

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



May 7, 2020

Agenda ID # 18409
RESOLUTION WSD-004
Commission Meeting: June 11, 2020

**TO: STAKEHOLDERS TO SOUTHERN CALIFORNIA EDISON
COMPANY'S 2020 WILDFIRE MITIGATION PLAN**
Service List(s): R.18-10-007

Enclosed is the Action Statement of the Wildfire Safety Division (WSD) and Draft Resolution WSD-004. The Action Statement and Draft Resolution WSD-004, together, with the Draft Guidance Resolution WSD-002, present the WSD's evaluation of Southern California Edison Company's (SCE) 2020 Wildfire Mitigation Plan (WMP). Pursuant to Public Utilities Code Section 8386.3, the attached Action Statement, the discussion found in Draft Resolution WSD-004, and the overarching discussion in Draft Guidance Resolution WSD-002, is the outcome of WSD's review of SCE's WMP, including input from the public, the Wildfire Safety Advisory Board, and other governmental agencies. The Action Statement is the conditional approval of SCE's WMP and is presented to the Commission for ratification via the associated resolution.

Draft Resolution WSD-004 is one of seven Draft Resolutions, sequentially ordered as Draft Resolutions WSD-003 - WSD-009, that address the individual 2020 WMPs of Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas and Electric Company, Liberty Utilities, PacifiCorp, Bear Valley Electric Service, and, together, Trans Bay Cable, LLC and Horizon West Transmission, LLC. These seven resolutions, along with the associated Action Statements and the Guidance Resolution WSD-002 represent the totality of WSD's evaluation of the 2020 WMPs.

Pursuant to Rule 14.5 of the Commission's Rules of Practice and Procedure, stakeholders may submit comments on the Draft Resolutions and the Draft Guidance Resolution (WSD-002 - WSD-009.) The WSD will accept one set of comments per stakeholder that collectively addresses the Draft Guidance Resolution and the individual electrical corporation Draft Resolutions WSD-002 - WSD-009.

Comments shall be limited to twenty (20) pages in length and should list the recommended changes to the Draft Resolutions. Comments shall focus on factual, legal or technical errors in the proposed Draft Resolutions.

Comments must be received by the Wildfire Safety Division by May 27, 2020. Comments should be submitted to the following email address: wildfiresafetydivision@cpuc.ca.gov. The WSD will consider comments on the Draft Resolutions when finalizing its Action Statement on SCE's 2020 WMP.

Stakeholders submitting comments on the Draft Resolution must also serve their comments on the service list of R.18-10-007. Comments that are not served on the service list of R.18-10-007 may not be considered. The WSD will post all comments received on the following website: www.cpus.ca.gov/wildfiremitigationplans.

Replies to comments will not be accepted nor considered if submitted.

Draft Resolution WSD-004 will appear on the agenda at the next Commission meeting, which is at least 30 days after the date of this letter. The Commission may vote to ratify WSD's Draft Resolution at that time or it may postpone a vote until a later meeting.

Sincerely,

/S/ CAROLINE THOMAS JACOBS
Caroline Thomas Jacobs
Director, Wildfire Safety Division
California Public Utilities Commission

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



May 7, 2020

**Wildfire Safety Division Draft Action Statement on
Southern California Edison Company's 2020 Wildfire Mitigation Plan**

This Action Statement is the conditional approval of Southern California Edison Company's (SCE's) Wildfire Mitigation Plan (WMP) and is presented to the California Public Utilities Commission (CPUC) for ratification, via the associated Resolution and Guidance Resolution.

Introduction

Wildfires have caused significant social, economic, and environmental damage on a global scale. In California, electric utilities are responsible for some of the most devastating wildfires in recent years. The Wildfire Safety Division (WSD) recognizes that the wildfire threat is only increasing, with utility-related ignitions responsible for a disproportionate share of wildfire-related consequences. To that end, the WSD has a vision of moving towards a sustainable California, with no catastrophic utility-related wildfires, that has access to safe, affordable, and reliable electricity. The WSD recognizes it is critical for utilities to act quickly to reduce utility-related wildfire risk effectively and prudently.

As utility wildfire mitigation has become an increasingly urgent priority, the California Legislature has passed several bills related to utility wildfire prevention and oversight. The main regulatory vehicle for the WSD to regulate utilities in reducing utility wildfire risk is the Wildfire Mitigation Plan (WMP), which was introduced in Senate Bill (SB) 1028 (Hill, 2016) and further defined in SB 901 (Dodd, 2018), Assembly Bill (AB) 1054 (Holden, 2019), and AB 111 (Committee on Budget, 2019). Investor-owned electric utilities are required to submit WMPs assessing their level of wildfire risk and providing plans for wildfire risk reduction. The first WMPs under the SB 901 framework were submitted by the utilities and evaluated by the CPUC in 2019.

AB 1054 and AB 111 transferred responsibility for evaluation and approval of WMPs to the WSD,¹ which, as of July 2021, will transfer and become the Office of Energy Infrastructure Safety within the California Natural Resources Agency. In

¹ With CPUC ratification of the WSD's actions.

this role, the WSD must ensure utility wildfire mitigation efforts sufficiently address increasing utility wildfire risk. To support its efforts, the WSD is developing a draft long-term strategy and roadmap. This strategy and roadmap will inform the WSD's work in updating the WMP process and guidelines, and the WSD's evaluation of the WMPs.

AB 1054 mandates that the WSD complete its evaluation of WMPs within 90 days of submission. The utilities submitted 2020 WMPs on February 7, 2020. Upon completion of the past 90 days of evaluation, the WSD recognizes that the utilities have made significant progress. Compared to their first submissions in 2019, the utilities utilize much more data and objective content in their 2020 WMP filings and share more critical information with key partners. However, while utilities are already undertaking wildfire mitigation activities and building capabilities subject to regulation, all utilities must continue to make meaningful progress. Utilities' activities need to incorporate longer-term thinking by focusing more systematically on increasing their maturity over time. All utilities should take a more robust strategic approach that leverages additional Risk Spend Efficiency (RSE) data to focus on the most impactful actions – all with a local lens. This statement outlines more specifically what the WSD sees as critical priorities for the upcoming year for SCE and approves, with conditions, SCE's 2020 WMP. Together, this statement, the associated Resolution and the Guidance Resolution represent the totality of the WSD's conditional approval of SCE's 2020 WMP.

Background

To ensure that utility wildfire mitigation efforts sufficiently address increasing utility wildfire risk, new WMP Guidelines, a Utility Survey and a Maturity Model were launched for 2020. Together, these tools represent a milestone in the evolution of utilities' wildfire mitigation efforts and ensure consistency with the WSD's enabling legislation.

2020 Guidelines

The 2020 WMP Guidelines implement several changes to further enhance the depth, comparability and quality of utility WMP submissions. Specifically, the WMP Guidelines require reporting of consistent metrics, ignitions, risk data and specific utility initiatives to reduce wildfire risk. Utilities have provided historical metrics and data as a baseline, which can be used to evaluate a utility's wildfire risk level and to assess whether the utility's initiatives sufficiently address this

risk. These metrics and data will be used to track utility progress in mitigating the risk of catastrophic wildfire over time.

Maturity Model and Utility Survey

In order to enhance the focus on safety, ensure consistent goals and evaluate performance, the WSD has developed a model for evaluating current and projected wildfire risk reduction performance. It is important to note that this model is not designed to immediately penalize utilities for poor performance, but rather it is an effort by the WSD to work collectively with the utilities it regulates² to facilitate improvement by identifying best practices, current strengths and current weaknesses across the utility landscape. The WSD believes it is in the best interest of the utilities, ratepayers and other key stakeholders to take this collaborative, growth-oriented approach. While certain utilities are currently on the low end of the range for various categories of performance, the WSD is hopeful that providing clear review and evaluation of performance, including identifying such weaknesses, will help drive change in the utilities, allowing all regulated electric utilities in California to improve wildfire risk reduction performance.

As a consequence, the model results are best interpreted as levels – the results are not absolute scores. A utility, for example, could be on the borderline for level 2 in the model, but it would remain at level 1 until it completed 100% of the steps required to cross the threshold to level 2. In this example, the way the model works is the utility would get a result of 1, not 1.8. The purpose of the model is not to penalize the utility for achieving a result of 1 but to identify the specific actions it can take to reach level 2.

Summary of the WSD's Assessment

An effective WMP should have three, overarching components in which utilities should be striving to be “world class.” First, the WMP should demonstrate an understanding of a utility’s unique risk. Each utility should measure outcome and progress metrics and use a sophisticated model to lay the foundation for safe operation within its service territory. Second, with a deep understanding of its

² The WSD (ultimately the Office of Energy Infrastructure Safety) and the CPUC have complementary regulatory roles to fill in ensuring a strong oversight in reducing the risk of ignition of wildfires from utility infrastructure. The WSD, CPUC, and other relevant agencies will work together to ensure roles are defined and regulatory outcomes are met.

risk, the utility should deploy a suite of initiatives designed to incrementally and aggressively reduce that risk. Finally, this deployment should be done with a key, strategic eye toward maximizing every scarce resource, whether it be direct costs, personnel, or time, to maximize its impact. The result should be that with each passing year California is safer from wildfire threats, with a significant reduction and eventual elimination of the need to use Public Safety Power Shutoffs (PSPS) as a mitigation action.

The WSD evaluated 2020 WMPs considering the following factors:

- Completeness: The WMP is complete and comprehensively responds to the WMP requirements
- Technical feasibility and effectiveness: Initiatives proposed in the WMP are technically feasible and are effective in addressing the risks that exist in the utility's territory
- Resource use efficiency: Initiatives are an efficient use of utility resources
- Forward looking growth: The utility is targeting maturity growth

The WSD used the utilities' 2020 WMP submissions and subsequent updates, public comments, responses to the WSD's data requests, utility reported data and utility responses to the Utility Survey in its assessment of 2020 WMPs.

Upon completion of this review, the WSD then determined whether each utility's 2020 WMP should either be:

- Approved without conditions (Full Approval)
- Approved with conditions (Conditional Approval)
- Denied (Denial)

Pursuant to Public Utilities Code Section 8386.3, this Action Statement and the discussion found in the associated Resolutions is the outcome of the WSD's review of SCE's WMP and input from the public and other governmental agencies. As stated previously, this Action Statement is the conditional approval of SCE's WMP and is presented to the CPUC for ratification, via the associated Resolution and Guidance Resolution.

The conditions for approval of SCE's WMP are designed to address the gaps identified in SCE's WMP. Some of the key deficiencies for SCE's WMP are

summarized below. The associated Resolution and Guidance Resolution capture the WSD's comprehensive review of SCE's WMP submission.

Discussion of WMP Assessment

Summary

SCE has a large service territory, and significant portions of its grid are in High Fire-Threat District (HFTD) areas. For SCE's plan to be most effective with its finite resources, strategic prioritization of initiatives geographically and by ignition driver to target the highest risk elements of SCE's grid is crucial. SCE outlines improvements being made to its risk assessment tools, but it is unclear from SCE's WMP how these tools are used to drive prioritization of specific wildfire mitigation initiatives to minimize wildfire risk and PSPS.

SCE outlines various wildfire mitigation programs that address most of the major risk drivers in its territory. However, SCE does not provide a detailed justification of how it determined its portfolio of planned initiatives to be the most effective use of its finite resources.

Based on SCE's responses to the Utility Survey for the Utility Wildfire Mitigation Maturity Model, SCE is planning to mature foundational capabilities that inform decision making such as resource allocation methodology and data governance. SCE, however, does not expect much, if any, growth in other important categories, such as situational awareness, asset management, vegetation management, nor grid operations. Improving foundational capabilities is critical to driving meaningful reduction in wildfire and PSPS risk.

Risk Assessment

Given the growing wildfire risk brought on by climate change, all utilities must move away from traditional prioritization practices to those informed and prioritized by risk. To effectively mitigate wildfire and PSPS risk, SCE will not only need a granular and accurate understanding of its own risk profile, but it will also need to leverage that information to inform decisions about which wildfire mitigation initiatives to invest in and where to prioritize deployment.

In general, SCE has articulated an ambition to improve understanding of its own risk profile by investing in its Wildfire Risk Reduction Model (WRRM) and articulates high confidence in its ignition risk estimates (claiming a >95% confidence interval in its maturity survey). However, SCE does not consistently communicate this granular understanding of its own risk in its WMP. For example, SCE reports that in 2019 70% of near misses were driven by 'other' causes, without explaining what these causes are or how they will be addressed.

SCE also does not describe how hardening and vegetation management initiatives will address PSPS thresholds.

Finally, SCE does not demonstrate how this information and awareness affects decision making and deployment of initiatives in a granular way. SCE will need to address the related conditions cited in the WSD's evaluation to demonstrate that it is mitigating wildfire and PSPS risk as quickly and effectively as possible.

Initiatives

SCE's initiatives, which are the actions and programs SCE will take to reduce wildfire risk, are designed to address the largest drivers of wildfire risk (with the exception of 'other' drivers, which are not explained). SCE is particularly focused on grid design and system hardening initiatives, which are expected to address most major risk drivers and comprise 70% of total planned spend. Its largest hardening program by far is its covered conductor program, with planned spend of \$1.88 billion over the plan period.

SCE projects high confidence in the effectiveness of its initiatives, projecting a 70% decrease in ignitions between actual 2019 and projected 2020 ignitions (assuming 5-year historical weather conditions), and approximately a 10% decrease in ignitions from 2020-2021 and 2021-2022 each (also assuming 5-year historical weather conditions).

However, SCE does not provide enough evidence regarding the deployment of its programs and historical effectiveness of these programs to substantiate this estimate. This is particularly concerning with respect to SCE's covered conductor program. SCE plans to allocate 42% of plan spend to this program and ramp up deployment rapidly, spending 70% more in 2022 than in 2020. However, SCE offers no alternatives analysis or other evidence that justify the scale of this program relative to alternative mitigation options. SCE also does not describe how evidence of the effectiveness of its 2019 and 2020 covered conductor installations will inform the scale of the program in 2022 and beyond. To achieve sufficient risk reduction given the limited resources, it is imperative that SCE addresses the related conditions of approval issued by the WSD.

While SCE has grid operations initiatives in place to reduce PSPS, to meet the conditions of approval, SCE will need to offer a firm and measurable commitment to reduce PSPS scale and scope. SCE will also need to provide evidence of the impact of its grid hardening and vegetation management initiatives on protocols and thresholds for PSPS initiation, demonstrating that these initiatives indeed quantifiably reduce the probability of a PSPS event over the circuits on which they are deployed.

Finally, for many initiatives, SCE has not described their deployment strategy and timelines in sufficient detail to convince the WSD that the highest risk circuits are being targeted in a nuanced way and that this work will be completed on time. SCE must meet the conditions issued by the WSD to address these gaps.

Resource Allocation Methodology

While the WSD's assessment of the 2020 WMP does not approve cost recovery for its initiatives – which will be addressed in each utility's General Rate Case or application allowed by Public Utilities Code 8386.4(b)(2) – the assessment does consider the effective use of resources to reduce wildfire ignition risk. Overall, SCE does not demonstrate sufficiently that it is allocating finite resources to initiatives that most effectively reduce wildfire risk and PSPS incidents. The 2020 Guidelines required utilities to provide RSE estimates for all initiatives, yet, SCE provided estimates for only 27 of 80 initiatives.

For those initiatives where RSE estimates were provided, RSE was not provided for alternatives, making the calculation alone insufficient to justify allocation decisions. In addition, gaps exist in the methodology for calculating RSE. Estimates were produced using service-territory wide approximations of initiative effectiveness rather than circuit-level detail that SCE has claimed to have available in technical workshops. Estimates do not take into account the full cost of PSPS, which is a critical input to decision making. Most initiatives for which RSE was not calculated did not have a thoughtful justification of their allocation based on merits relative to alternatives and the expected impact of those initiatives. SCE will need to meet the WSD's conditions to address these gaps in the near term. Over the WMP plan period, SCE has committed to improving capabilities which allow for thoughtful resource allocation and will need to work diligently to meet these commitments.

A detailed discussion of the above concerns, as well as further analysis of SCE's WMP is articulated in the associated Resolutions, including a complete list of deficiencies and conditions in Appendix A of the associated Resolution for SCE.

Conclusion

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electric utilities, including SCE, must continue to make progress toward reducing utility-related wildfire risk. Through the conditional approval granted for its 2020 WMP submission, the WSD will ensure SCE is held

accountable to successfully executing the wildfire risk reduction initiatives articulated in its 2020 WMP and required updates. The WSD expects SCE to meet the commitments in its 2020 WMP and fully comply with the conditions listed in Appendix A of its associated Resolution to ensure it is driving meaningful reduction of utility-related wildfire risk within its service territory.

Sincerely,

/S/ CAROLINE THOMAS JACOBS

Caroline Thomas Jacobs
Director, Wildfire Safety Division
California Public Utilities Commission

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Resolution WSD-004
Wildfire Safety Division
June 11, 2020

R E S O L U T I O N

RESOLUTION WSD-004 - Resolution Ratifying Action of the Wildfire Safety Division on Southern California Edison Company's 2020 Wildfire Mitigation Plan Pursuant to Public Utilities Code Section 8386.

This Resolution ratifies the attached action of the Wildfire Safety Division (WSD) pursuant to Public Utilities Code Section 8386. The California Public Utilities Commission's (Commission) and the WSD's most important responsibility is ensuring the safety of Californians. Since several catastrophic wildfires in the San Diego area in 2007, the equipment of large electric utilities the Commission regulates has been implicated in the most devastating wildfires in our state's history. California's Legislature enacted several legislative measures requiring electrical corporations to submit, and the Commission and the WSD to review, approve or otherwise act on Wildfire Mitigation Plans (WMPs) designed to reduce the risk of utility-caused catastrophic wildfire. Key among the legislative measures are Senate Bill 901 (2018), Assembly Bill 1054 (2019), and Assembly Bill 111, discussed in detail below.

This Resolution (along with several others concurrently being issued with regard to all Commission-regulated electric utilities and independent transmission owners), acts on the WMP submitted on February 7, 2020, of Southern California Edison Company (SCE, filer, or electrical corporation), pursuant to Public Utilities Code Section 8386.3. SCE's WMP responds to a list of 22 requirements set forth in Public Utilities Code 8386 and focuses on measures the electrical corporation will take over the next three years to reduce the risk of, and impact from, a catastrophic wildfire caused by its electrical infrastructure and equipment.

Electrical infrastructure and equipment pose ongoing risks of starting wildfires due to the presence of electric current. There are three elements required to start a fire: fuel (such as dry vegetation), oxygen, and an ignition source (heat). A spark from electrical infrastructure and equipment can provide the ignition point from which a wildfire can spread and cause catastrophic harm to life, property, and the environment.

WMPs contain an electrical corporation's detailed plans to reduce the risk of its equipment, operations or facilities igniting a wildfire. This Resolution ratifies the attached action of the WSD, which has conditionally approved SCE's 2020 WMP in its Action Statement. In doing so, this Resolution analyzes the extent to which SCE's wildfire mitigation efforts objectively reduce wildfire risk, drive improvement, and act as cost effectively as possible. In conducting this evaluation, the Commission considers and incorporates input from the Wildfire Safety Advisory Board, the public and other stakeholders.

PROPOSED OUTCOME:

- Ratifies the attached action of the WSD to approve the 2020 WMP of SCE, with conditions designed to ensure the WMP decreases risk of catastrophic wildfire in California.
- A list of conditions of approval is in Appendix A.
- Evaluates the maturity of SCE WMP using the WSD's new Utility Wildfire Mitigation Assessment, as represented in the Utility Wildfire Mitigation Maturity Model. Final maturity model outputs should be viewed as levels or thresholds – they are not absolute scores.
- Requires SCE to file an update to its WMP in 2021 according to a forthcoming schedule to be released by the WSD.
- Does not approve costs attributable to WMPs, as statute requires electrical corporations to seek and prove the legitimacy of all expenditures at a future time in their General Rate Cases (GRC) or compliant application. Nothing in this Resolution nor the WSD's Action Statement

should be construed as approval of any WMP-related costs.

- Does not establish a defense to any enforcement action for a violation of a Commission decision, order, or rule.

SAFETY CONSIDERATIONS:

Mitigation of catastrophic wildfires in California is among the most important safety challenges the Commission-regulated electrical corporations face. Comprehensive WMPs are essential to safety because:

- WMPs list all of an electrical corporation's proposed actions to reduce utility-related wildfire risk and prevent catastrophic wildfires caused by utility infrastructure and equipment. By implementing measures such as vegetation management, system hardening (such as insulating overhead lines and removing or upgrading equipment most likely to cause fire ignition), improving inspection and maintenance, situational awareness (cameras, weather stations, and use of data to predict areas of highest fire threat), improving community engagement and awareness, and other measures, utility-caused catastrophic wildfire risk should be reduced over time.
- The WSD's and Commission's substantive and procedural changes for evaluations of electrical corporations' 2020 WMPs will enhance California's ability to mitigate catastrophic wildfire risk related to utilities. Below is a summary of the key, new requirements in the 2020 process, required of all WMP filers:
 - A WMP template and format so WMPs are standardized and include similar information in the same format.
 - Standard data submissions, in spatial, non-spatial and tabular format, which grounds the WMPs in specific data. Data submissions will continue throughout the WMP 3-year horizon and be used to

measure compliance and performance to program, progress and outcome metrics.

- A new Utility Survey that objectively assesses the electrical corporation's maturity across 52 capabilities in 10 categories. The resulting Maturity Matrix quantitatively presents the progressive impact of the electrical corporation's wildfire mitigation plan activities over the WMP 3-year horizon.

ESTIMATED COST:

- Nothing in this Resolution should be construed as approval of the costs associated with the WMP mitigation efforts.
- For illustrative purposes, Table 1 below contains filer's estimates of its projected costs for the wildfire mitigation efforts in its 2020 WMP.
- SCE may not record the same costs more than once or in more than one place, seek duplicative recovery of costs, or record or seek to recover costs in the memorandum account already recovered separately. All electrical corporations should ensure they carefully document their expenditures in these memorandum accounts, by category, and be prepared for Commission review and audit of the accounts at any time.

Table 1: Proposed WMP costs

| Proposed WMP costs | |
|---------------------------|----------------|
| Total costs 2020-2022 | \$4.5 billion |
| Subtotal: 2020 | \$1.60 billion |
| Subtotal: 2021 | \$1.40 billion |
| Subtotal: 2022 | \$1.50 billion |

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Summary

This Resolution acts on the attached Wildfire Safety Division's (WSD) conditional approval of the Wildfire Mitigation Plan (WMP) submitted by Southern California Edison Company (SCE) on February 7, 2020. The Resolution finds that SCE is in compliance, subject to conditions, with the requirements for WMPs set forth in Assembly Bill (AB) 1054, codified at Public Utilities Code (Pub. Util. Code) Section 8386(c) and the WMP Guidelines issued by the Commission to electrical corporations. Section 8386 requires that electrical corporations' WMPs contain 22 elements; the full list of elements appears in Appendix E to this Resolution.

There are three possible actions for the WSD and Commission in response to any electrical corporation's WMP: approval, denial, or approval with conditions. In the case of the WMP resolved here, we ratify the WSD's action to approve SCE's WMP with conditions. To the extent we do not impose conditions on elements of the WMP, that element is approved.

The list of conditions of approval is in Appendix A.

1. Background

Catastrophic wildfires in 2017-19 led the California Legislature to pass Senate Bill (SB) 901 in 2018 and its successor AB 1054 in 2019, as well as AB 111. SB 901 and AB 1054 contain detailed requirements for electrical corporations' WMPs and provide a 90-day review cycle of WMPs by the WSD. AB 111 establishes a new division, the WSD, within the Commission. The duties of the WSD are contained in Pub. Util. Code Section 326(a), including to evaluate, oversee and enforce electrical corporations' compliance with wildfire safety requirements, and develop and recommend to the Commission performance metrics to achieve maximum feasible wildfire risk reduction. SB 901 required a formal Commission proceeding for WMP review in 2019, and to that end the Commission reviewed the 2019 WMPs in Rulemaking (R.) 18-10-007. The decisions dispensing of the 2019 WMPs also added additional requirements for the 2020 WMPs.

After the Commission issued its WMP decisions on May 30, 2019,³ the Legislature enacted AB 1054. AB 1054 contains similar WMP requirements to SB 901 but allows WMPs a three-year, rather than one-year duration. AB 1054 also requires WSD to review and approve, deny or approve with conditions the

³ Decisions 19-05-036, 037, 038, 039, 040 and 041 (May 30, 2019).

electrical corporations' WMPs, with Commission ratification to follow thereafter. AB 1054 also requires establishment of a Wildfire Safety Advisory Board (WSAB), with appointees from the California Governor and Legislature, to provide comment on the 2020 WMPs and develop and make recommendations related to the metrics used to evaluate WMPs in 2021 and beyond.⁴

Building on lessons learned from the WMP review process in 2019, WSD developed and required all electrical corporations to conform their WMPs to a set of new WMP Guidelines starting in 2020.⁵ For 2020, the WMP Guidelines add requirements on detail, data, and other supporting information. The WMP Guidelines are designed 1) to increase standardization of information collected on electrical corporations' wildfire risk exposure, 2) enable systematic and uniform review of information each electrical corporation submits, and 3) move electrical corporations toward an effective long-term wildfire mitigation strategy, with systematic tracking of improvements over time.

The Commission adopted Resolution WSD-001 setting forth the process for WSD and Commission review of the 2020 WMPs. The resolution called for electrical corporations to submit their 2020 WMPs on February 7, 2020. SCE submitted its WMP on that date.

Shortly after electrical corporations filed their WMPs, the WSD held two sets of all-day workshops over four days, on February 18, 19, 24 and 25. The February 18-19, 2020 informational workshops called for the electrical corporations to present to stakeholders and the public details on their WMPs, and for stakeholders to ask questions, raise concerns, and otherwise comment on the WMPs' contents. The February 24-25 technical workshops focused more in depth on key provisions of the WMPs: vegetation management, system hardening, risk-spend efficiency, emerging technology, and reduction of the scale and scope of Public Safety Power Shutoff (PSPS) events. Again, stakeholder and public input was offered.⁶

Stakeholders were also allowed to submit comments on the WMP, to which the electrical corporation replied. Stakeholders and members of the public

⁴ Pub. Util. Code § 8386.3 (Wildfire Safety Division), § 326.1 (Wildfire Safety Advisory Board).

⁵ A ruling issued on December 19, 2019 in proceeding R.18-10-007 described and attached all of the material electrical corporations were required to use in submitting their 2020 WMPs.

⁶ Presentations, agendas and other details of the workshops appear on the Commission's WMP homepage, located at www.cpuc.ca.gov/wildfiremitigationplans/.

commented on the WMPs by April 7, 2020, and the electrical corporations responded to those comments by April 16, 2020.

2. Notice

In accordance with Pub. Util. Code § 8386(d), notice of SCE's WMP was given by posting of the WMP on the WSD's webpage, at www.cpuc.ca.gov/wildfiremitigationplans, on February 7, 2020, in accordance with the requirements of Pub. Util. Code Section 8386(d). Further, the electrical corporation served its 2020 WMP on the Commission's existing WMP formal proceeding (R.18-10-007) service list, as Resolution WSD-001 provided. Resolution WSD-001 also required the filer to post all data request responses, as well as any document referenced in its WMP, on its own website and update the website with notice to the R.18-10-007 service list on a weekly basis.

3. Wildfire Safety Division Analysis of WMP

To reach a conclusion about each WMP, WSD reviewed each electrical corporation's 2020 WMP (including updates and Geographic Information System (GIS) data), public and WSAB input, responses to WSD data requests, and responses to the maturity model survey questions. For SCE, the WSD issued three sets of data requests for missing information, clarification, and supplementation where necessary. Upon completion of this review, WSD determined whether each utility's 2020 WMP should either be approved without conditions, approved with conditions, or denied.

To reach its conclusion, the WSD reviewed the WMPs for compliance with every aspect of the WMP Guidelines and AB 1054 and requirements of the 2019 WMP Decisions. WSD designed the WMP Guidelines to require that each filer have a comprehensive WMP that contains all elements required by AB 1054. Thus, for example, every WMP must contain plans for vegetation management, system hardening, inspections of assets and vegetation, situational awareness, a plan to reduce and manage PSPS events, customer and first responder outreach and coordination, risk analysis, GIS data, a short- and long-term vision, analysis of causes of ignition, and many other elements. To evaluate WMPs, WSD assessed each plan for its completeness, the technical feasibility and effectiveness of its initiatives, whether proposed initiatives were an efficient use of resources, and for demonstration of a sufficiently growth-oriented approach to reducing utility-related wildfire risk over time.

A conditional approval explains each missing or inadequate component in the WMP. The 2020 WMP Resolutions for each electrical corporation contain a set of “Deficiencies” and associated “Conditions” to remedy those deficiencies. Each deficiency is categorized into one of the following categories, with Class A being the most serious:

1. Class A – aspects of the WMP are lacking or flawed;
2. Class B – insufficient detail or justification provided in WMP;
3. Class C – gaps in baseline or historical data, as required in 2020 WMP Guidelines.

Class A deficiencies are of the highest concern and require an electrical corporation to develop and submit to the WSD, within 45 days of Commission ratification of this Resolution, a Remedial Compliance Plan (RCP) to resolve the identified deficiency. Class B deficiencies are of medium concern and require reporting by the electrical corporation to provide missing data or update its progress in its quarterly report. Such reporting will be either on a one-time basis or ongoing as set forth in each condition. Class C deficiencies require the electrical corporation to submit additional detail and information or otherwise come into compliance in its 2021 annual WMP update. Detailed descriptions of the RCP and quarterly reports are contained in Resolution WSD-002, the Guidance Resolution on 2020 Wildfire Mitigation Plans.

4. Wildfire Safety Advisory Board Input

The WSAB provided recommendations on the WMPs of SCE, Pacific Gas and Electric Company (PG&E) and San Diego Gas & Electric Company (SDG&E) on April 15, 2020. The WSD has considered the WSAB’s recommendations, and this Resolution incorporates WSAB’s input throughout.

The WSAB focused its recommendations on high-level input and identification of shortcomings in the 2020 WMPs to inform upcoming wildfire mitigation efforts. WSAB recommendations focused on the following areas: vegetation management and inspection; grid design and system hardening; resource allocation methodology; and PSPS preparation, including communication with the community, planning, and recovery after PSPS events.

5. Public and Stakeholder Comment

The following individuals and organizations submitted comments on April 7, 2020 on SCE’s WMP and made the following points:

Many stakeholders found the utility WMPs lacking in specific and complete data, especially related to Risk Spend Efficiency (RSE). Generally, stakeholders also found comparing utilities difficult due to inconsistent reporting across utilities. The utilities received some appreciation for the general expansion of programs, with some stakeholders noting specific improvements in situational awareness. Many also reiterated that approval of the WMPs neither approves the scope or portfolio of programs nor authorizes rate recovery. This Resolution reflects the input of all commenters.

California Environmental Justice Alliance

- The electrical corporations address socioeconomic risk factors inconsistently across programs. Socioeconomic factors should be systematically considered to ensure vulnerable populations are not left behind.
- The electrical corporations should be required to conduct further analysis to determine the effectiveness of inspections.
- SCE should update its WMP to reflect the outreach requirements adopted in Decision (D.) 20-03-004.

Kevin Collins

- The WMPs are too vague, lack clear obligatory completion dates, and do not address specific performance metrics.
- SCE makes promising proposals in fault detection and situational awareness but does not provide enough information about where it will install or expand their use.

Energy Producers and Users Coalition

- SCE does not provide enough RSE information in its WMP to determine how it prioritizes activities and the cost effectiveness of each mitigation activity.

Green Power Institute

- SCE does not provide sufficient information on the connections between the results of the bowtie analysis, RSE, and proposed WMP activities.
- SCE focuses on programmatic metrics, which may not result in a plan that is the most cost-effective.

- SCE should clarify the anticipated near-term and long-term costs of its Integrated Vegetation Management approach.
- The electrical corporations show large differences in risk reduction and RSE values for similar vegetation management activities.

Mussey Grade Road Alliance

- SCE must remedy the deficiencies in its WMP as a condition of approval.
- SCE should provide a more granular breakdown regarding fire potential index calculations so that it is comparable to the PG&E and SDG&E presentations.

Orange County Fire Authority

- PG&E, SDG&E, and SCE should allocate resources to jointly fund the Fire Integrated Real Time Intelligence System (FIRIS) program.

Perimeter Solutions

- The electrical corporations do not discuss the use of fire-retardant products.

Rural Counties of California Representatives

- SCE's customer resiliency equipment incentive program is a positive feature of its WMP.
- More information is needed to better understand the extent the utilities will be able to scale back the use of PSPS events over time.
- Multi-channel communications are essential, and electrical corporations should be cautious in assuming that customers can easily "click through" a hyperlink for more information.
- The WMPs lack details that are necessary to ensure vulnerable populations are protected.
- A tool should be developed to compare the cost/benefit across utilities.

Alan Stein

- The COVID-19 shutdown has invalidated timelines in the WMPs, and the plans should be revised and resubmitted.
- An analysis should be conducted to compare the cost of simply cutting all trees that can hit lines to the cost of the multi-step process of determining which specific trees to cut.

The Utility Reform Network

- SCE's RSE showings are deficient and do not provide a basis for approving the WMP.
- The Commission should not allow electrical corporations to track costs in the wildfire mitigation memorandum account simply because the electrical corporations claim the costs are new or incremental.
- The Commission should not allow electrical corporations to include the costs of traditional maintenance inspection and repair compliance programs as costs in the wildfire mitigation memorandum accounts because these are not new programs.

Public Advocates Office at the California Public Utilities Commission

- SCE should submit a supplement that details the parameters of the emerging technology pilots.
- SCE should identify an evaluation date for its Unmanned Aerial System study and consider terminating the program.
- SCE should obtain and use 10 years of historical wind data, as opposed to modeled data, to determine high wind conditions.
- Each utility should submit a supplement demonstrating the accuracy of its wildfire models.
- The utilities are not sufficiently transparent about how resource and operational constraints affect their decision-making.

- The electrical corporations should provide a detailed justification of why undergrounding is an acceptable hardening strategy in locations where it is proposed.

SCE responded to the above comments as follows:

- *Risk-Spend Efficiency.* SCE provided sufficient data on how it developed its RSEs, and the calculation of RSE is compliant with regulatory requirements and consistent with the format requested in the WMP Guidelines. Standardized RSEs across utilities are unavailable and unnecessary to evaluate WMPs. SCE agrees that utilities should factor customer impacts of PSPS into RSE for future WMPs. An RSE is not reliable without sufficient data to estimate risk reduction benefits.
- *Vegetation Management.* SCE sufficiently justified its Hazard Tree Removal Program and other vegetation management programs.
- *Inspection.* Inspections of facilities are appropriate WMP initiatives. SCE validates the effectiveness of its inspection programs through assessments by its Compliance and Quality group.
- *Community Outreach.* SCE undertakes robust customer and community outreach efforts regarding wildfire mitigation efforts, including convening meetings and collecting feedback on ways to improve PSPS protocols. Community Resource Centers should be used to mitigate the impacts of PSPS events; however, 24 hour-a-day emergency overnight shelters should not be the responsibility of the utility.
- *PSPS Mitigation.* SCE prioritizes its PSPS mitigation and grid hardening efforts by considering community-specific attributes to reduce the frequency and scope on communities most impacted by power outages.
- *Situational Awareness.* SCE supports sharing situational awareness data with appropriate limitations to avoid the wide dissemination of sensitive information.

- *Fire Retardants.* Fire retardants and fire gels do not appear to be a viable fire mitigation measure.
- *Cooperation with First Responders.* SCE welcomes partnerships with state and local agencies advance fire suppression activities and associated pilot projects.

6. Discussion

The Commission has reviewed the actions taken by the Wildfire Safety Division (WSD) pursuant to Public Utilities Code Section 8386.3, the recommendations of the Wildfire Safety Advisory Board (WSAB), stakeholder comments served on the R.18-10-007 service list, the underlying documents, and other public input. The following aspects of the Wildfire Mitigation Plan (WMP) raised concerns for the WSD:

1. *Grid design and system hardening:* A primary concern is in the area of grid design and system hardening. Southern California Edison Company (SCE) takes an “all in” approach to the deployment of covered conductor at significant cost with minimal analysis of alternatives or analysis of why this tool warrants extensive use. SCE states that “increased use of covered conductor is anticipated to significantly reduce contact-from-object and wire-to-wire ignition risks as well as indirectly reduce the frequency of wire down events by reducing the number of faults,”⁷ but SCE does not provide evidence supporting this claim. SCE’s WMP does not adequately address alternatives to covered conductor, and SCE provides little analysis justifying where it targets grid hardening programs for the greatest risk reduction. For example, SCE fails to address how its extensive covered conductor initiative compares to other alternatives. While SCE is aggressively pursuing its covered conductor program, more detail is needed regarding which ignition risk drivers this initiative is targeting and whether other measures could more effectively reduce those risks. In the absence of further detail, it is unclear how the risk of ignition from vegetation is addressed within the covered conductor

⁷ SCE WMP (Revision 3) at 118.

- initiative, as SCE continues to also expand vegetation clearances. More comparative cost data is also needed for the covered conductor initiative as compared to alternatives, especially given the high portion of SCE's overall WMP spend allocated to the covered conductor program.
2. *Risk assessment and resource allocation:* Overall, SCE provides insufficient details regarding its risk assessment modeling initiatives and how they are used to make resource allocation decisions. SCE outlines improvements being made to its risk modeling tools, but it is unclear from SCE's WMP how these tools are used to drive decision-making on which WMP initiatives it chooses, how it decides to allocate resources among chosen initiatives, how it prioritizes chosen initiatives and where on the grid it implements chosen initiatives. For example, SCE claims to prioritize circuits based on risk-ranking but it does not specify what information is used in determining that ranking or how that circuit risk-ranking is used to determine which mitigation initiatives are deployed there. While SCE's stated advancements in risk modeling seem promising, further detail is required on how its risk modeling tools and capabilities drive its risk assessment.
 3. *PSPS:* SCE does not specifically address how its WMP initiatives affect PSPS thresholds, frequency or impacts. Although SCE claims growth and advancement in its ignition and consequence modeling capabilities, the information provided lacks sufficient detail. SCE fails to adequately address how it is leveraging such tools to assess the appropriate thresholds for initiating a PSPS event or achieve reductions in the scope, duration, and frequency of PSPS events. While SCE assumes its planned investments in grid hardening and sectionalizing initiatives will reduce PSPS impacts, its WMP lacks detail or justification of how. SCE also fails to make quantitative commitments of expected reductions in PSPS use, scope or duration.

4. *Vegetation Management*: SCE must address vegetation management in a more in-depth manner. For example, SCE's determination of "at-risk" tree species, which drives several aspects of its vegetation management activities, relies only on species growth rate, and does not incorporate additional tree characteristics or assessment. In addition, SCE's vegetation management programs need to focus less on achieving numerical targets and more on targeting programs to achieve the greatest wildfire risk reduction.
5. *Categorizing near miss incidents and ignitions*. SCE reports a disproportionately large amount of its near misses and ignitions being caused by "Other" (i.e. unspecified) sources, creating difficulties in assessing its wildfire risk drivers. This data is critical for better understanding SCE's wildfire risk and unavailability of causal information limits the WSD's ability to evaluate whether SCE has effectively targeted its primary ignition risk drivers through its WMP. With steadily increasing rates of near miss incidents attributed to "other" causes, WSD has concerns regarding the protocols and depth of SCE's investigations to determine outage causes and qualifications and training of its personnel making those determinations.

Therefore, approval of the WMP by the WSD is conditioned on compliance with each of the "conditions" set forth in Appendix A.

The following sections discuss in detail the WMP, its contents, required changes, and conditions imposed on approval. They follow the template provided in WMP Guidelines attached to the R.18-10-007 Administrative Law Judge's December 16, 2019 ruling as Attachment 1.

6.1. Persons Responsible for Executing The Plan

This section of the WMP requires that the filer designate a company executive with overall responsibility for the plan, and program owners specific to each component of the plan. The section also requires a senior officer to verify the contents of the plan, and the filer to designate key personnel responsible for major areas of the WMP.

SCE provided the required information.

6.2. Metrics and Underlying Data

The metrics and underlying data section of the WMP represents an innovation over the 2019 WMP requirements in that all filers are required to report standardized and normalized data on many aspects, including their performance metrics, conditions in their service territories, grid topology, and wildfire mitigation efforts. To remedy a concern with the 2019 plans, the 2020 WMP Guidelines disallow the practice of filers characterizing only "program targets" (e.g., number of miles of covered conductor installed or trees trimmed) as the "metrics" required by the statute.¹⁰ For 2020, the WMP Guidelines require filers to group metrics and program targets as follows.

- *Progress metrics* track how much electrical corporation wildfire mitigation activity has managed to change the conditions of electrical corporation's wildfire risk exposure in terms of drivers of ignition probability.
- *Outcome metrics* measure the performance of an electrical corporation and its service territory in terms of both leading and lagging indicators of wildfire risk, PSPS risk, and other direct and indirect consequences of wildfire and PSPS, including the potential unintended consequences of wildfire mitigation work.
- *Program targets* measure tracking of proposed wildfire mitigation activities against the scope and pace of those activities as laid out in the WMPs but do not track the efficacy of those activities. The primary use of these program targets in 2020 will be to gauge electrical corporation follow-through on WMPs.

This section first requires filers to discuss how their plans have evolved since 2019, outline major themes and lessons learned from implementation of their 2019 plan and discuss how the filers' performance against metrics used in their 2019 plans have informed their 2020 WMP. A series of tables then requires reporting of recent performance on predefined outcome and progress metrics, including numbers of ignitions, near misses, PSPS events, worker and public deaths and injuries, acreage affected, and assets destroyed by fire, and critical infrastructure impacts, as well as additional metrics the filer proposes to use to

ensure the effectiveness of its efforts in quantitatively mitigating the risk of utility-caused catastrophic wildfire.

This section also requires filers to detail their methodology for calculating or modeling potential impact of ignitions, including all data inputs used, data selection and treatment methodologies, assumptions, equations or algorithms used, and types of outputs produced. Finally, this section requires filers to provide a number of Geographic Information System (GIS) files detailing spatial information about their service territory and performance, including recent weather patterns, location of recent ignitions, area and duration of PSPS events, location of lines and assets, geographic and population characteristics and location of planned initiatives. A detailed summary and comparison of performance metrics, current state of utility service territories and resource allocation is provided in Appendix B.

SCE's WMP is generally lacking in sufficient detail on lessons learned from 2019 and incorporation of those lessons into its 2020 WMP. SCE's WMP describes major themes and lessons learned from 2019 WMPs and from implementation of 2019 wildfire mitigation initiatives, but its discussion is generally not useful. SCE's focus is almost entirely on measuring the number of mitigation activities it conducted in 2019, and meeting more of its numerical goals in 2020. However, meeting program targets does not necessarily mean the activity was effective in reducing utility-caused wildfire risk, so continuing to focus on such targets in 2020 does not demonstrate that SCE has learned any lessons.

For example, in 2019, SCE relied on 58 "metrics" that it concedes in the 2020 plan are really program targets.⁸ As noted above, meeting program targets (e.g., number of trees trimmed or miles of covered conductor installed) does not necessarily mean that the utility has reduced the risk of wildfire. Building on the premise that program targets are meaningful, SCE describes its progress on the 2019 targets. SCE states that it exceeded its target in 29% of its initiatives and reached the target in 64% of its initiatives. For the remaining 7%, or four programs, SCE states that it did not meet its initial 2019 plans due to resource constraints, operational challenges, and reprioritization of activities to address emergent issues such as PSPS events.

SCE then states it plans to repeat its focus on program targets in 2020. "Using 2019 as a baseline year, SCE has established similar Program Targets to track

⁸ SCE WMP revision 3 at 16.

performance and compliance with this WMP for 2020 as outlined in Section 5.1.13 (Table SCE 5-1)."⁹ Repeating a prior approach that the Commission stated was not helpful does not indicate SCE learned from its 2019 experience.

Two positive changes in the 2020 WMP relate to pilots and prioritizing wildfire mitigation but SCE provides little information. On pilots, SCE states it completed pilot programs as part of the 2019 WMP and utilized the observations and results from these to inform its 2020 WMP. On prioritizing work, SCE states it modified and refined several wildfire mitigation activities based on the results and findings of tracking 2019 WMP program targets.

SCE also identified leading and lagging indicators to track trends that could provide insights to develop future mitigation strategies. It notes that it proposed six discrete and focused metrics in its July 30, 2019 Report on Data Collection for WMP Report. These metrics were: Wire down events within High Fire Threat Districts (HFTD) Areas, Equipment caused ignitions in HFTD Areas, Vegetation caused ignitions in HFTD Areas, Faults on Circuits in HFTD Areas, Number of Conventional Blown Fuse Events, and Number of National Fire Danger Rating System (NFDRS) "Very Dry" and "Dry" days.

While SCE provided much of the data required by the WMP Guidelines, it provided important data late, on March 31, 2020, including age, location and condition of poles and towers.

Deficiencies and Conditions – Metrics and Underlying Data

Deficiency (SCE-1, Class B): Insufficient discussion of lessons learned.

SCE's WMP does not provide sufficient discussion in Section 2.1. While SCE provides an adequate discussion of tracking and progress in its use of metrics, the WMP Guidelines also require a discussion of major themes and lessons learned from implementation of the 2019 WMP. SCE's WMP fails to outline the broader major themes and lessons learned, and how it has incorporated these lessons learned into its 2020 WMP.

Condition (SCE-1, Class B): In its first quarterly report, SCE shall:

- i) List and describe the lessons learned from implementation of its 2019 WMP;
- ii) Describe how the lessons learned in 2019 shaped SCE's 2020 WMP; and

⁹ SCE WMP revision 3 at 16.

- iii) Describe the actions SCE has taken or plans to take to ensure the lessons learned in 2019 improve its decision-making process when it comes to selection and prioritization of WMP programs and initiatives.

6.3. Baseline Ignition Probability and Wildfire Risk Exposure

The baseline ignition probability and wildfire risk exposure section of the WMP requires electrical corporations to report baseline conditions and recent information related to weather patterns, drivers of ignition probability, use of PSPS, current state of utility equipment, and summary data on weather stations and fault indicators. The section then requires the filer to provide information on its planned additions, removals, and upgrades of equipment and assets by the end of the 3-year plan term, in urban, rural and highly rural areas. The information must describe the scope of hardening efforts (i.e., circuit miles treated), distinguish between efforts for distribution and transmission assets, and identify certain locational characteristics (i.e., urban, rural and highly rural) of targeted areas. Filers must also report the sources of ignition over the past 5 years: due to contact from objects (*e.g.*, vegetation, animals, or other objects); ignition due to equipment failure; and ignition due to "line slap" or wire-to-wire contact or contamination.

Considering that managing the potential sources of ignition from its infrastructure, operations, and equipment is the single most controllable aspect of utility wildfire risk, understanding the sources and drivers of near misses and ignitions is one of the most critical capabilities in reducing utility-caused wildfire risk. Moreover, it is important to consider these performance metrics relative to annual fluctuations in weather conditions – such as incidence of Red Flag Warning (RFW) days, days with high wind conditions (95th and 99th percentile winds), and high fire potential days measured relative to utility Fire Potential Index (FPI) or other fire danger rating systems – to better gauge relationships and thresholds between weather and fire potential indicators and utility ignitions. As such, the discussion in this section focuses on recent weather patterns, key drivers of utility ignitions and frequencies of such ignitions, recent use of PSPS, the current baseline conditions of the utility's service territory and equipment, and locations of planned utility upgrades.

The levels of risk exposure in SCE's service territory vary geographically and have varied over the last 5 years based on weather conditions. While SCE seemingly only reports overhead circuit mileage in its WMP, past data indicates approximately one third of SCE's grid is underground (Appendix B, Figure 1.1a).

Approximately one fourth of its total overhead circuits are in HFTD areas (Appendix B, Figure 1.2a). Of SCE's overhead distribution and transmission systems, 14% and 8% respectively are in HFTD and Wildland-Urban Interface (WUI) areas, which can present additional risk due to the proximity of people and flammable vegetation (Appendix B, Figure 1.3a). SCE experienced the most circuit mile days with gusts over the 95th and 99th percentile wind speeds in 2017, and the second most in 2019 (Appendix B, Figure 1.5c).

Over the last 5 years, SCE has experienced variation in outcome metrics which are not exclusively accounted for by weather. Inspection findings spiked in 2019 at 7.2 findings per total circuit mile, over 50% higher than the average annual findings from 2015-2018 (Appendix B, Figure 2.1a). While this change may reflect a change in utility asset condition, shifts in SCE inspection checklists or inspection frequency may have also contributed to this increase and may reflect increased awareness of issues with assets that formerly went undetected.

SCE has a high percentage of ignitions from "Other" causes (approximately 15% of average annual ignitions over last five years). SCE does not break down these "Other" ignitions further. SCE's use of the "Other" category to list its near misses impedes WSD's ability to analyze why its near misses are increasing. On average over the last five years 51% of near misses and 14% of ignitions are caused by "Other" drivers not detailed in SCE's WMP. In 2019, 74% of near misses were caused by "Other" drivers. (Appendix B, Figures 2.2a and 2.3a). Normalized near misses have increased each year from 2015-2019. This increase may be due to an actual increase in near misses or it may be the result of improvement in tracking methods and increased situational awareness. Commission-reportable ignitions, which are tracked in a more standardized way, have also increased each year from 2016-2019. Use of the "Other" category is a deficiency addressed in Condition SCE-3.

On average over the last five years, the largest average individual drivers of ignitions for SCE have been balloon contact (17%), other (14%), vegetation contact (14%), animal contact (12%), and conductor failure (12%) (Appendix B, Figure 2.6a). It is important to keep in mind, though, that wildfire risk has two components: (1) probability of ignition and (2) magnitude of consequence. The vast majority of ignitions do not result in catastrophic wildfires. Thus, any estimation of aggregate wildfire risk must take into account not only what the largest drivers of ignition probability are but also what the largest drivers of wildfire consequence are. To reduce aggregate risk as efficiently and quickly as possible, it will be important for SCE to improve the degree to which WMP

initiative decisions are based on its quantitative risk modeling over the plan period.

SCE also reported its highest annual PSPS use in 2019. Even normalizing for red flag warning circuit mile days (a proxy for high fire potential weather conditions), SCE PSPS events resulted in 90 times more customer hours of outages than any prior year (Appendix B, Figure 2.8a) over the past five years, indicating a shift in PSPS protocol to vastly increase its implementation of PSPS.

Deficiencies and Conditions – Baseline Risk Probability and Wildfire Risk Exposure

The concerns raised by SCE's baseline ignition probability and wildfire risk exposure initiatives are described below, and the WSD imposes conditions to ensure that the WMP is effective in reducing wildfire risk.

Deficiency (SCE-2, Class A): *Determining cause of near misses.*

Since 2015, SCE's reported near miss incidents have steadily increased every year. As SCE's near miss incidents have increased, so has the number of near miss incidents attributed to "Other" (not specified) sources. This increase is so pronounced that in 2019, 74% of SCE's near miss incidents were categorized as resulting from "Other" (i.e., unspecified sources), in accordance with Appendix B, Figure. 2.2a. It appears that with steadily increasing rates of near miss incidents, SCE has had difficulty in determining the causes of such incidents to allow for better understanding of the potential ignition risks on its grid, thus the marked increase in near miss incidents attributed to "Other" causes. This calls into question the protocols and depth of SCE's outage cause investigations as well as the training and abilities of its personnel responsible for making such determinations.

Condition (SCE-2, Class A): SCE shall submit a Remedial Correction Plan (RCP) to provide a detailed description of:

- i) The processes, procedures, protocols and tools utilized in making outage cause determinations;
- ii) The percent of these "other" ignitions that are known to SCE, and for each known ignition driver, a breakdown of each of the drivers contained in "other" ignitions;
- iii) the qualifications and training of personnel assigned to determine outage causes;

- iv) its Quality Assurance/Quality Control program for verification of outage cause data; and
- v) the actions it is taking to drive down the number of near misses and outages attributed to "other" causes, including a timeline for such actions.

6.4. Inputs to the Plan, Including Current and Directional Vision for Wildfire Risk Exposure

This section of the WMP requires the filer to rank and discuss trends anticipated to exhibit the greatest change and have the greatest impact on ignition probability and wildfire consequence, within the filer's service territory, over the next 10 years. First, filers must set forth objectives over the following timeframes: before the upcoming wildfire season, before the next annual update, within the next 3 years, and within the next 10 years.

Filers must describe how the utility assesses wildfire risk in terms of ignition probability and estimated wildfire consequence, using Commission adopted risk assessment requirements (for large electrical corporations) from the General Rate Case (GRC) Safety Model and Assessment Proceeding (S-MAP) and Risk Assessment Mitigation Phase (RAMP). The filer must describe how the utility monitors and accounts for the contribution of weather and fuel to ignition probability and wildfire consequence; identify any areas where the Commission's HFTD should be modified; and rank trends anticipated to have the greatest impact on ignition probability and wildfire consequence.

A key area which filers are required to address is PSPS. In 2019 electrical corporations proactively shutoff power to millions of customers for multiple days, resulting in numerous cascading consequences, including associated public safety concerns. The Commission has been clear in its judgement that those events were unacceptable and cannot be repeated. The new 2020 WMP Guidelines direct the electrical corporations to describe lessons learned from past PSPS events and quantify the projected decrease of circuits and customers affected by PSPS as a result of implementing wildfire mitigation programs and strategies contained in the WMP.

SCE's vision sounds reasonable:

SCE's long-term vision is to significantly reduce ignitions that could lead to devastating wildfires and substantially mitigation impacts related to implementing its wildfire

programs, including PSPS. We [SCE] also strive to safeguard SCE's electric system against wildfires irrespective of ignition source and improve system resiliency where operationally feasible.¹⁰

This section of the WMP reveals that while risk-informed planning has not historically been an essential focus of SCE's management, it has become a greater component of decision-making for strategic business and operational planning. For example, SCE has incorporated a number of improvements to its wildfire risk modeling, such as accounting for wildfire risk associated with transmission assets, re-evaluating the methodology used for calculating RSE for projects to normalize the benefits between mitigations with longer and shorter term effective useful lives, and refining the granularity of the risk analysis by circuit or line segment.

SCE also addresses near-term trends impacting ignition probability and identifies several key factors, such as weather and fuel conditions, as playing a significant role in the initiation, spread, and intensity of wildfires. Therefore, weather and fuel data serve as key inputs into the modeling to calculate probability and consequence of ignitions. Over the next 10 years, SCE believes climate change will have the largest impact on ignition probability and wildfire risk.

As a result of its modeling and before the next wildfire season, SCE intends to focus on system hardening initiatives based on existing locational risk analyses in the higher-risk areas; operational enhancements, such as expansion of its weather station network, that aim to reduce the impact of PSPS; and completion of 360-degree (aerial and ground) inspections on the highest risk structures within HFTD.

Within the next 3 years, SCE will focus on wildfire mitigation deployment and efficiencies; minimizing the impact of PSPS events on its customers and communities; refining and improving mitigation effectiveness and RSE methodology; and working with fire agencies to detect and respond to emerging fires and further partner with governments, academia, the private sector and communities.

Within the next 10 years, SCE will focus on continuing to minimize the operational need for PSPS by deploying grid hardening system-wide;

¹⁰ SCE's 2020 WMP at 31.

transitioning to operating and maintaining wildfire mitigation activities already deployed; and monitoring and evaluating new technological advances that can further SCE's wildfire mitigation effectiveness.

In general terms, SCE discusses lessons learned from PSPS events. SCE states that lessons learned focus on the need for greater stakeholder communications during PSPS events to include coordination with public safety partners and local governments. SCE also acknowledges the need for greater understanding of impacts from a PSPS event to include enhanced outage notification during PSPS events. SCE's de-energization decisions are made on a circuit-by-circuit basis, often on a sub-circuit level. Setting aside variability in weather conditions, SCE anticipates de-energization events will decrease in coming years.

One overriding concern is SCE's general lack of commitment to actual PSPS reduction and lack of commitment to targets in other areas, for example near misses.

Deficiencies and Conditions – Inputs to the plan, including current and directional vision for wildfire risk exposure

Deficiency (SCE-3, Class B): *Failure of commitment.*

A key concern the WSD has with SCE's discussion of the objectives of its WMP is the lack of firm commitment to both the reduction of PSPS events and the calling of PSPS events without those events coming to fruition. While PG&E promises to reduce by one-third the number of customers affected by PSPS events and re-energize circuits within 12 daylight hours after an "all-clear" declaration, SCE makes no such commitments.

Condition (SCE-3, Class B): In its first quarterly report, SCE shall:

- i) provide a firm commitment to a quantifiable reduction in
1) frequency, 2) scope (i.e. customers impacted), and 3)
duration of PSPS events during the plan term, including
timelines for achieving these reductions; and
- ii) explain which initiatives in its 2020 WMP are contributing
to the goals in (i) above.

Deficiency (SCE-4, Class B): *Risk reduction estimate requires further detail.*

SCE projects high confidence in the effectiveness of its initiatives, projecting a 70% decrease in ignitions between actual 2019 ignitions and projected 2020 ignitions (assuming five-year historical weather conditions, as required in

Table 31 of the 2020 WMP Guidelines). SCE further projects an approximately 9-10% annual decrease in ignitions from 2020 through 2022 (also assuming five-year historical weather conditions). SCE does not provide enough evidence regarding the deployment of its programs and historical effectiveness of these programs to substantiate this estimate. This is particularly concerning with respect to SCE's covered conductor program. SCE plans to allocate 42% of plan spend to this program and ramp up deployment rapidly, spending 70% more in 2022 than in 2020.

Condition (SCE-4, Class B In its first quarterly report, SCE shall explain:

- i. how it arrived at these estimates, including all assumptions and calculations used;
- ii. why it estimates a significant drop in 2020 with far less significant drops in 2021 and 2022 when planned spend remains relatively consistent and SCE plans on significantly ramping up covered conductor installation in 2021 and 2022;
- iii. how it expects 2020 weather conditions to compare to 5-year historical average weather conditions;
- iv. how it reconciles its estimates for 2020 with observed ignitions in 2019; and
- v. specifically how each of its initiatives contributes to risk reduction, including a breakdown of how much each initiative contributes to this reduction across each year.

6.5. Wildfire Mitigation Activity for Each Year of the 3-Year WMP Term, Including Expected Outcomes of the 3-Year Plan

This section of the WMPs is the heart of the plans and requires the filer to describe each mitigation measure it will undertake to reduce the risk of catastrophic wildfire. A description of each type of measure appears below, with elaboration in Appendix D to this Resolution.

First, the WMP Guidelines require a description of the overall wildfire mitigation strategy over the following timeframes: before the upcoming wildfire season, before the next annual update, within the next 3 years and within the next 10 years. The filer is required to describe its approach to determining how to manage wildfire risk (in terms of ignition probability and estimated wildfire consequence) as distinct from other safety risks. The filer is required to

summarize its major investments over the past year, lessons learned, and changes planned for 2020-2022; describe challenges associated with limited resources; and outline how the filer expects new technologies to help achieve reduction in wildfire risk.

Next, Section 5 requires the filer to explain how it will monitor and audit the implementation of the plan and lay out the data the filer relies on in operating the grid and keeping it safe. It then requires detailed descriptions of specific mitigations or programs, in the following order:

- 1) Risk assessment and mapping
- 2) Situational awareness and forecasting
- 3) Grid design and system hardening
- 4) Asset management and inspections
- 5) Vegetation management and inspections
- 6) Grid operations and operating protocols
- 7) Data governance
- 8) Resource allocation methodology
- 9) Emergency planning and preparedness
- 10) Stakeholder cooperation and community engagement.

Below, this Resolution evaluates the mitigations (or initiatives) SCE proposes for each of the 10 foregoing categories. After identifying each proposed mitigation or group of mitigations, the Resolution discusses concerns with the proposal, and identifies any conditions imposed. Provided in Section 1.3 of Appendix B, for illustrative purposes, are summaries of the filer's projected costs across highest total cost initiatives as well as projected costs across the highest category initiatives. Between 2020-2022, SCE plans to spend approximately \$4.5 billion on proposed mitigation initiatives.

6.5.1. Risk Assessment and Mapping

This section of the WMP requires the filer to discuss the risk assessment and mapping initiatives implemented to minimize the risk of its causing wildfires. Filers must describe initiatives related to equipment maps and modelling of: overall wildfire risk, ignition probability, wildfire consequence, risk-reduction impact, match-drop simulations, and climate/weather driven risks. This section also requires the electrical corporation to provide data on spending, miles of infrastructure treated, spend per treated line mile, ignition probability drivers

targeted, projected risk reduction achieved from implementing the initiative, Risk Spend Efficiency (RSE), and other (i.e., non-ignition) risk drivers addressed by the initiative.

The parameters of risk assessment and resource allocation to reduce wildfire risk derive from the S-MAP and RAMP for GRCs. The risk assessment methodology that governs the three large IOUs was determined through a joint Settlement Agreement (Settlement) among parties and approved in D.18-12-014. The process is being refined with each new RAMP/GRC cycle.

The S-MAP/RAMP RSE methodology applies to all identified safety risks, not just wildfires, although utility-caused wildfires are considered the top safety risk for each of the electric distribution utilities and, therefore, a big component of the risk assessment program. The WMP is an opportunity to put the S-MAP/RAMP process into practice for all covered utilities.

Each large investor-owned utility is at a different stage in using the Settlement methodology approved in D.18-12-014. Going forward each is supposed to employ uniform processes and scoring methods to assess current risk, estimate risk reduction attributable to its proposed mitigations, and establish a RSE score for each mitigation by dividing the risk reduction by the total cost of the mitigation program.

The RSE model is a tool to allocate resources toward actions that offer the greatest risk reduction per dollar spent. In accordance with the Settlement, electrical corporations are supposed to conduct this analysis at the asset level as a way to compare effectiveness of certain mitigations to alternatives.

SCE's risk assessment and forecasting initiatives consist of the following:

- Before the 2020 wildfire season, SCE states it will deploy wildfire simulation models;
- SCE states that between 2020-2022, it will (1) refine its mitigation effectiveness and RSE methodology; (2) analyze how wildfire patterns change under forward looking climate change scenarios within the WRRM; (3) integrate WRRM's fire spread modeling capabilities with SCE's asset predictive models; and (4) utilize WRRM scenarios to inform 2022 RAMP filing; and
- Longer term, between 2023-2030, SCE states it will (1) utilize integrated WRRM and asset condition data to

predict asset health condition and wildfire related risk values; (2) use WRRM climate change scenarios to inform how HFRA boundaries may evolve over time; and (3) consider where mitigations may need to be deployed in the future; and (4) engage communities and local governments in climate adaptation decision-making.

SCE has benefited from working with a consulting firm to develop a wildfire simulation model that utilizes 20-year climate data to predict historical fire-weather days, which can be leveraged to improve model accuracy and precision. Meteorological factors, including relative humidity, temperature, dead fuel moisture and wind speed/direction, are utilized as model inputs. SCE is using the model results to assess wildfire consequence, including, for example, the number of impacted structures. The benefits include (1) integrating SCE's weather forecasting data, such as more granular two kilometers (km) by two km weather scenarios, and (2) relying on more detailed vegetation, structure and population data. SCE plans to implement the WRRM in 2020 but does not provide specific detail on timeframe or goals.

In terms of its RSE analysis, SCE plans to improve its Multi-Attribute Value Function (MAVF) methodology (the framework to evaluate risk reduction) before the 2020 Wildfire season. Then, SCE plans to incorporate the updated MAVF into its WMP Annual update. Before 2022, SCE plans to incorporate lessons learned from other electrical corporation RAMP reports on their MAVF framework and incorporate it into its 2022 RAMP and subsequent WMP filings. In the longer term, SCE states that it will continue to refine modeling and analysis to a more granular level. While SCE expresses plans to evolve its RSE analysis, its 2020 WMP is lacking in this regard.

The key concerns with SCE's risk assessment and mapping initiatives include the following:

- SCE articulates a desire to better understand its risk but does not explain how the information it is gathering will improve its decision making;
- SCE has a new Wildfire Risk Reduction Model (WRRM), a fire spread model, supported by additional deployment of weather stations. SCE states it has high confidence in its ignition risk estimates – claiming a more than 95% confidence level in its maturity survey. Nonetheless, SCE

- shows 14% of average annual ignitions over the last 5 years as driven by “other” causes without explaining what SCE is doing to understand and reduce these ignitions;
- SCE does not show that it is targeting deployment of initiatives to the highest-risk areas; and
 - SCE does not show PSPS risk by circuit using wind threshold data nor explain how it will reduce that risk.

Deficiencies and Conditions – Risk Assessment and Mapping

SCE only calculated an RSE for a fraction of its initiatives. When SCE did calculate an RSE, SCE did not determine plausible alternatives. SCE did not provide a sufficient discussion of how it included resource constraints into its allocation approach. SCE also did not calculate the RSE for initiatives that indirectly reduce risks, such as equipment testing or “enablers.”

Lack of risk reduction and RSE data is not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE’s plan does not clearly reflect more sophisticated decision-making, for example, based on risk models.

Lack of sophisticated decision-making based on risk-based models is not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE provides little discussion of whether or how it uses wildfire risk modeling to prioritize initiatives. For SCE’s plan to be effective, strategic prioritization of initiatives geographically and by ignition driver to target the highest risk portions of SCE’s grid is crucial.

Lack of strategic prioritization of initiatives geographically and by initiative is not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE provides little detail on how risk mapping and models help SCE better understand the extent to which a PSPS event is needed and how it uses risk models and mapping to minimize PSPS scope, frequency or impact.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

Deficiency (SCE-5, Class B): Insufficient detail on wildfire risk model implementation.

SCE does not provide a detailed timeline of its WRRM implementation. SCE states that it will provide more information upon implementation of its WRRM in 2020 but does not provide a specific timeline or what additional information or details it will provide.

Condition (SCE-5, Class B): In its quarterly report, SCE shall provide:

- i) the status of implementation of its WRRM;
- ii) a description of how it plans to use its WRRM to evaluate its 2020 WMP initiatives, including how it will make future decisions based on this model;
- iii) all factors it will consider in this evaluation;
- iv) changes to 2020 WMP initiative type, scope, or priority being considered as a result of WRRM implementation and resultant outputs;
- v) a description of whether information from the evaluation of 2020 WMP initiatives will be used to inform scoping of those initiatives or adjustments to those initiatives in 2021 and beyond; and
- vi) if yes, a description of the criteria, including quantitative metrics, used to inform those adjustments and provision of those metrics.

6.5.2. Situational Awareness and Forecasting

The situational awareness and forecasting section of the WMP requires the filer to discuss its use of cameras, weather stations, weather forecasting and modeling tools, grid monitoring sensors, fault indicators, and equipment monitoring. Situational awareness requires the electrical corporation to be aware of actual ignitions in real time, and to understand the likelihood of utility ignitions based on grid and asset conditions, wind, fuel conditions, temperature and other factors.

Other ways of enhancing situational awareness include use of Supervisory Control And Data Acquisition (SCADA) and communications devices, sensitive settings on relays (sensitive settings), controllers, and in line fault detectors. Most utilities are in various levels of upgrade to enable the use of relays, reclosers, capacitors, circuit breakers, and fault detectors.

The WMP Guidelines refer to key situational awareness measures, including:

- 1) Installation of advanced weather monitoring and weather stations that collect data on weather conditions so as to develop weather forecasts and predict where ignition and wildfire spread is likely;
- 2) Installation of high definition cameras throughout an electrical corporation's service territory, with the ability to control the camera's direction and magnification remotely;
- 3) Use of continuous monitoring sensors that can provide near real-time information on grid conditions;
- 4) Use of a fire risk or fire potential index that takes numerous data points in given weather conditions and predicts the likelihood of wildfire; and
- 5) Use of personnel to physically monitor areas of electric lines and equipment in elevated fire risk conditions.

Regarding advanced weather monitoring and weather stations, SCE is moving aggressively toward placing a weather station on each circuit in the HFTD and sometimes more than one. This is a goal that will enable SCE to do circuit level forecasting, similar to SDG&E, instead of district level forecasting – an advancement that is captured in SCE's maturity assessment. SCE's service territory has many microclimates, so this level of granularity is warranted. SCE has completed the deployment of 482 weather stations and will continue to deploy more, primarily in High Fire Risk Areas (HFRA)¹¹ to continue to improve its weather modeling and enable more targeted PSPS. SCE is also working toward using vehicle mounted weather stations that can be placed where needed until SCE reaches the goals for placement of weather stations. This technique is novel and not used by PG&E or SDG&E.

While SCE has continued expanding its network of weather stations, it has a limited amount of weather stations in the San Gabriel Mountains (Tier 3), Los Padres National Forest (Tier 2), and the Sequoia National Forest (Tier 2). In addition to weather stations, SCE has a camera deployment level of 90%

¹¹"HFRA" or High Fire Risk Areas, are SCE's own risk maps, which do not always correspond to the Commission's "HFTD" or High Fire-Threat Districts. In its 2019 decision on SCE's WMP, the Commission directed SCE to synchronize its HFRA with the HFTD, and SCE filed an Application to do so in response. See D.19-05-038 (2019 WMP decision) and SCE Petition for Modification of D.17-12-024, now being considered in Rulemaking 15-05-006. A decision on the Petition for Modification has not been issued as of the date of this Resolution's writing.

coverage of the Tier 2 and Tier 3 of HFTD, which includes 161 high-definition cameras. SCE states that it is rapidly reaching its saturation point on camera deployment. SCE has aggressively worked to improve its FPI since early 2019. This improvement should increase SCE's ability to assess the need for PSPS.

SCE's plan provides more detail than PG&E and SDG&E on how it will sample live fuel moisture and fuel loading. SCE has also partnered with Los Angeles County Fire Department to do a fuel sampling program that will assist all utilities. Regarding personnel monitoring areas of electric lines and equipment in elevated fire risk conditions, SCE does not have a robust dedicated Safety and Infrastructure Protection Team program, similar to PG&E, but it is working toward increased staffing. SCE does, however, have designated staff who closely monitor line and weather conditions. SCE relies on human intelligence to make decisions to de-energize as close to wind events as possible. SCE has two high performance computing clusters currently and plans to add a third. These high performance computing clusters will improve SCE's ability to assess weather and fire potential index and the impact on lines and equipment.

Furthermore, SCE has prioritized gaining a more in-depth understanding of hazardous vegetation fuels. This is a positive step because fuel loads and moisture are dynamic inputs into any fire potential indexes and are not always assessed well enough. In addition, SCE is further developing its Asset and Reliability and Risk modeling. All these tools should assist SCE in determining the need for PSPS or how it otherwise needs to respond to incidents in real time; however, how it will use these tools for such purposes is not discussed.

Deficiencies and Conditions – Situational Awareness

Deficiency (SCE-6, Class B): *SCE lacks sufficient weather station coverage.*

SCE lacks sufficient weather station coverage on U.S. Forest Service National Forest lands relative to other locations. Since a large portion of Tier 2 and 3 HFTD areas are in National Forests, it is important to understand SCE's methodology for choosing where to put weather stations and its justification of why they are not in National Forests. SCE has a significantly lower density of weather stations in the San Gabriel Mountains, Los Padres National Forest and Sequoia National Forest compared to other regions of its territory. While SCE understandably has fewer electric assets in these areas, weather stations in these areas could paint a picture of how weather systems are moving across SCE's whole territory.

Condition (SCE-6, Class B): In its first quarterly report, SCE shall:

- i) explain in detail how it chooses to locate its weather stations and explain gaps or areas of lower weather station density, including in the National Forest Areas; and
- ii) provide a cost/benefit analysis of the impact of having a higher density of weather stations across its territory, including on U.S. Forest Service National Forest lands.

6.5.3. Grid Design and System Hardening

The grid design and system hardening section of the WMPs examine how the filer is designing its system and what it is doing to strengthen its distribution and transmission system and substations to prevent catastrophic wildfire. The grid design and system hardening WMP section also requires discussion of routine and non-routine maintenance programs, including whether the filer replaces or upgrades infrastructure proactively rather than running facilities to failure. Programs in this category, which often cover the most expensive aspects of a WMP, include initiatives such as the installation of covered conductors to replace bare overhead wires, undergrounding of distribution or transmission lines, and pole replacement programs. The filer is required, at a minimum, to discuss grid design and system hardening in each of the following areas:

- 1) Capacitor maintenance and replacement,
- 2) Circuit breaker maintenance and installation to de-energize lines upon detecting a fault,
- 3) Covered conductor installation,
- 4) Covered conductor maintenance,
- 5) Crossarm maintenance, repair, and replacement,
- 6) Distribution pole replacement and reinforcement, including with composite poles,
- 7) Expulsion fuse replacement,
- 8) Grid topology improvements to mitigate or reduce PSPS events,
- 9) Installation of system automation equipment,
- 10) Maintenance, repair, and replacement of connectors, including hotline clamps,

- 11) Mitigation of impact on customers and other residents affected during PSPS event,
- 12) Other corrective action,
- 13) Pole loading infrastructure hardening and replacement program based on pole loading assessment program,
- 14) Transformers maintenance and replacement,
- 15) Transmission tower maintenance and replacement,
- 16) Undergrounding of electric lines and/or equipment,
- 17) Updates to grid topology to minimize risk of ignition in HFTDs, and
- 18) Other/not listed items if an initiative cannot feasibly be classified within those listed above

SCE's grid design and system hardening plans consist of most of the items in the foregoing list. SCE intends to spend 70% of its total budget on system hardening, \$3.2 billion from 2020-2022 (Appendix B, Figure 3.3a). The key concern is SCE's failure to justify the scope of its covered conductor program, its effectiveness as compared to alternative mitigation measures, and how it will reduce PSPS events. In this section, SCE describes its 2019 grid hardening activity. It says it replaced hundreds of miles of bare conductor with covered conductor and wood poles with fire resistant poles. It installed fast-acting fuses, remote controlled sectionalizing devices in HFTD and Remote Automatic Reclosers (RARs) around the HFTD boundary.

In this WMP period, SCE will continue to install remote controlled switches to further sectionalize its circuitry and fire-resistant wrap/barrier on new treated wood poles. SCE explains that installation of this fire-resistant protective wrap/barrier to wood poles in combination with fire-resistant composite poles will allow SCE to lower costs while meeting the need of hardening its grid.

Deficiencies and Conditions - Grid Design and System Hardening

SCE is using a new protective technology to detect distribution system ground faults that SCE expects will greatly reduce ignition probability. This technology is known as Rapid Earth Fault Current Limiters (REFCLs). SCE does not identify the lessons learned and the results of the data obtained from studying the REFCL technology.

Deficiencies in reporting on piloting and implementation of new technology are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE claims covered conductor may reduce the frequency of wire down, wire-to-wire contact, and wire contact with energized equipment incidents. Installing covered conductor on its overhead lines in HFRA continues to be one of the major wildfire risk mitigation activities in SCE's WMP. To justify the emphasis in this area, SCE points to the risk reduction potential and cost effectiveness compared to other measures, such as undergrounding. SCE claims to have utilized risk analysis to determine that covered conductor was the most effective approach but does not explain the evidence that brought it to that conclusion.

SCE plans to target the replacement of 4,000 circuit miles between 2020 and 2022. SCE's analysis did not indicate if it includes an assessment of alternatives that might be more effective and less costly.

Deficiencies in lacking alternatives analysis are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

In 2020, SCE will continue to refine its evaluation methodology for undergrounding by incorporating factors such as wildfire risk reduction by removing overhead primary conductors, mitigation of PSPS frequency and impacts, and further consideration of pole removal from egress routes. Beyond 2020, SCE intends to complete the six miles of undergrounding planned for 2021 and eleven miles in 2022. SCE fails to explain how it utilized cost and permitting criteria to risk rank these undergrounding projects in comparison to alternative approaches, including use of covered conductor.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

As a result of the PSPS events in 2019, SCE states that it identified opportunities to reassess and potentially modify configurations on circuits that experienced multiple PSPS events to reduce the number of affected customers. To date, SCE has identified approximately 30 potential locations where additional circuit modifications may improve sectionalizing capability within HFRA. Design and execution of this work was initiated in late November 2019. SCE does not provide its methodology for assessing where additional grid hardening programs, beyond improved sectionalization, would reduce the number of affected customers in PSPS events based upon need, use cost, and feasibility.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE's WMP indicates that it plans to install 45 remote automatic recloser (RAR) devices in 2020 and that installation of these devices could minimize the frequency and duration of customer outages related to PSPS. SCE fails to explain how it determined the number of RAR devices to install and where to locate these devices to provide the greatest benefit of reducing customer impacts related to PSPS events.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

Deficiency (SCE-7, Class B): *Lack of discussion on factoring alternative pole materials into risk analysis.*

SCE's WMP indicates that it plans to replace wood poles with fire resistant pole materials (i.e. composite, fire wrapping, etc.) in instances where covered conductor installation requires pole replacements. SCE fails to indicate whether the addition of fire-resistant poles was factored into its risk analysis used in assessing the benefit of covered conductors.

Condition (SCE-7, Class B): In its first quarterly report, SCE shall:

- i) describe in detail whether the replacement of wood poles with fire resistant pole materials was factored into its risk models for determining covered conductor effectiveness;
- ii) if so, how this factored into the analysis and accounted for in the model outputs;
- iii) if not, why; and
- iv) how it plans to account for this impact on risk, including timeframe for inclusion.

Deficiency (SCE-8, Class B): *Insufficient detail on program to replace hotline clamps.*

Hotline clamps are known to be associated with weak connections that can result in wire down events and present potential ignition risks. SCE's WMP mentions a program to replace hotline clamps, but fails to provide sufficient detail regarding how the program is implemented, including its prioritization methodology and timeline for completion.

Condition (SCE-8, Class B): In its first quarterly report, SCE shall:

- i) explain how it identifies existing hotline clamps on its grid;
- ii) describe how it assesses which hotline clamps require replacement;
- iii) define how it prioritizes where to target hotline clamp replacements;
- iv) describe how it calculates and measures ignition risk reduction achieved by completing this replacement work; and
- v) describe how it inspects and maintains existing hotline clamps that are not scheduled for replacement, including how it prioritizes particular assets, circuits, or geographies.

6.5.4. Asset Management and Inspections

The asset management and inspections portion of the WMP Guidelines requires the filer to discuss power line/infrastructure inspections for distribution and transmission assets within the HFTD, including infrared, Light Detection and Ranging (LiDAR), substation, patrol, and detailed inspections, designed to minimize the risk of its facilities or equipment causing wildfires. The filer must describe its protocols relating to maintenance of any electric lines or equipment that could, directly or indirectly, relate to wildfire ignition. The filer must also describe how it ensures inspections are done properly through a program of quality control.

SCE states that in 2019, it inspected its distribution, transmission, and generation assets located in the HFTD, using new wildfire risk criteria as part of its Enhanced Overhead Inspection process. It conducted 450,000 ground-based inspections (all structures in SCE's original HFRA) in 5 months, a task typically performed over a three- or five-year cycle.

In 2020, SCE plans to make two modifications to its inspection and maintenance programs informed by risk analysis. First, assets that pose higher risks – for both probability of ignition and fire consequence – will be inspected more frequently. Second, SCE intends to set remediation schedules based on risk assessment. This inspection effort represents a strength of the WMP.

The following discussion outlines areas of concern with SCE's asset management and inspection proposals and imposes conditions with which SCE shall comply as a prerequisite to approval of its WMP.

Deficiencies and Conditions – Asset Management and Inspections

Deficiency (SCE-9, Class B): *Insufficient detail regarding the Pole Loading Assessment Program (PLP).*

In its WMP, SCE indicates the goal of its Pole Loading Assessment Program (PLP) is to assess the structural integrity of approximately 1.4 million poles by 2021. SCE's WMP did not include any detail regarding its PLP. SCE's WMP did not include any detail regarding how much of this work is complete nor how, when and where SCE intends to complete this work during this plan period. This lack of detail impedes WSD's ability to evaluate the program's feasibility or audit its progress and likelihood of completion.

Condition (SCE-9, Class B): In a quarterly report, SCE shall submit GIS files detailing:

- i) areas where PLP assessments have been completed during the prior reporting period; and
- ii) areas where PLP assessments are planned for the following quarter.

Deficiency (SCE-10, Class B): *Lack of discussion on inspection QA/QC program effectiveness.*

SCE's WMP fails to discuss the effectiveness of its QA/QC program to determine effectiveness of inspections nor how it corrects the issues identified by the program and ensures they are communicated to inspectors to prevent future occurrences.

Condition (SCE-10, Class B): In its first quarterly report, SCE shall provide:

- i) all metrics and other measures it uses to track and evaluate the ability of its inspectors in identifying and classifying the potential safety and reliably risks of GO 95 violations, potential ignition risks, and other safety hazards;

- ii) the threshold values of metrics and measures identified in (i) that mandate response action, e.g. retraining, change in protocols or checklists, etc...; and
- iii) all possible response actions related to findings from QA/QC review and performance metrics evaluation.

Deficiency (SCE-11, Class B): *Insufficient detail on asserted shift to risk-based asset management and inspection strategy.*

SCE states an intention to move from a compliance based to a risk-based asset management and inspection strategy. However, beyond indicating an intent to shift to a risk-based strategy, SCE provides minimal information to detail how this shift will take place. Without sufficient detail regarding how it plans to make this transition, the WSD is unable to determine whether SCE is taking the appropriate steps to achieve its ambition. SCE does not explain how it intends to shift to a risk-based asset management and inspection strategy.

Condition (SCE-11, Class B): In a first quarterly report, SCE shall detail:

- i) all initiatives it is implementing to make this transition to a risk-based strategy;
- ii) all data sources, models, and tools it is using to implement this initiative;
- iii) how it is adjusting its inspection and maintenance programs to incorporate such changes; and
- iv) how it is planning to communicate and train its inspectors of such changes.

6.5.5. Vegetation Management and Inspections

This section of the WMP Guidelines requires filers to discuss vegetation inspections, including inspections that go beyond existing regulation, as well as infrared, Light Detection and Ranging (LiDAR), and patrol inspections of vegetation around distribution and transmission lines/equipment, quality control of those inspections, and limitations on the availability of workers. The filer must also discuss collaborative efforts with local land managers to leverage opportunities for fuel treatment activities and fire break creation, methodology for identifying at-risk vegetation, how trim clearances beyond minimum regulations are determined, and how the filer considers and addresses environmental and community impacts related to tree trimming and removal (erosion, flooding, and the like).

SCE's vegetation management and inspection programs are designed to meet the requirements of GO 95, Rule 35, and other compliance requirements. The programs include pre-inspection, pruning, tree removal, pole clearing, and in more recent years, weed abatement. SCE has also expanded its vegetation management activities within HFRA. SCE is in the early stages of developing its Integrated Vegetation Management Plan (IVM). The goal of IVM is to develop sustainable shrub or grassy areas that do not interfere with overhead power lines, pose a fire hazard, or restrict access on SCE transmission rights-of-way or applicable distribution easement.

Deficiencies and Conditions – Vegetation Management

There are several areas of concern in SCE's 2020 vegetation management proposals. We describe each below and prescribe conditions with which SCE is required to comply as a condition of WMP approval.

SCE's discussion of its vegetation management programs contains a focus on numerical project targets but lacks detail on how achieving those targets correlates to reduction in vegetation caused outage or ignition risk or increase in thresholds for initiating PSPS events.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

Deficiency (SCE-12, Class C): *Insufficient justification of increased vegetation clearances.*

Throughout its WMP, SCE indicates an intent to obtain greater vegetation clearances than those required or recommended by the WSD. Moreover, based on its survey responses to vegetation-related maturity model capabilities, SCE indicates no planned growth in its vegetation management capabilities. As these vegetation management programs continue to grow in scope, SCE has yet to provide a detailed discussion or evidence of the effectiveness of increased vegetation clearances on decreasing utility near misses (i.e. outages) and ignitions.

Condition (SCE-12, Class C): SCE shall coordinate with other large electrical corporations to conduct a study detailing the effect of increased vegetation clearances on vegetation caused outage and ignition probabilities. This study shall evaluate the impact, separately, on vegetation caused outage and ignition probability as a function of clearance distance and be attached to its 2021 WMP.

SCE shall provide a report on the parameters and findings of this study in its 2021 WMP update.

Deficiency (SCE-13, Class A): *Lack of ambition in improving vegetation inspection and management capabilities.*

SCE's survey responses for the maturity model indicate that SCE does not plan on advancing its current capabilities in vegetation management and inspections. Considering that SCE significantly overspent beyond its vegetation management targets in implementing its 2019 WMP, SCE's planning, prioritization and execution of this work raises concern.

Condition (SCE-13, Class A): SCE shall file a Remedial Correction Plan (RCP) to provide a detailed plan for addressing the following:

- i) how it uses risk models and their outputs to identify and prioritize vegetation management work in areas that provide the largest reduction in utility ignition risk;
- ii) whether and how it targets VM work in areas that are historically prone to vegetation-caused outages and ignitions;
- iii) what measures and metrics it uses to track the effectiveness and efficiency of its vegetation management work; and
- iv) how it plans to integrate and leverage new technology to enhance its current vegetation inspection and management efforts.

Deficiency (SCE-14, Class B): *SCE only relies on growth rate to determine "at-risk" tree species.*

Part of SCE's vegetation management program involves its identification of "at-risk" tree species. However, SCE appears to only rely on the growth rate of trees to identify the "at-risk" species. This focus only on tree characteristics raises concern that SCE's process for identifying "at-risk" tree species does not account for factors related to outage, ignition, or PSPS risk.

Condition (SCE-14, Class B): In its first quarterly report, SCE shall detail:

- i) all the factors it considers in identifying "at-risk" tree species;

- ii) how it plans to measure the effectiveness of focusing work on "at-risk" species is for reducing vegetation-caused outages and ignitions; and
- iii) what measurable impact its work on "at-risk" tree species has on its thresholds for initiating a PSPS event.

Deficiency (SCE-15, Class B): *Insufficient detail on "additional measures" for addressing fast-growing species.*

SCE's WMP lacks detail on measures taken to address fast growing species. In Section 5.3.5.15 of its WMP, SCE indicates that it takes "additional measures" to address fast growing species but does not provide any detail regarding what those measures are or how SCE determines which additional measures must be implemented.

Condition (SCE-15, Class B): In its first quarterly report, SCE shall:

- i) list and describe what "additional measures" it takes to address fast growing tree species;
- ii) how it determines which additional measures must be implemented; and
- iii) how it evaluates the effectiveness of these additional measures at reducing vegetation-caused outages and ignitions.

Deficiency (SCE-16, Class C): *SCE lagging peer utilities in ISA-certified assessors.*

SCE has approximately half the number of ISA-certified assessors for hazard tree assessment as SDG&E, which has a significantly smaller service territory and less overhead circuit miles. SCE's lack of ISA-certified assessors raises concerns about its abilities to effectively implement its vegetation management programs.

Condition (SCE-16, Class C): In SCE's 2021 WMP update, SCE shall:

- i) describe whether SCE has sufficient ISAs to properly conduct vegetation management work; and
- ii) provide an analysis of the expected incremental cost and incremental risk reduction benefit of hiring, training, or subcontracting additional ISAs.

6.5.6. Grid Operations and Operating Protocols, Including PSPS

The grid operations and operating protocols section of the WMP requires discussion of ways the filer operates its system to reduce wildfire risk. For example, disabling the reclosing function of automatic reclosers¹² during periods of high fire danger (*e.g.*, during Red Flag Warning conditions) can reduce utility ignition potential by minimizing the duration and amount of energy released when there is a fault. This section also requires discussion of work procedures in elevated fire risk conditions, PSPS events and protocols, and whether the filer has stationed and on-call ignition prevention and suppression resources and services.

SCE commits to aggressively pursuing mitigations to minimize the impacts of PSPS on communities but provides minimal detail on how its chosen WMP initiatives will quantitatively reduce PSPS impact. SCE lists factors it relies on in initiating PSPS events, including qualified electrical workers' observations in the field; input from first responders and other emergency management personnel; the expected public safety impact (such as impacts on essential services such as public safety agencies, water pumps, and traffic controls); and extreme weather conditions.

A strength of SCE WMP is that SCE provides a number of initiatives intended to address PSPS events and the impacts of PSPS. SCE has made progress on limiting the areas impacted by the PSPS events by focusing efforts on reducing the lines that need to be shut down through sectionalization of its circuits. It also predicts its system hardening efforts will reduce PSPS risk, although no quantitative information to support this hypothesis is provided. SCE plans to increase the number of community resource centers and the incentives for customer self-resiliency to further reduce impacts of PSPS events. While these initiatives are expected to reduce PSPS impact, SCE provides no information on how it expects those reductions to be realized.

Deficiencies and Conditions – Grid Operations and Operating Protocols, including PSPS¹³

¹² A recloser is a switching device that is designed to detect and interrupt momentary fault conditions. The device can reclose automatically and reopen if a fault condition is still detected.

¹³ Several parts of SCE's WMP involve PSPS, with a long discussion in Sections 4 and 5, including references in Sections 3.3, 3.4, 4.1, 4.4, 5.1.2, 5.1.3, 5.1.6, 5.1.10, 5.2.3, 5.3.3, 5.3.4, 5.3.5, 5.3.6, 5.3.8, 5.3.9, 5.3.10, 5.5, 5.6, and 6.3; Tables

While SCE addresses numerous efforts to improve its ability to more effectively conduct PSPS and minimize PSPS impacts, a clear gap and absence of detail exist on the relationship between various grid hardening, vegetation management, and asset management initiatives and corresponding impacts on thresholds for initiating PSPS events. PSPS modeling is also overall deficient. It is not clear how SCE incorporated consequences of PSPS or impact of the PSPS events on customers and property into modeling.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

6.5.7. Data Governance

The data governance section of the WMP Guidelines seeks information on the filer's initiatives to create a centralized wildfire-related data repository, conduct collaborative research on utility ignition and wildfire, document and share wildfire-related data and algorithms, and track and analyze near miss data.

SCE's data governance consists of processes and tools to help manage large datasets from inspections, remediation and risk assessment. SCE plans to invest in automation, machine learning, and artificial intelligence over this WMP period, in order to integrate wildfire data in areas including vegetation management, asset inspections, and PSPS. In 2020, SCE plans to focus on measuring and managing its data quality. SCE also plans an integrated system for data management, enabling analysis and comprehensive decision making. SCE plans to develop the ability to analyze data across its new and existing databases over the next three years. SCE fails to sufficiently describe goals, program targets, and investments.

Deficiencies and Conditions - Data Governance

There are several areas of concern in SCE's 2020 data governance proposals. The WSD describes each below and prescribe conditions with which SCE is required to comply as a condition of WMP approval.

20, 22, 26, 29, SCE 5-0-3, SCE 5-0-6, SCE 5-0-9, SCE 5-0-10, SCE 5-6, SCE 5-7, SCE 5-8, SCE 5-9, SCE 5-10; and Figure 5-1.

Deficiency (SCE-17, Class B): *Insufficient detail on collaborative research efforts.*

SCE asserts that it has well-established initiatives for collaborative research with academic institutions, but its WMP fails to provide details on how this collaboration is executed, planned to evolve over the plan term, or which research it plans to invest in.

Condition (SCE-17, Class B): In its first quarterly report, SCE shall detail:

- i) with whom and how it collaborates with academic institutions to further its research on utility ignition issues;
- ii) how it plans to evolve these collaborations over the plan term; and
- iii) which research it plans to invest in during the plan term.

Deficiency (SCE-18, Class B): *Insufficient detail on targets and goals of centralized data repository.*

SCE explains its plans for creating and implementing a centralized repository of data to be leveraged across a number of wildfire mitigation programs and activities. SCE's discussion of this centralized data repository lacks sufficient detail on goals and targets related to this program, as well as how the centralized data repository will evolve during the plan period.

Condition (SCE-18, Class B): In its first quarterly report, SCE shall detail:

- i) its goals and targets related to implementation of this centralized data repository;
- ii) how the centralized data repository will evolve during the plan period;
- iii) which specific WMP programs or initiatives will utilize this centralized data repository;
- iv) all the sources of data input into this centralized data repository; and
- v) treatment and QA/QC of data identified in (iv).

6.5.8. Resource Allocation Methodology

The resource allocation section of the WMPs requires the filer to describe its methodology for prioritizing programs to minimize the risk of its equipment or facilities causing wildfires in the most cost-efficient manner. This section requires

filers to discuss risk reduction scenario analysis and provide an RSE analysis for each aspect of the plan.

SCE's plan describes how it decides where to spend money on wildfire mitigation in fairly general terms. It explains constraints based on availability of SCE employees and contractors to plan, design, engineer, and implement mitigation work. SCE explains that in many cases the same resources that are required to support wildfire mitigation activities are used for SCE's traditional infrastructure replacement work. SCE states that these resources are finite, and that it faces real resource constraints. Over the next few years, SCE plans a slower pace of routine infrastructure replacement and load growth activities to devote resources to wildfire mitigation work.

SCE highlights its Wildfire Risk Reduction Model (WRRM), which quantifies wildfire risk down to specific circuits and circuit segments across the HFRA. It enables SCE to identify potential high-risk circuits and segments so as to target mitigation such as covered conductors, undergrounding, equipment replacement, or other strategies.

SCE's Public Safety Program Management Office (PMO) provides oversight and prioritization for its wildfire mitigation activities and conducts risk analysis. Last year, SCE had estimated a \$1.4 million budget for PMO in its 2019 plan, but actual spending was nearly \$6.5 million. SCE's expected spending is between \$9.1-\$9.5 million per year from 2020-2022.

Resource allocation can also be compared across the large three electrical corporations. Appendix B, Figure 3.1a illustrates the total planned spend for each utility during the plan period (2020-2022). The planned spend is presented as total and normalized for overhead HFTD circuit miles.¹⁴ As presented in Appendix B, Figure 3.1a, when assessing planned spend per circuit mile in HFTD, the large three electrical corporations are roughly planning to spend similar amounts. On average, the large three electrical corporations plan to spend approximately \$305,000 per HFTD circuit mile. SCE's planned spend of approximately \$318,000 per HFTD circuit mile is the high end of the large three IOUs and is approximately 4% more than the average of the two other large IOUs.

¹⁴ Considering that much of the planned spend will occur in HFTD areas, the HFTD circuit mile normalization is focused on in this discussion. However, it should be noted that utility-provided information was used to populate Appendix B, Figure 3.1a and errors exist in utility calculations for spend totals, as well as inconsistent interpretations on what data to report (*i.e.*, overhead vs. total miles, transmission vs. distribution, etc.) for circuit mileage.

Appendix B, Figures 3.2a and 3.3a show the same information, planned spend by category for the plan period, but in different formats. The planned spend is normalized by HFTD circuit miles.¹⁵ Appendix B, Figures 3.2a and 3.3.a show that over 90% of each of the large IOUs' planned spend is allocated to the following four WMP categories: (1) grid design and system hardening, (2) vegetation management and inspections, (3) asset management and inspections, and (4) grid operations and protocols. On average, the large three IOUs plan to allocate approximately 93% of their planned spend on initiatives across these four WMP categories. Moreover, all large electrical corporations plan to spend more than half their total budget on grid design and system hardening initiatives and approximately 5% of their budget on other enabling initiatives (e.g., situational awareness, risk assessment and mapping, etc.).

Appendix B, Figure 3.5a lists the top five initiatives by planned spend for SCE.¹⁶ It shows that the top five individual initiatives represent nearly 70% of SCE's planned spend during the plan period, and covered conductor makes up over 40% of that total. SCE plans to steadily increase covered conductor deployment, resulting in average annual increases over 30% in each plan year. SCE plans to steadily reduce vegetation clearance work but increase spending on hazard tree remediation. Conversely, SCE spent 325% more than it planned on vegetation clearance in 2019 and only about 25% of what it planned on spending for hazard tree remediation.

An important contradiction appears between SCE's WMP and its maturity survey. In its WMP, it states its WRRM helps it target grid hardening by quantifying the probability of ignition at the asset level, but gives no detailed information.¹⁷ SCE's survey responses on maturity model capability 12 indicates that over the plan period, it does not currently and does not plan to take wildfire risk into account for routing new portions of its grid.

Deficiencies and Conditions – Resource Allocation Methodology

There are several areas of concern in SCE's 2020 resource allocation methodology proposals. The WSD describes each below and prescribe conditions with which SCE is required to comply as a condition of WMP approval.

¹⁵ It should be noted that utility-provided information was used to populate the information in Appendix B, Figures 3.2a and 3.3a and errors exist in utility calculations for spend totals, as well as inconsistent interpretations on what data to report (i.e., overhead vs. total miles, transmission vs. distribution, etc.) for circuit mileage.

¹⁶ Appendix B, Figure 3.5a and 45 should be considered in conjunction with WMP Tables 6 and 8.

¹⁷ See, SCE WMP, Section 4.3.

Although SCE states its WRRM provides granular asset-level quantification of ignition probability, SCE does not elaborate on how it leveraged WRRM to develop its planned WMP initiatives or to evaluate alternatives.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

While SCE is developing models to estimate risk across its service territory, there is a lack of focus on how these models can be used in practice to prioritize initiatives to address specific ignition drivers and geographies. By continuing to improve wildfire risk modeling and basing its wildfire mitigations on its wildfire risk modeling outputs, SCE could potentially achieve a greater level of risk reduction with the same resources. SCE has not provided sufficient detail to demonstrate how they are leveraging risk models to target the highest risk portions of the grid. Specifically, SCE does not outline in detail how it determines where to prioritize to improve asset management or determine portions of circuits that would benefit the most from hardening, and vegetation management. SCE also does not carefully identify circuits and assets in which vegetation management is less needed to reduce the scope of the vegetation management to where it is most effective.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

SCE's WMP includes an assessment of priorities, which resulted in SCE's "conscious decision" to pursue certain programs at a slower pace in order to divert resources to higher safety risk mitigations. Such assessments are considered "supporting" activities, according to SCE, and, therefore, SCE does not provide cost/budget details in Table 28 of the WMP. The only component for which budget figures are included is the Project Management Office. As a result, quantitative analysis is difficult.

Deficiencies such as these are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

Deficiency (SCE-19, Class B): *SCE does not sufficiently justify the relative resource allocation of its WMP initiatives to its covered conductor program.*

SCE's total investment in covered conductor is 42% of the entire WMP budget, growing from \$240 million actual spending in 2019 to \$775 million projected spending in 2022, as shown in Appendix B, Figure 3.5a. SCE's spend on covered conductors is much greater than that of its peer electrical corporations. It is also noteworthy that while SCE projected spending \$42 million on covered conductor installation in its 2019 WMP, its 2020 WMP reports SCE actually spent \$240

million – nearly five times over its 2019 projections.¹⁸ SCE does not sufficiently justify the relative resource allocation of its WMP initiatives to its covered conductor program with any quantifiable risk reduction information.

Condition (SCE-19, Class B): In its first quarterly report, SCE shall provide:

- i) further justification, including a RSE analysis of alternatives, for the costs associated with the covered conductor initiative,
- ii) an explanation of how SCE derived the ignition reduction potential of covered conductor, including with reference to its projected ignitions in Table 31 of its WMP,
- iii) a detailed explanation of why this initiative, as opposed to others, warrants such a large percentage of its spend given its ignition reduction potential,
- iv) justification and rationale for its planned ramping up of spend on covered conductor each year of the plan term, and
- v) a detailed description of relationship between spend and forecasted circuit miles approved in D.20-04-013 and that presented in SCE's 2020 WMP.

6.5.9. Emergency Planning and Preparedness

The WMP Guidelines require a general description of the filer's overall emergency preparedness and response plan, including discussion of how the plan is consistent with legal requirements for customer support before, during and after a wildfire, including support for low income customers, billing adjustments, deposit waivers, extended payment plan, suspension of disconnection and nonpayment fees, and repairs. Filers are also required to describe emergency communications before, during, and after a wildfire in English, Spanish, and other languages required by the Commission

The WMP Guidelines also require discussion of the filer's plans for coordination with first responders and other public safety organizations, plans to prepare for

¹⁸ Of note, the Commission, in D.20-04-013, adopted a proposed settlement in SCE's Grid Safety and Resiliency Program proceeding, Application 18-09-002. A portion of the adopted settlement pertained to SCE's recent deployment of covered conductors, and the decision approved capital expenditures of approximately \$285 million, or \$428,000 per circuit mile for deployment of covered conductor in 2018-2020. The settlement adopted a forecasted deployment of 592 miles of covered conductor. The WSD's analysis centers on future deployment and spend not already approved in 2020-2023, although there is likely some overlap between SCE's presentation of covered conductor in its 2020 WMP and in Application 18-09-002.

and restore service, including workforce mobilization and prepositioning of equipment and employees, and a showing that the filer has an adequate and trained workforce to promptly restore service after a major event.

SCE's emergency planning and preparedness plans consist of emergency communication; a trained workforce to assist during emergencies and for service restoration; community outreach to increase public awareness of emergency planning, including PSPS protocols; customer support, such as executing high-volume targeted notifications within a very short timeframe; disaster and emergency preparedness, including guidelines to ensure rapid re-energization following a PSPS event; and protocols to debrief following wildfire events.

From SCE's WMP, it is clear that SCE is investing early in their workforce with regular testing of emergency scenarios through learning from real-world incidents and drills. SCE is also focused on giving real-time feedback to its workforce for improvement and best practices.

SCE asserts that it enhanced its communications plans after the wildfires of 2017. SCE is upgrading its Emergency Outage Notification System to execute high volume notification within short timeframes to customers and non-customers. SCE is also addressing methods to notify master meter customers, such as trailer parks. However, one concern discussed below is notice fatigue, since in 2019 SCE notified customers many times of impending PSPS events that never materialized. Lack of precision in PSPS decision-making and sloppy implementation of notification requirements led to persistent PSPS events throughout the early summer in 2019 and commensurate notification fatigue.

Deficiencies and Conditions – Emergency Planning and Preparedness

Deficiency (SCE-20, Class B): *Potential notification fatigue from frequency of PSPS events and communications.*

SCE's rapid expansion of PSPS implementation and the associated decision-making to "call" a PSPS led to constant and persistent PSPS events in the summer of 2019. Given PSPS notification requirements, this led SCE's customers and public safety partners to experience notification fatigue, which could reduce the effectiveness of SCE's notifications. Striking the right balance for timely and accurate notifications is paramount to effective emergency planning and preparedness. SCE's PSPS notifications in 2019 were criticized for being overwhelming, inaccurate or confusing.

Condition (SCE-20, Class B) In its quarterly report, SCE shall detail:

- i) its plans for ensuring PSPS notifications are both timely and accurate;
- ii) the number of PSPS events initiated during the prior quarter;
- iii) the number of pre-event notifications sent for each event; and
- iv) the number of false-positive pre-event notifications (i.e. a customer was notified of an impending PSPS event that did not occur) for each event.

6.5.10. Stakeholder Cooperation and Community Engagement

The final topic covered in Section 5 relates to the extent to which the filer will engage the communities it serves and cooperate and share best practices with community members, agencies outside California, fire suppression agencies, forest service entities and others engaged in vegetation management or fuel reduction.

In 2019, SCE conducted approximately 350 meetings with local government, tribal officials, community organizations, and the public about wildfire, WMP initiatives and PSPS.

In 2020, SCE plans to focus on communities impacted by multiple PSPS events. In addition, SCE will (1) establish an international joint utility wildfire committee with two of the major Australian electric utilities, AusNet Services and Powercor Australia; (2) continue outreach and coordination efforts with emergency management representatives of water, cable and telecommunications providers through The California Utilities Emergency Association; (3) continue meetings with local government and tribal officials, community organizations, and the general public to further enhance partnerships, increase awareness, and discuss lessons learned; (4) participate in preparedness and coordination meetings hosted by Cal OES; and (5) explore virtual community meetings to increase the reach of its meetings.

Deficiencies and Conditions – Stakeholder cooperation and community engagement

Continued close coordination with the stakeholder community is vital to the successful execution of SCE's WMP. SCE does not provide adequate detail on regular, direct engagement with local partners, including city and county emergency management, critical infrastructure, and vulnerable, at-risk customers.

Vague commitments in the area of stakeholder cooperation and community engagement are not unique to SCE. As such, this deficiency and associated condition is addressed in the Guidance Resolution, WSD-002.

Deficiency (SCE-21, Class B): *Insufficient detail on sharing of best practices.*

In Section 5.3.10 of its WMP, SCE did not provide sufficient detail regarding its sharing of best practices with entities outside of California. This discussion is a required element of 2020 WMPs pursuant to the Guidelines.

Condition (SCE-21, Class B): In its first quarterly report, SCE shall:

- i) detail its progress regarding best practice sharing with entities outside of California,
- ii) include a description of how such interactions have changed or improved, including specific examples, and
- iii) include a description of how it has applied lessons learned into its 2020 WMP.

Deficiency (SCE-22, Class B): *Lack of detail on resources needed for collaboration on fuel reduction efforts.*

A large portion of SCE's HFTD area falls within federal lands. As such, it is imperative that SCE maintain close coordination and working relationships with the U.S. Forest Service (USFS), which is responsible for managing federal lands. SCE identifies specific ways in which it coordinates with the USFS, which appear sufficient for receiving permits for fuel reduction, but SCE does not address the resources needed to collaborate on fuel reduction efforts and establish formal agreements.

Condition (SCE-22, Class B): In its first quarterly report, SCE shall describe:

- i. whether it plans to collaborate with the USFS on fuel reduction programs in its service territory;

- ii. what programs or agreements, if any, it has in place with the USFS for fuel reduction programs;
- iii. the timeline for implementing initiatives identified in (i) and (ii);
- iv. how it plans to identify the resources needed to collaborate with the USFS on fuel reduction; and
- v. the status of reaching any formal agreements on fuel reduction efforts.

7. Maturity Evaluation

In 2020, WSD introduced a new Utility Wildfire Mitigation Maturity Model, to establish a baseline understanding of utilities' current and projected capabilities and assess whether each utility is progressing sufficiently to improve its ability to mitigate wildfire risk effectively. The maturity model also serves as an objective means of comparing across utilities and provides a framework for driving utility progress in wildfire risk mitigation over time. WMP filers were required to complete a survey in which they answered specific questions which assessed their existing and future wildfire mitigation practices across 52 capabilities at the time of filing and at the end of the three-year plan horizon. The 52 capabilities are mapped to the same 10 categories identified in Section 5 above.¹⁹

The maturity model will continue to evolve each year to reflect best practices and lessons learned. With the inaugural use of the maturity model in 2020, it is important to note that the resulting maturity level is to be informative of a utility's capabilities within the context of the underlying assessment criteria. Accordingly, it is essential that the maturity levels are understood within the context of the qualitative detail supporting each level. The model results require context and should not be interpreted as the final word on an electrical corporation's wildfire mitigation capabilities without an understanding of the scoring process described in the Guidance Resolution. As such, the final maturity model outputs should be viewed as levels or thresholds – they are not absolute scores.

¹⁹ A detailed description of the purpose and use of the maturity model is provided the Guidance Resolution being issued concurrently with the instant Resolution.

Summary of SCE Maturity Evaluation

The maturity assessment shows that SCE is in the early stages of its maturity growth and is mostly focused on building foundational capabilities, such as risk assessment and mapping and resource allocation. SCE's development in these foundational, enabling capabilities provides an opportunity for the WSD and the Commission to guide this development and drive towards increased transparency and standardization in decision-making.

SCE's initial maturity model assessment provides a good example of the importance of evaluating the qualitative details generated from the maturity model outputs and not simply taking the maturity levels at face value. By looking at the maturity levels in 2020 and 2023, as shown in Section 1.3 of Appendix C, SCE's maturity assessment reflects little to no projected growth across numerous categories. However, in examining the supporting details like its survey question responses, SCE's maturity assessment reveals projected growth across various capabilities. This planned growth, though, does not typically meet the threshold criteria for achieving a higher maturity level.

Nevertheless, SCE projects to increase its ignition risk estimation capabilities to quantitatively and accurately assess the risk of ignition across its grid by 2023, as well as reliably estimate the risk reduction potential of initiatives with asset-level granularity. Notably, in response to the maturity survey questions, SCE indicates it uses a 95% confidence interval in estimating ignition risk. When it comes to asset management and inspections, SCE plans to expand its asset inventory database to include additional information related to asset condition, maintenance history, up-to-date work plans and circuit-level risk by 2023. SCE plans increasing its maturity across a number of data collection and governance capabilities, including plans to be able to simulate wildfire potential based on near miss data, as well as respond to near miss data to change grid operation protocols in real time by 2023. By the end of the plan term, SCE also plans to have a centralized database for situational, operational, and risk data that can be used to run advanced analytics which inform short-term and long-term decision making.

SCE's maturity assessment also reveals several categories and capabilities that minimal maturity growth is projected. For example, based on SCE's survey responses, it projects no growth across all capabilities in the vegetation management and inspections category.

A detailed summary of SCE's maturity model responses and results is provided in Appendix C.

8. Impact of COVID-19 Pandemic

After SCE submitted its WMP, on March 19, 2020, California Governor Gavin Newsom signed Executive Order N-33-20 requiring Californians to stay at home to combat the spread of the COVID-19 virus. Specifically, Governor Newsom required Californians to heed the order of the California State Public Health Officer and the Director of the California Department of Public Health that all individuals living in California stay home or at their place of residence, except as needed to maintain continuity of operation of the federal critical infrastructure sectors, in order to address the public health emergency presented by the COVID-19 disease (stay-at-home order).²⁰

As articulated in the March 27, 2020 joint letters²¹ of the WSD, CAL FIRE and the California Governor's Office of Emergency Services regarding essential wildfire and PSPS mitigation work during COVID-19 sent to each electrical corporation, electrical corporations are expected to continue to prioritize essential safety work. The WSD expects the electrical corporations to make every effort to keep WMP implementation progress on track, including necessary coordination with local jurisdictions. Such effort is essential to ensuring that electrical corporations are prepared for the upcoming and subsequent wildfire seasons, while complying with COVID-19 restrictions requiring residents to shelter-in-place, practice social distancing, and comply with other measures that California's public health officials may recommend or that Governor Newsom or other officials may require in response to the COVID-19 pandemic.

Furthermore, the WSD expects the electrical corporations to continue to make meaningful progress on PSPS mitigation goals, including continuing with sectionalization projects, local outreach and coordination, establishing customer resource centers, and microgrid projects. Electrical corporations are expected to limit planned outage work during this time to wildfire mitigation, PSPS reduction, projects that immediately impact reliability if delayed, and emergency/public safety outages. In addition, electrical corporations are

²⁰ Executive Order N-30-20. Available at <http://covid19.ca.gov/img/Executive-Order-N-30-20.pdf>.

²¹ <https://www.cpuc.ca.gov/covid/>. Letters to each electrical corporation are found under the heading "Other CPUC Actions", March 27, 2020: Joint Letters to IOUs re: Essential Wildfire and PSPS Mitigation Work.

expected to undertake any other critical work related to operating a safe and reliable grid and to mitigate wildfire and/or PSPS risk.

9. Conclusion

- SCE's Wildfire Mitigation Plan contains all of the elements required by AB 1054, Pub. Util. Code Section 8386(c) and all
- SCE's WMP is approved, subject to the conditions set forth in Appendix A.

10. Comments

Pub. Util. Code § 311(g)(1) provides that resolutions must be served on all parties and subject to at least 30 days public review. However, given that this resolution is issued outside of a formal proceeding, interested stakeholders need not have party status in R.18-10-007 in order to submit comments on the resolution. Please note that comments are due 20 days from the mailing date of this resolution. Replies will not be accepted.

This draft resolution was served on the service list of R.18-10-007 and posted on the Commission's website, www.cpuc.ca.gov/wildfiremitigationplans, and it will be placed on the Commission's agenda no earlier than 30 days from today.

Findings

1. AB 1054 and Commission Resolution WSD-001 require SCE to file a WMP for 2020 that conforms with Pub. Util. Code § 8386(c) and guidance provided by the WSD and served on the R.18-10-007 service list on December 16, 2019 by ALJ ruling.
2. The WMPs were reviewed and acted upon with due consideration given to comments received from governmental agencies, the WSAB members of the public, and all other relevant stakeholders.
3. The WMPs were reviewed and acted upon in compliance with all relevant requirements of state law.
4. SCE's WMP contains all the elements required by AB 1054, Pub. Util. Code § 8386(c).
5. SCE has satisfied the requirements of Pub. Util. Code § 8386(c) and the WMP Guidelines.
6. Appendix A contains findings regarding deficiencies in SCE's WMP.

THEREFORE, IT IS ORDERED THAT:

1. Ratification of the Wildfire Safety Division's approval of Southern California Edison Company's Wildfire Mitigation Plan is subject to conditions set forth in Appendix A.
2. The Wildfire Safety Division's approval of Southern California Edison Company's 2020 Wildfire Mitigation Plan, conditioned upon Southern California Edison Company's compliance with the conditions listed in Appendix A, is hereby ratified.
3. Southern California Edison Company shall submit an update to its Wildfire Mitigation Plan in 2021 according to the forthcoming guidance and schedule issued by the Wildfire Safety Division.
4. Southern California Edison Company shall submit a new comprehensive 3-year Wildfire Mitigation Plan in 2023.
5. Nothing in this Resolution should be construed as approval of the costs associated with Southern California Edison Company's Wildfire Mitigation Plan mitigation efforts.
6. Southern California Edison Company may track the costs associated with its Wildfire Mitigation Plan in a memorandum account, by category of costs, and shall be prepared for Commission review and audit of the accounts at any time.
7. Southern California Edison Company shall submit a letter to the Wildfire Safety Division containing any updates to scope, timing or other aspects of any mitigation set forth in its Wildfire Mitigation Plan as result of the COVID-19 pandemic, including Public Safety Power Shutoff. The letter shall list items using the same names and sections used in the Wildfire Mitigation Plan and give a thorough description of why the COVID-19 pandemic requires the specified action. The letter shall be submitted within 60 days of issuance of this Resolution and shall be addressed to the Director of the Wildfire Safety Division. The letter shall be emailed to wildfiresafetydivision@cpuc.ca.gov with service on the service list of Rulemaking 18-10-007. If there are no changes to report, no such submission is required.
8. Nothing in this Resolution should be construed as a defense to any enforcement action for a violation of a Commission decision, order, or rule.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on _____; the following Commissioners voting favorably thereon:

Alice Stebbins
Executive Director

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

RESOLUTION WSD-004 - Resolution Ratifying Action of the
Wildfire Safety Division on Southern California Edison Company's
2020 Wildfire Mitigation Plan Pursuant to Public Utilities Code
Section 8386.

INFORMATION REGARDING SERVICE

I have electronically served all persons on the attached official service list who have provided an e-mail address for R.18-10-007.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the document to be served by U.S. mail on all parties listed in the "Party" category of the official service list for whom no e-mail address is provided.

The official service list I use is current as of today's date.

Dated May 7, 2020, at San Francisco, California.

/S/ ANTONINA V. SWANSEN
Antonina V. Swansen

N O T I C E

Persons should notify the Process Office, Public Utilities Commission, 505 Van Ness Avenue, Room 2000, San Francisco, CA 94102, of any change of address to ensure that they continue to receive documents. You must indicate the proceeding number on the service list on which your name appears.

The Commission's policy is to schedule hearings (meetings, workshops, etc.) in locations that are accessible to people with disabilities. To verify that a particular location is accessible, call: Calendar Clerk (415) 703-1203.

If specialized accommodations for the disabled are needed, e.g., sign language interpreters, those making the arrangements must call the Public Advisor at (415) 703-2074 or TDD# (415) 703-2032 five working days in advance of the event.

