on how much work the utility will perform (how many trees it will cut, how many miles of conductor it will install), rather than on the results of this work (reduction in wildfires or other events that cause wildfires).

11.1. SCE Proposal – Metrics, Monitoring and Reporting

SCE's metrics all focus on the number of trees cut, amount of infrastructure installed, and the number of inspections performed. SCE reasons that its performance metrics are both "controllable" and "quantifiable." A

controllable metric is one that SCE has the ability to control or influence the outcome through planned activities. A quantifiable metric is one that is measurable. SCE also includes "indicators" – numbers of wires down, ignitions, and faults – that it asserts may be caused by "uncontrollable" events. For this reason, SCE claims, these "indicators" are not as appropriate to use for measuring the performance of its plan.

Below are the "metrics" and "indicators" SCE established for its 2019 WMP:

Table 6-6
Metrics

Work Stream	Performance Metric	Unit of Measurement	2019 Goal
Vegetation Management	Enhanced Vegetation Management	The number of trees removed as part of HTMP (VM-1)	7,500 trees
	Quality Control Inspections in HFRA	Circuit miles inspected	400 Transmission circuit miles 450 Distribution circuit miles
	Drought CEMA Program Trees Removed in HFRA	The number of trees removed as part of DRI	30,000 trees forecast
System Hardening	Wildfire Covered Conductor Program (WCCP) Miles Hardened	The number of circuit miles replaced with covered conductor (SH-1)	At least 96 circuit miles re-conductored
Operational Practices	Fuses Installed	The count of fuses installed on un-fused branch lines (SH-4)	At least 7,500 fuses
Situational Awareness	Weather Stations Installed	Count of weather stations installed (SA-1)	At least 315 weather stations
	HD Cameras Installed	Count of HD cameras installed (SA-3)	At least 62 HD Cameras
Patrols & Inspections	Enhanced Overhead Inspections (EOI) in HFRA	Inspect all Distribution, sub-transmission and transmission overhead lines in HFRA	100% of overhead lines in HFRA inspected

Table 6-7
Indicators

Indicators	Unit of Measurement
Wire Downs on Circuits in HFRA	Count of wire down events on HFRA circuits
Ignitions on Circuits in HFRA	Count of all ignitions on HFRA circuits associated with contact from object or equipment failures
Counts of all faults on Circuits in HFRA	Count of all faults on HFRA circuits associated with contact from object or equipment failures

11.2. Party Comments – Metrics, Monitoring and Reporting

A common criticism in the parties' comments on the utilities' proposed performance metrics is that the proposed metrics do not measure outcomes. Parties propose that metrics should, among other things, measure "number of deaths or injuries resulting from utility-caused wildfires" or "number of catastrophic wildfires or acres burned resulting from utility-caused wildfires."

TURN argues that the utilities' proposed metrics cannot adequately assess their progress in preventing wildfires. TURN recommends that the "indicators" proposed by utilities be used as a metric instead. In addition, William Abrams and the Energy Producers and Users Coalition (EPUC) argue that the currently proposed metrics do not meet the burden of proof needed for ratepayer funding.

Cal Advocates proposes that the metrics, in addition to incorporating outcome-based goals, should also consider the level of risk reduced, cost of implementation, risk-spend efficiency, and the alternative strategies considered. OSA recommends that the utility should also track the number of wires down, the number of wires that remain energized, and response time to wires down. EPUC argues that the utilities' proposed metrics should meet the three guideposts provided by SB 901, which are metrics that assess harm (*e.g.* total acres burned, or injuries, fatalities, and property damage caused by wildfires), metrics that assess the utility's response to issues (*e.g.* how fast is a line

de-energized after an ignition, how fast is a community notified after an ignition), and metrics that assess the effectiveness of mitigation measures and outreach (*e.g.* the percentage of Tier 2 and 3 customers contacted about potential wildfire and de-energization risks, the effectiveness of inspections in identifying equipment prone to failure). Also, SBUA recommends that the metrics measure the effects of the Plan on small business, such as the effectiveness of outreach to small business customers or the number of small businesses damaged or destroyed by utility-caused wildfires.

In its reply, SCE explains that its plan includes three indicators that are outcome-based measures, which are 1) counts of faults, 2) wires down, and 3) CPUC-reportable ignitions in HFRA. SCE explains that these indicators help inform long-term trends when tracked over several years, but they will not be helpful to inform single year performance. SCE further argues that outcome-based measures are not appropriate for measuring compliance because they are affected by uncontrollable random factors, such as those caused by unpredictable weather patterns.

SCE also states that metrics used to determine compliance and measure WMP performance is an area for continuous improvement. SCE indicates that it will leverage its existing processes, controls and systems to monitor and manage performance to ensure compliance with its WMP, including developing WMP-specific monitoring dashboards, timely reporting to senior leadership to allow timely corrective actions, performing internal audits, and gathering information from system events.

Cal Advocates and TURN recommend that an independent entity evaluate the performance of the utilities' plans. TURN recommends that the utilities fund the evaluators, who would be managed by and answer to the Commission, to

assess, among other things, whether work is completed at an appropriate level of quality. In its reply, SCE argues that TURN's recommendation is duplicative of the reviews currently in progress. SCE explains that, in addition to SCE's own internal audit and review, the Commission is hiring an independent evaluator with $15 million of funding from the utilities to review and inspect the utilities' electrical facilities and operational practices for regulatory compliance.

11.3. Discussion – Metrics, Monitoring and Reporting

A great majority of the "metrics" proposed in SCE's WMP are better characterized as program execution targets. What SCE characterizes as "indicators" are actually closer to the required metrics than what SCE calls "metrics." SCE's focus may be linked to its assertion that SB 901's WMP provisions create "compliance" obligations. Using this reasoning, if the utility cuts down a prescribed number of trees or replaces the number of miles of conductor it says it will, it may claim it "complied" with the Commission's requirements.

Metrics are not intended to support the Commission's ability to determine whether the utility is in compliance with the WMP, but rather to inform the Commission on whether the programs proposed in the WMP are effective at minimizing the risk of catastrophic wildfire from electrical lines and equipment. To that end, SCE's "indicators" or "metrics" must identify and track trends associated with utility-caused wildfires.

SCE's metrics portion of its WMP should be focused on outcomes – that is, on measuring the amount by which the mitigation implemented reduces the risk of its electrical lines and equipment causing a catastrophic wildfire. The aim of the WMP portion of SB 901 is clear: "Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will

minimize the risk of catastrophic wildfire posed by those electrical lines and equipment." Pub. Util. Code § 8386(a). Every aspect of the Plan must be analyzed with this goal in mind.

Metrics are required under the statute to be used "to evaluate the plan's performance." Pub. Util. Code § 8386(c)(4). That is, metrics are to be used to evaluate whether the plan actually reduces the risk of catastrophic wildfire. Thus, it is not enough to measure how many trees are trimmed or miles of conductor are replaced. Rather, metrics must measure whether this work had an impact on the utility's wildfire risk.

Even if the risk elements associated with fire spread potential are not directly in the control of utilities, it is imperative to track data showing when and where ignitions are occurring to properly evaluate the risk of catastrophic wildfires posed by electrical lines and equipment. Accordingly, metrics that track the number of elevated fire danger days (whether RFWs, FPI ratings, or NFDRS data are used as the indicator), and the number and types of potential ignition events (*i.e.*, wires down, blown fuses, vegetation contact, etc.) that occur on those days are imperative. Such metrics can provide the type of insight needed to better understand and properly analyze the risk of catastrophic fires caused by electrical lines and equipment.

Metrics that would be useful and informative, and that one or more IOU proposed in a WMP, include those listed below. This decision requires SCE to work with the Commission's Safety and Enforcement Division on a template for reporting each of these data points in a format that is consistent with other IOUs:

- Wire Down Events Within HFTD Areas;
    - The number of wires down events within HFTD areas, when the FPI is rated as very-high or higher.

- Equipment Caused Ignitions in HFTD Areas;
- Vegetation Caused Outages in HFTD Areas;
  - The number of vegetation caused outages within HFTD areas, when the FPI is rated as very-high or higher.
- Vegetation Caused Ignitions in HFTD Areas;
- Faults on Circuits in HFTD;
  - Counts of all faults on HFTD circuits associated with contact from object or equipment failures.
- Number of Conventional Blown Fuse Events.
- Number of National Fire Danger Rating System (NFDRS)[19] "Very Dry" and "Dry" Days.

12. Should SCE's 2019 Wildfire Mitigation Plan be Approved?

SCE's WMP contains each of the elements required by Pub. Util. Code Section 8386(c). SCE shall comply with the reporting, metrics, advice letter, and other follow-up requirements set forth in this decision in order to address concerns with its existing WMP.

13. Comments on Proposed Decision

The proposed decision of ALJ Sarah R. Thomas and ALJ Peter V. Allen in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. In accordance with the May 7, 2019 ruling, parties filed a single set of comments on the five decisions on electrical corporations' individual WMPs. The following parties filed comments addressing one or more of the WMP proposed decisions: RCRC on May 13, 2019;

[19] NFDRS is used in the United States to provide a measure of the relative seriousness of burning conditions and threat of fire.

CEJA on May 16, 2019; and William B. Abrams, BVES, City of Malibu, City of Placerville, the Joint Local Governments (County of Mendocino, County of Napa, County of Sonoma, and City of Santa Rosa), EBMUD, GPI, Horizon West, Liberty, MGRA, PG&E, PacifiCorp, POC, CalPA, SDG&E, SBUA, SCE, and TURN on May 20, 2019. Reply comments were filed on May 28, 2019 by BVES, CEJA, MGRA, PG&E, POC, SDG&E, SBUA, SCE, and TURN. We have made changes throughout this decision reflecting party comments.

14. Assignment of Proceeding

Michael Picker is the assigned Commissioner and Sarah R. Thomas and Peter V. Allen are the assigned ALJs in this proceeding.

Findings of Fact

1. SCE's WMP includes all of the elements listed in SB 901, Publ. Util. Code Section 8386(c).

2. Some of the elements SCE includes in its WMP require reporting, data gathering or other follow-up to ensure SCE's actions contribute to lowering the risk of catastrophic wildfire.

3. United States Census data shows that the top three primary languages used in California other than English and Spanish are Chinese (including Cantonese, Mandarin and other Chinese languages), Tagalog, and Vietnamese.

Conclusions of Law

1. An electrical corporation's WMP is required to include all 19 elements listed in SB 901, Pub. Util. Code Section 8386(c), as well as any material required by the Commission.

2. SCE's WMP contains the elements required by Pub. Util. Code Section 8386(c). Subject to the reporting, metrics, data and advice letter requirements set forth below, SCE's WMP should be approved.

3. SCE should conduct reporting, data gathering and other follow-up on actions in its WMP, as outlined in this decision, to ensure those actions contribute to lowering the risk of catastrophic wildfire.

4. SCE's 2020 WMP should use the quantitative risk assessment framework adopted in D.18-12-014 in the Safety Model Assessment Proceeding to evaluate and compare the cost effectiveness of each of the mitigations that were under consideration in developing the WMP. The WMP shall provide the risk spend efficiency (RSE) results of the quantitative risk analysis and include an explanation of the MAVF that was used and how it was constructed.

5. Southern California Edison should comply with the reporting, metrics, advice letter, and other follow-up requirements set forth in this decision, as follows:

a. Within 30 days of issuance of this decision, file a Tier 1 Advice Letter listing with specificity any wildfire mitigation work the company plans during the effective dates of the 2019 Wildfire Mitigation Plan in the SCE's own "High Fire Risk Areas" but not in the High Fire-Threat District the Commission approved in Decision 17-12-024.

b. Within 30 days of issuance of this decision, file a Tier 1 Advice Letter further describing its Enhanced Overhead Inspection program to clarify what the inspections involve, including a description of the specific activities that will be performed as part of these inspections, data that will be collected, and any databases that will be created or supplemented as part of these inspections. The filing may include the information SCE provided in comments on the proposed decision.

c. Within 30 days of issuance of this decision, if SCE plans to install covered conductor outside the Commission's HFTD during this Wildfire Mitigation Plan cycle, file a Tier 1 Advice Letter outlining and justifying its plans.

6. SCE should, upon request, provide any data, databases or information related to its WMP and the reporting, metrics, advice letter, and other follow-up requirements set forth in this decision to staff of this Commission or of CAL FIRE.

7. The metrics portion of SCE's future WMPs should be focused on outcomes, measuring the effectiveness of implemented mitigation measures in reducing the risk of its electrical lines and equipment causing a catastrophic wildfire.

8. In its next WMP, SCE should propose a process for bringing its "High Fire Risk Areas" into conformity with the Commission's High Fire-Threat District area maps, or discuss in more detail why it should not be required to do so.

9. SCE should address in future WMPs how enhanced inspection and maintenance activities, including LiDAR, will target its distribution infrastructure, and as well as its transmission system.

10. SCE's vegetation management efforts during this 2019 WMP cycle should focus on the Commission-adopted High Fire-Threat District areas.

11. SCE should only remove healthy trees – whether categorized as "hazard trees," "reliability trees," or other name – during this cycle where the utility has evidence that those trees pose a risk to utility electric facilities under wildfire ignition conditions, based on the opinion of a certified arborist.

12. In the future WMPs, SCE should use expert input in determining which healthy trees to remove based on the opinion of certified arborists and on evidence that the trees pose a risk to utility electric facilities under wildfire ignition conditions.

13. SCE should describe "hazard trees" more clearly in its future WMPs, in a manner that explains the conditions that pose expected risk, and compares its

own definitions to descriptions in the CAL FIRE's Powerline Fire Prevention Field Guide.

14. SCE should inform local communities and residents of its vegetation management plans, especially when it plans large scale vegetation work in a heavily forested area.

15. SCE should provide detail about the alternative technologies it is using or considering for wildfire mitigation and prevention in its future WMPs in the report ordered in the accompanying guidance decision.

16. In future WMPs, SCE should discuss the strengths and weaknesses of its emergency preparedness, outreach, and response program as it engages with stakeholders during this upcoming fire season.

17. SCE should give the following customer support to utility customers affected by a wildfire, during and after a wildfire: (a) support for low-income customers; (b) billing adjustments; (c) deposit waivers; (d) extended payment plans; (e) suspension of disconnection and nonpayment fees; (f) repair processing and timing; (g) access to utility representatives; and (h) access to outage reporting and emergency communications.

18. Official notice is taken, pursuant to Rule 13.9 of the Commission's Rules of Practice and Procedure, that United States Census data shows that the top three primary languages used in California other than English and Spanish are Chinese (including Cantonese, Mandarin and other Chinese languages), Tagalog, and Vietnamese. In addition to those languages, SCE should conduct outreach in Korean and Russian, where those languages are prevalent in its service territory.

19. SCE should communicate its WMP's emergency preparedness outreach and response in English, Spanish, Chinese (including Cantonese, Mandarin and

other Chinese languages), Tagalog, and Vietnamese as well as Korean and Russian, where those languages are prevalent in its service territory.

20. SCE is not allowed to seek or obtain double recovery of the costs tracked in its Pub. Util. Code Section 8386(e) memorandum account in any other account, including the memorandum account described in Pub. Util. Code Section 8386(j), which the utility established with the Commission's Energy Division's approval. Pub. Util. Code Section 8386(j) describes this account as follows: "(j) Each electrical corporation shall establish a memorandum account to track costs incurred for fire risk mitigation that are not otherwise covered in the electrical corporation's revenue requirements."

O R D E R

IT IS ORDERED that:

1. Southern California Edison's (SCE's) Wildfire Mitigation Plan (WMP) contains the elements required by Public Utilities Code Section 8386(c). Subject to the reporting, metrics, data and advice letter requirements set forth below, SCE's WMP is approved.

2. Southern California Edison shall com ply with the reporting, metrics, advice letter, and other follow-up requirements set forth in this decision, as follows:

   a. Within 30 days of issuance of this decision, file a Tier 1 Advice Letter listing with specificity any wildfire mitigation work the company plans during the effective dates of this Wildfire Mitigation Plan in the utility's own "High Fire Risk Areas" but not in the High Fire-Threat District the Commission approved in Decision 17-12-024.

   b. Within 30 days of issuance of this decision, file a Tier 1 Advice Letter further describing its Enhanced Overhead Inspection program to clarify in more detail than what was provided in the Wildfire Mitigation Plan how the new

inspections differ from existing inspections, what the inspections involve, including a description of the specific activities that will be performed as part of these inspections, data that will be collected, and any databases that will be created or supplemented as part of these inspections.

c. Within 30 days of issuance of this decision, if the utility plans to install covered conductor outside the Commission's High Fire-Threat District areas during this Wildfire Mitigation Plan cycle, file a Tier 1 Advice Letter outlining and justifying its plans.

3. Southern California Edison shall work with the Commission's Safety and Enforcement Division on a template for reporting each of the data points required in this decision in a format that is consistent with the other respondent electrical corporations.

4. Southern California Edison shall, upon request, provide any data, databases or information related to its Wildfire Mitigation Plan and the reporting, metrics, advice letter, and other follow-up requirements set forth in this decision to staff of this Commission or of the California Department of Forestry and Fire Protection.

5. Southern California Edison's metrics portion of its future Wildfire Mitigation Plans shall be focused on outcomes, measuring the effectiveness by which the mitigation implemented reduces the risk of its electrical lines and equipment causing a catastrophic wildfire.

6. Southern California Edison shall use the quantitative risk assessment framework adopted in D.18-12-014 in the Safety Model Assessment Proceeding to evaluate and compare the cost effectiveness of each of the mitigations that were under consideration in developing the WMP. The WMP shall provide the risk spend efficiency results of the quantitative risk analysis and include an

explanation of the Multi-Attribute Value Function that was used and how it was constructed.

7. In its next Wildfire Mitigation Plan, or sooner if it wishes, Southern California Edison shall propose a process for bringing its "High Fire Risk Areas" into conformity with the Commission's High Fire-Threat District area maps, or discuss in more detail why it should not be required to do so.

8. Southern California Edison shall address in future Wildfire Mitigation Plans how enhanced inspection and maintenance activities, including Light Detection and Ranging, will target its distribution infrastructure, as well as its transmission system.

9. Southern California Edison's vegetation management efforts during this 2019 Wildfire Mitigation Plan cycle shall focus on the Commission's High Fire-Threat District areas.

10. Southern California Edison may remove healthy trees – whether categorized as "hazard trees," "reliability trees," or other name – during this cycle only where the utility has evidence that those trees pose a risk to utility electric facilities under wildfire ignition conditions, based on the opinion of a certified arborist.

11. In the future Wildfire Mitigation Plans, Southern California Edison shall use expert input in determining which healthy trees to remove based on the opinion of certified arborists and on evidence that the trees pose a risk to utility electric facilities under wildfire ignition conditions.

12. Southern California Edison shall describe "hazard trees" more clearly in its future Wildfire Mitigation Plans, in a manner that explains the conditions that pose expected risk, and compares its own definitions to descriptions in the

California Department of Forestry and Fire Protection's Powerline Fire Prevention Field Guide.

13. Southern California Edison shall inform local communities and residents of its vegetation management plans, especially when it plans large scale vegetation work in a heavily forested area.

14. Southern California Edison shall provide detail about the alternative technologies it is using or considering for wildfire mitigation and prevention in its future Wildfire Mitigation Plans in the comment and workshop process ordered in the accompanying guidance decision.

15. In future Wildfire Mitigation Plans, Southern California Edison shall discuss the strengths and weaknesses of its emergency preparedness, outreach, and response program as it engages with stakeholders during this upcoming fire season.

16. Southern California Edison shall give the following customer support to utility customers affected by a wildfire, during and after a wildfire: (a) support for low-income customers; (b) billing adjustments; (c) deposit waivers; (d) extended payment plans; (e) suspension of disconnection and nonpayment fees; (f) repair processing and timing; (g) access to utility representatives; and (h) access to outage reporting and emergency communications.

17. Southern California Edison shall communicate its plan for community outreach and public awareness before, during, and after a wildfire in English, Spanish, Chinese (including Cantonese, Mandarin and other Chinese languages), Tagalog, and Vietnamese, as well as Korean and Russian, where those languages are prevalent in its service territory.

18. Southern California Edison is authorized to open the memorandum account described in Public Utilities Code Section 8386(e), which provides: "At

the time it approves each [Wildfire Mitigation] plan, the commission shall authorize the utility to establish a memorandum account to track costs incurred to implement the plan."

19. Southern California Edison shall not seek or obtain double recovery of the costs tracked in its Public Utilities (Pub. Util.) Code Section 8386(e) memorandum account in any other account, including the memorandum account described in Pub. Util. Code Section 8386(j), which the utility established with the Commission's Energy Division's approval. Pub. Util. Code Section 8386(j) describes this account as follows: "(j) Each electrical corporation shall establish a memorandum account to track costs incurred for fire risk mitigation that are not otherwise covered in the electrical corporation's revenue requirements."

20. Nothing in this decision relieves Southern California Edison of the requirement to conform all of the activities described in its Wildfire Mitigation Plan to existing law, regulation and Commission General Orders.

21. Nothing in this decision changes the notice, communication, outreach or other requirements of the Commission's concurrent de-energization decision issued in Rulemaking 18-12-005.

22. Rulemaking 18-10-007 remains open.

This order is effective today.

Dated May 30, 2019, at San Francisco, California.

MICHAEL PICKER
President
LIANE M. RANDOLPH
MARTHA GUZMAN ACEVES
CLIFFORD RECHTSCHAFFEN
GENEVIEVE SHIROMA
Commissioners

Appendix A - List of Requirements in SB 901 for WMPs

8386.

(c) The wildfire mitigation plan shall include:

(1) An accounting of the responsibilities of persons responsible for executing the plan.

(2) The objectives of the plan.

(3) A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.

(4) A description of the metrics the electrical corporation plans to use to evaluate the plan's performance and the assumptions that underlie the use of those metrics.

(5) A discussion of how the application of previously identified metrics to previous plan performances has informed the plan.

(6) Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure.

(7) Appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines. The procedures shall consider th need the notify, as a priority, critical first responders, health care facilities, and operators of telecommunications infrastructure.

(8) Plans for vegetation management.

(9) Plans for inspections of the electrical corporation's electrical infrastructure.

(10) A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the electrical corporation's service territory, including all relevant wildfire risk and risk mitigation information that is part of Safety Model Assessment Proceeding and Risk Assessment Mitigation Phase filings. The list shall include, but not be limited to, both of the following:

(A) Risks and risk drivers associated with design, construction, operations, and maintenance of the electrical corporation's equipment and facilities.

(B) Particular risks and risk drivers associated with topographic and climatological risk factors throughout the different parts of the electrical corporation's service territory.

(11) A description of how the plan accounts for the wildfire risk identified in the electrical corporation's Risk Assessment Mitigation Phase filing.

(12) A description of the actions the electrical corporation will take to ensure its system will achieve the highest level of safety, reliability, and resiliency, and to ensure that its system is prepared for a major event, including hardening and modernizing its infrastructure with improved engineering, system design, standards, equipment, and facilities, such as undergrounding, insulation of distribution wires, and pole replacement.

(13) A showing that the utility has an adequate sized and trained workforce to promptly restore service after a major event, taking into account employees of other utilities pursuant to mutual aid agreements and employees of entities that have entered into contracts with the utility.

(14) Identification of any geographic area in the electrical corporation's service territory that is a higher wildfire threat than is currently identified in a

commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment.

(15) A methodology for identifying and presenting enterprise-wide safety risk and wildfire-related risk that is consistent with the methodology used by other electrical corporations unless the commission determines otherwise.

(16) A description of how the plan is consistent with the electrical corporation's disaster and emergency preparedness plan prepared pursuant to Section 768.6, including both of the following:

(A) Plans to prepare for, and to restore service after, a wildfire, including workforce mobilization and prepositioning equipment and employees.

(B) Plans for community outreach and public awareness before, during, and after a wildfire, including language notification in English, Spanish, and the top three primary languages used in the state other than English or Spanish, as determined by the commission based on the United States Census data.

(17) A statement of how the electrical corporation will restore service after a wildfire.

(18) Protocols for compliance with requirements adopted by the commission regarding activities to support customers during and after a wildfire, outage reporting, support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, repair processing and timing, access to utility representatives, and emergency communications.

(19) A description of the processes and procedures the electrical corporation will use to do all of the following:

(A) Monitor and audit the implementation of the plan.

(B) Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies.

(C) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.

(20) Any other information that the commission may require.

(END OF APPENDIX A)

Appendix B - Cross Reference SB 901-Wildfire Mitigation Plans

CROSS REFERENCE TABLE 1
Using SB 901 Organization

Code Reference §8386(c)	Wildfire Mitigation Plan section
(1) An accounting of the responsibilities of persons responsible for executing the plan.	VI.A.
(2) The objectives of the plan.	I.
(3) A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.	II.
(4) A description of the metrics the electrical corporation plans to use to evaluate the plan's performance and the assumptions that underlie the use of those metrics.	VI.B.
(5) A discussion of how the application of previously identified metrics to previous plan performances has informed the plan.	VI.C.
(6) Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure.	IV.A.
(7) Appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines. The procedures shall consider th need the notify, as a priority, critical first responders, health care facilities, and operators of telecommunications infrastructure.	IV.F.
(8) Plans for vegetation management.	IV.D.
(9) Plans for inspections of the electrical corporation's electrical infrastructure.	IV.B.

Code Reference §8386(c)	Wildfire Mitigation Plan section
(10) A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the electrical corporation's service territory, including all relevant wildfire risk and risk mitigation information that is part of Safety Model Assessment Proceeding and Risk Assessment Mitigation Phase filings. The list shall include, but not be limited to, both of the following: **(A) Risks and risk drivers associated with design, construction, operations, and maintenance of the electrical corporation's equipment and facilities.** **(B) Particular risks and risk drivers associated with topographic and climatological risk factors throughout the different parts of the electrical corporation's service territory.**	III.B.(1-5)
(11) A description of how the plan accounts for the wildfire risk identified in the electrical corporation's Risk Assessment Mitigation Phase filing.	III.B.6.
(12) A description of the actions the electrical corporation will take to ensure its system will achieve the highest level of safety, reliability, and resiliency, and to ensure that its system is prepared for a major event, including hardening and modernizing its infrastructure with improved engineering, system design, standards, equipment, and facilities, such as undergrounding, insulation of distribution wires, and pole replacement.	IV. (whole section)
(13) A showing that the utility has an adequate sized and trained workforce to promptly restore service after a major event, taking into account employees of other utilities pursuant to mutual aid agreements and employees of entities that have entered into contracts with the utility.	V.B.3.
(14) Identification of any geographic area in the electrical corporation's service territory that is a higher wildfire threat than is currently identified in a commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment.	III.D.
(15) A methodology for identifying and presenting enterprise-wide safety risk and wildfire-related risk that is consistent with the methodology used by other electrical corporations unless the commission determines otherwise.	III.A.

Code Reference §8386(c)	Wildfire Mitigation Plan section
(16) A description of how the plan is consistent with the electrical corporation's disaster and emergency preparedness plan prepared pursuant to Section 768.6, including both of the following: **(A) Plans to prepare for, and to restore service after, a wildfire, including workforce mobilization and prepositioning equipment and employees.** **(B) Plans for community outreach and public awareness before, during, and after a wildfire, including language notification in English, Spanish, and the top three primary languages used in the state other than English or Spanish, as determined by the commission based on the United States Census data.**	V.A. V.B.
(17) A statement of how the electrical corporation will restore service after a wildfire.	V.B.1.
(18) Protocols for compliance with requirements adopted by the commission regarding activities to support customers during and after a wildfire, outage reporting, support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, repair processing and timing, access to utility representatives, and emergency communications.	V.C.
(19) A description of the processes and procedures the electrical corporation will use to do all of the following: **(A) Monitor and audit the implementation of the plan.** **(B) Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies.** **(C) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.**	VI.D.
(20) Any other information that the commission may require.	VII.A.

CROSS REFERENCE TABLE 2
Using Wildfire Mitigation Plan Organization

Wildfire Mitigation Plan section	Code Reference §8386(c)

Wildfire Mitigation Plan section	Code Reference §8386(c)
I. Objectives consistent with §8386(a) **A. Categorized by following timeframes:** **A. Before upcoming wildfire season** **B. Before next Plan filing** **C. Within next 5 years**	2
II. Description of preventive strategies and programs **B. Categorized by following timeframes:** **A. Before upcoming wildfire season** **B. Before next Plan filing** **C. Within next 5 years**	3
III. Risk Analysis and Risk Drivers **A. Safety and wildfire risk identification and assessment methodology**	15
B. Wildfire risks and drivers list **C. Listed in the following categories:** **1. Design and Construction** **2. Inspection and Maintenance** **3. Operational Practices** **4. Situational/Conditional Awareness** **5. Response and Recovery**	10
C. Description of how plan accounts for wildfire risk identified in RAMP	11
D. Service territory fire-threat evaluation	14
IV. Wildfire Prevention Strategies and Programs **D. Operational practices** **E. Inspection and maintenance plans** **F. System hardening to achieve highest level of safety, reliability, and**	6 9 12

Wildfire Mitigation Plan section	Code Reference §8386(c)	
resiliency		
G. Vegetation management plan	8	
H. Situational awareness protocols and determination of local conditions		
I. De-energization protocol	7	
J. Alternative technologies **K. Post-incident recovery, restoration, and remediation activities**		
V. Emergency Preparedness and Response **A. General description of overall plan** **B. Description of consistency with emergency preparedness and response plan**		16
1. Service restoration plan	17	
2. Emergency communications		
3. Workforce adequacy showing	13	
C. Customer support in emergencies **1.1.1. Protocols for compliance with CPUC requirements**	18	

Wildfire Mitigation Plan section	Code Reference §8386(c)
VI. Performance Metrics and Monitoring	
A. Accounting of responsibilities	1
B. Description of metrics and assumptions	4
C. Discussion on how previous metrics performance has informed current plan	5
D. Processes and procedures for: **1. Plan monitoring and auditing** **2. Identifying and correcting Plan deficiencies** **3. Monitoring and auditing effectiveness of equipment and line inspections**	19
VII. Any other information the CPUC may require **A. Cost information**	20

(END OF APPENEDIX B)

Appendix C
List of Acronyms

A.	Application
AT&T	AT&T Mobility Wireless Operations Holdings, Inc.,Pacific Bell Telephone Company, and AT&T Corp.
AB	Assembly Bill
Abrams	William B. Abrams
ACS	Arc Suppression Coils
AGP	Annual Grid Patrol
Air Operations	SCE's Air Operations Department
ANSI	American National Standards Institute
AR	automatic reclosers
Bear Valley or	Bear Valley Electric Service, a division of Golden State
BLF	Branch Line Fuses
BVLOS	Beyond Visual Line of Sight
C3	Customer Crew Communications
Cal Advocates	Public Advocates Office fka Office of Ratepayer Advocates
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CARE	California Alternate Rates for Energy
CEJA	California Environmental Justice Alliance
CB	Circuit Breaker
CCC	Customer Contact Center
CCSF	The City and County of San Francisco
CCUE	Coalition of California Utility Employees
CCTA	California Cable and Telecommunications Association
CCWD	Contra Costa Water District
Cell	Critical Energy Infrastructure Information
CEMA	Catastrophic Event Memorandum Account
CEQA	California Environmental Quality Act
CERP	Company Emergency Response Plan
CFBF	California Farm Bureau Federation
CIRT	Centralized Inspection Review Team

Citizens	Citizens Sunrise Transmission LLC
CLF	current-limiting fuses
CMUA	California Municipal Utilities Association
CPUC	California Public Utilities Commission or Commission
CSWC	California State Warning Center
CUEA	California Utilities Emergency Association
CWSP	Community Wildfire Safety Program
D.	Decision
DATC	Duke American Transmission Company
DATC Path 15	Trans-Elect NTD Path 15, LLC
DDS	Distribution Design Standards
DFA	Distribution Fault Anticipation
DFM	Dead Fuel Moisture
DIIP	Distribution Infrared Inspection Program
DIMP	Distribution Inspection and Maintenance Program
DOH	Distribution Overhead Construction Standards
DRI	Drought Relief Initiative
EBMUD	East Bay Municipal Utility District
Eel	Edison Electric Institute
EOC	Emergency Operations Center
EOI	enhanced overhead inspections
EONS	Emergency Outage Notification System
EPIC	Electric Program Investment Charge
EP&R	Emergency Preparedness and Response
EPUC/IS	Energy Producers and Users Coalition and Indicated Shippers
ERO	Emergency Response Organization
ESA	Energy Savings Assistance
ETOR	Estimated Time of Restoration
EVM	enhanced vegetation management
FEMA	Federal Emergency Management Agency
FERA	Family Electric Rate Assistance
FERC	Federal Energy Regulatory Commission
FHPMA	Fire Hazard Prevention Memorandum Account
FHSZ	Fire Hazard Severity Zone

FIA	Fire Index Area
FiRM	Fire Risk Mitigation
FMEA	Failure Modes and Effects Analysis
FPI	Fire Potential Index
FPP	Fire Prevention Plan
FRP	fiber reinforced polymer
GIS	Geographic and Information System
GO	General Order
GPI	Green Power Institute
GRC	General Rate Case
GSRP	Grid Safety and Resiliency Program
GSW	Golden State Water Company
HD	high definition
Henricks	Ruth Henricks
HFRA	High Fire Risk Areas
HFTD	High Fire Threat District
HHZ	High Hazard Zones
HPCC	High Performance Computing Cluster
HTMP	Hazard Tree Management Program
I.	Investigation
ICS	Incident Command System
IMT	Incident Management Team
IOUs	Investor-Owned Utilities
IPI	Intrusive Pole Inspection program
IR	Infrared
ISA	International Society of Arborculture
ITO	Independent Transmission Owners
IVR	Integrated Voice Recording
km	Kilometer
kV	Kilovolt
LAC	Local Assistance Center
LADWP	Los Angeles Department of Water and Power
Laguna Beach	The City of Laguna Beach
Liberty	Liberty Utilities (CALPECO Electric) LLC
LiDAR	light detection and ranging technology

Malibu	The County of Los Angeles, City of Malibu
MA	Memorandum Account
MAA	Mutual Assistance Agreements
MADEC	meter alarming for downed energy conductor
MAVF	Multi-Attribute Value Framework
Mendocino	The County of Mendocino
MGRA	Mussey Grade Road Alliance or Mussey Grade
Mph	Miles per hour
MVCD	Minimum Violation Clearance Distance
Napa	The County of Napa
NIMS	National Incident Management System
NEET-West	Next Era Energy Transmission West LLC
NERC	North American Reliability Corporation
NFDRS	National Fire Danger Rating System
NFPA	National Fire Protection Association
NIFC	National Interagency Fire Center
NIMS	National Incident Management System
NWS	National Weather Service
OA	Operability Assessment
OCP	Overhead Conductor Program
ODI	Overhead Detail Inspection
ODRM	Outage Database and Reliability Metrics
OEM	Offices of Emergency Management
OES	Office of Emergency Services
OIR	Order Instituting Rulemaking
OMS	Outage Management System
OSA	The Commission's Office of Safety Advocates
PacifiCorp	Pacific Power, a division of PacifiCorp
Paradise	Town of Paradise
PCB	polychlorinated biphenyls
PCEA	Peninsula Clean Energy Authority
PEV	Post Enrollment Verification
PG&E	Pacific Gas and Electric Company
PI	Pole Inspections
PIH	Pre-installed Interconnection Hubs

PLP	Pole Loading Program
PMO	Program Management Office
POC	Protect Our Communities
POMMS	PG&E Operational Mesoscale Modeling System
PRC	Public Resources Code
PSPS	Public Safety Power Shut-Off or De-Energization
PTZ	pan-tilt-zoom
PUC	Public Utilities Code
QA	Quality Assurance
QC	Quality Control
QCG	Quality Control Group
AM	Quality Management
QO	Quality Oversight
R.	Rulemaking
RAMP	Risk Assessment Mitigation Phase
RAR	remote-controlled automatic reclosers
RAWS	Remote Automated Weather Stations
RCRC	Rural County Representatives of California
REACH	Relief for Energy Assistance through Community Help
REFCL	Rapid Earth Fault Current Limiter
RFW	Red Flag Warnings
ROW	Right-of-Way
Santa Rosa	The City of Santa Rosa
SAWTI	Santa Ana Wildfire Threat Index
SB901	Senate Bill 901
SBUA	Small Business Utility Advocates
SCADA	Supervisory Control and Data Acquisition
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
SE D	Commission's Safety and Enforcement Division
SIMP	Substation Inspection and Maintenance Program
SIPT	Safety and Infrastructure Protection Teams
S-MAP	Safety Model Assessment Proceedings
SOB	Standard Operating Bulletin
Sonoma	County of Sonoma

SOPP	Storm Outage Prediction Model
SoCalGas	Southern California Gas Company
SmartMeter	Brand Name for Automated Metering Initiative
SME	Subject MaTTER Experts
Sunrun	Sunrun Inc.
Startrans	Startrans IO, LLC
T&D	SCE's Transmission and Distribution business unit
TBC	Trans Bay Cable LLC
TICII	Transmission Infrared and Corona Inspection Initiative
TIMP	Transmission Inspection and Maintenance Program
TURN	The Utility Reform Network
UAS	Advanced Unmanned Aerial Systems
UAV	unmanned aerial vehicle
UDI	Underground Inspection Program
USFS	U.S. Forest Service
USGS	United States Geological Survey
VM	Vegetation Management
WAPA	Western Area Power Administration
WCCP	Wildfire Covered Conductor Program
WEIMAR	Western Energy Institute Mutual Assistance Roster
WECC	Western Electricity Coordinating Council
WMP or Plan	Wildfire Mitigation Plan
WRF	Weather Research and Forecasting
WRMAG	Western Region Mutual Assistance Agreement for Electric Utilities
WSIP	Wildfire Safety Inspection Program
WSOC	Wildfire Safety Operations Center
WSP	Wildfire Safety Plan
Zuma Beach	Hans Laetz on behalf of Zuma Beach FM Broadcasters

(END OF APPENDIX C)