# APPENDIX A

## Deficiencies and Conditions

| SCE-1 | Lessons learned not sufficiently described. |
| --- | --- |
| Class | B |
| Deficiency | 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 | In its first quarterly report, SCE shall:<br>   i.   list and describe the lessons learned from implementation of its 2019 WMP,<br>  ii.   describe how the lessons learned in 2019 shaped SCE's 2020 WMP and<br> 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. |

| SCE-2 | Determining cause of near misses. |
|---|---|
| **Class** | A |
| **Deficiency** | 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 shall submit a Remedial Compliance Plan (RCP) to provide a detailed description of: <br> i. the processes, procedures, protocols and tools utilized in making outage cause determinations, <br> 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, <br> iii. the qualifications and training of personnel assigned to determine outage causes, <br> iv. its Quality Assurance/Quality Control program for verification of outage cause data; and <br> 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. |

| | |
|---|---|
| **SCE-3** | **Failure of commitment.** |
| **Class** | B |
| **Deficiency** | 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** | In its first quarterly report, SCE shall: <br> 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 <br> ii. explain which initiatives in its 2020 WMP are contributing to the goals in (i) above. |

| SCE-4 | SCE risk reduction estimation requires further detail |
|---|---|
| **Class** | B |
| **Deficiency** | 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 to 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** | In its first quarterly report, SCE shall explain:<br>i.    how it arrived at these estimates, including all assumptions and calculations used;<br>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;<br>iii.    how it expects 2020 weather conditions to compare to 5-year historical average weather conditions;<br>iv.    how it reconciles its estimates for 2020 with observed ignitions in 2019; and<br>i. 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. |

| SCE-5 | Detailed timeline of WRRM implementation not provided. |
|---|---|
| **Class** | B |
| **Deficiency** | 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 of what additional information or details it will provide. |
| **Condition** | In its quarterly report, SCE shall provide:<br>   i.   the status of implementation of its WRRM,<br>   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,<br>   iii.   all factors it will consider in this evaluation,<br>   iv.   changes to 2020 WMP initiative type, scope, or priority being considered as a result of WRRM implementation and resultant outputs,<br>   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 if yes, a description if the criteria (including quantitative metrics) used to inform those adjustments and provision of those metrics. |

| SCE-6 | SCE lacks sufficient weather station coverage. |
|---|---|
| **Class** | B |
| **Deficiency** | 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** | In its first quarterly report, SCE shall:<br> 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<br> 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. |

| SCE-7 | Does not describe whether fire-resistant poles were factored into risk analysis |
|---|---|
| Class | B |
| Deficiency | 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 | In its first quarterly report, SCE shall: <br> 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, <br> ii. if so, how this factored into the analysis and accounted for in the model outputs, <br> iii. if not, why, and <br> iv. how it plans to account for this impact on risk, including timeframe for inclusion. |

| SCE-8 | Lack of detail on hotline clamp replacement program. |
|---|---|
| **Class** | B |
| **Deficiency** | 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, however fails to provide sufficient detail regarding how the program is implemented, including its prioritization methodology and timeline for completion. |
| **Condition** | In its first quarterly report, SCE shall: <br> i. explain how it identifies existing hotline clamps on its grid; <br> ii. describe how it assesses which hotline clamps require replacement; <br> iii. define how it prioritizes where to target hotline clamp replacements; <br> iv. describe how it calculates and measures ignition risk reduction achieved by completing this replacement work; and <br> 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. |

| SCE-9 | **Lack of detail regarding Pole Loading Assessment Program.** |
|---|---|
| **Class** | B |
| **Deficiency** | 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 it's 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** | In a quarterly report, SCE shall submit GIS files detailing: <br> i. areas where PLP assessments have been completed during the prior reporting period, and <br> ii. areas where PLP assessments are planned for the following quarter. |

| SCE-10 | Lack of detail on effectiveness of inspection program QA/QC. |
|---|---|
| Class | B |
| Deficiency | 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 | In its first quarterly report, SCE shall provide:<br>  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;<br>  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<br>  iii. all possible response actions related to findings from QA/QC review and  performance metrics evaluation. |

| SCE-11 | **Lack of explanation around shift to risk-based asset management.** |
|---|---|
| **Class** | B |
| **Deficiency** | 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** | In a first quarterly report, SCE shall detail:<br>i.    all initiatives it is implementing to make this transition to a risk-based strategy;<br>ii.    all data sources, models, and tools it is using to implement this initiative;<br>iii.    how it is adjusting its inspection and maintenance programs to incorporate such changes; and<br>iv.    how it is planning to communicate and train its inspectors of such changes. |

| SCE-12 | SCE does not provide evidence of effectiveness of increased vegetation clearances |
|---|---|
| Class | A |
| Deficiency | 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 shall submit an RCP with a plan for the following:<br>i. Comparing areas with and without enhanced post-trim clearances to measure the extent to which post-trim clearance distances affect probability of vegetation caused ignitions and outages;<br>ii. Collaborating with PG&E and SDG&E, in accordance with PGE-26 and SDGE-13, to develop a consensus methodology for how to measure post-trim vegetation clearance distance impacts on the probability of vegetation caused ignitions and outages. |

| SCE-13 | Lack of advancement in vegetation management and inspections |
|---|---|
| **Class** | A |
| **Deficiency** | 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 shall file a Remedial Compliance Plan (RCP) to provide a detailed plan for addressing the following:<br>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;<br>ii. whether and how it targets VM work in areas that are historically prone to vegetation-caused outages and ignitions;<br>iii. what measures and metrics it uses to track the effectiveness and efficiency of its vegetation management work; and<br>iv. how it plans to integrate and leverage new technology to enhance its current vegetation inspection and management efforts. |

| SCE-14 | SCE relies only on growth rate to identify "at-risk" tree species. |
|---|---|
| Class | B |
| Deficiency | 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 | In its first quarterly report, SCE shall detail:<br>   i.    all the factors it considers in identifying "at-risk" tree species;<br>   ii.   how it plans to measure the effectiveness of focusing work on "at-risk" species is for reducing vegetation-caused outages and ignitions; and<br>   iii.   what measurable impact its work on "at-risk" tree species has on its thresholds for initiating a PSPS event. |

| SCE-15 | Lack of detail on how SCE addresses fast-growing species |
|---|---|
| **Class** | B |
| **Deficiency** | 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** | In its first quarterly report, SCE shall:<br>  i.   list and describe what "additional measures" it takes to address fast growing tree species;<br>  ii.  how it determines which additional measures must be implemented; and<br>  iii.  how it evaluates the effectiveness of these additional measures at reducing vegetation-caused outages and ignitions. |

| SCE-16 | Lack of ISA-certified assessors |
|---|---|
| **Class** | C |
| **Deficiency** | SCE has approximately half the number of ISA-certified assessors for hazard tree assessment as SDG&E, who 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** | In SCE's 2021 WMP update, SCE shall:<br>  i.   describe whether SCE has sufficient ISAs to properly conduct vegetation management work; and<br>  ii.  provide an analysis of the expected incremental cost and incremental risk reduction benefit of hiring, training, or subcontracting additional ISAs. |

| SCE-17 | **Details not provided for collaborative research programs.** |
|---|---|
| **Class** | B |
| **Deficiency** | 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** | In its first quarterly report, SCE shall detail:<br><br>i. with whom and how it collaborates with academic institutions to further its research on utility ignition issues;<br>ii. how it plans to evolve these collaborations over the plan term; and<br>iii. which research it plans to invest in during the plan term. |

| SCE-18 | Discussion of centralized data repository lacks detail. |
|---|---|
| Class | B |
| Deficiency | 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 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 | In its first quarterly report, SCE shall detail:<br>i.    its goals and targets related to implementation of this centralized data repository;<br>ii.    how the centralized data repository will evolve during the plan period;<br>iii.    which specific WMP programs or initiatives will utilize this centralized data repository;<br>iv.    all the sources of data input into this centralized data repository; and<br>v.    treatment and QA/QC of data identified in (iv). |

| SCE-19 | SCE does not sufficiently justify the relative resource allocation of its WMP initiatives to its covered conductor program. |
|---|---|
| Class | B |
| Deficiency | 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.[1] 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 | In its first quarterly report, SCE shall provide:<br>i.   further justification, including a RSE analysis of alternatives, for the costs associated with the covered conductor initiative,<br>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,<br>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,<br>iv.   justification and rationale for its planned ramping up of spend on covered conductor each year of the plan term, and<br>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. |

---

[1] 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.

| SCE-20 | Potential notification fatigue from frequency of PSPS communications. |
|---|---|
| Class | B |
| Deficiency | 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 potential 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 | In its quarterly report, SCE shall detail: <ol type="i"><li>its plans for ensuring PSPS notifications are both timely and accurate,</li><li>the number of PSPS events initiated during the prior quarter,</li><li>the number of pre-event notifications sent for each event, and</li><li>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.</li></ol> |

| SCE-21 | Lack of sufficient detail on sharing of best practices. |
|---|---|
| Class | B |
| Deficiency | 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 | In its first quarterly report, SCE shall:<br>i.    detail its progress regarding best practice sharing with entities outside of California,<br>ii.    include a description of how such interactions have changed or improved, including specific examples, and<br>iii.    include a description of how it has applied lessons learned into its 2020 WMP. |

| SCE-22 | SCE does not describe resources needed on fuel reduction efforts. |
| --- | --- |
| Class | B |
| Deficiency | 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), who 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 | In its first quarterly report, SCE shall describe:<br><br>i.    whether it plans to collaborate with the USFS on fuel reduction programs in its service territory;<br><br>ii.    what programs or agreements, if any, it has in place with the USFS for fuel reduction programs;<br><br>iii.    the timeline for implementing initiatives identified in (i) and (ii);<br><br>iv.    how it plans to identify the resources needed to collaborate with the USFS on fuel reduction; and<br><br>v.    the status of reaching any formal agreements on fuel reduction efforts. |

**(End of Appendix A)**

# APPENDIX B

# Detailed Figures & Charts

# 0. Description of Data Sources

All figures reference the latest submitted versions of 2020 WMPs as of April 10th, 2020. Data is pulled from Tables 1-31 of Utility WMPs unless stated otherwise.

By utility, the WMPs referenced in this document are:

| | |
|---|---|
| **PG&E** | Update to WMP submitted March 17th, 2020 |
| **SCE** | Revision 02 to WMP |
| **SDG&E** | Update to WMP submitted March 10th, 2020 |
| **Liberty CalPeco** | Update to WMP submitted February 28th, 2020 |
| **PacifiCorp** | Update to WMP submitted February 26th, 2020 |
| **Bear Valley Electric Service** | Update to WMP submitted February 26th, 2020 |
| **Horizon West Transmission** | Update to WMP submitted February 28th, 2020 |
| **Trans Bay Cable** | Update to WMP submitted February 28th, 2020 |

All are available at cpuc.ca.gov/wildfiremitigationplans.

All the analysis and corresponding figures presented in this appendix rely upon data that is self-reported by the utilities. By utilizing and presenting this self-reported data in this appendix, the WSD is not independently validating that all data elements submitted by utilities are accurate. The WSD will continue to evaluate utility data, conduct data requests, and conduct additional compliance activities to ensure that data provided is accurate.
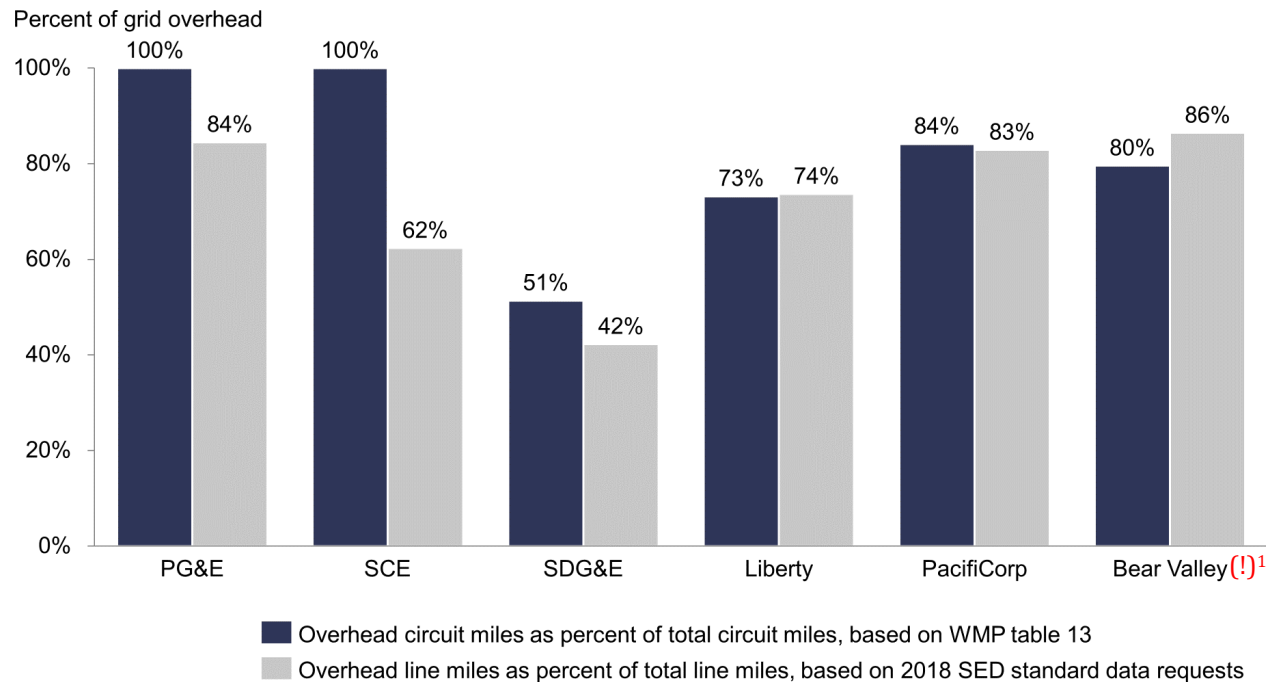
# 1. Figures

## CONTENTS

## 1.1 Wildfire Risk Exposure

Figure 1.1a: Comparison of data sources for circuit typologies



Note: In their 2020 WMPs, PG&E and SCE only reported circuit mileage data for overhead facilities. Based on the best available historical data on circuit mileage and grid topology in the Comission's possession, PG&E is reported to have 84% of its total line miles overhead, and SCE is reported to have 62% of its total line miles overhead. While the 2020 WMP Guidelines directed the utilities to report their grid topology breakdown by circuit miles, rather than line miles, the percentages overhead and underground are expected to be similar. The WSD will issue a data request to confirm accurate underground circuit mileage numbers.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: SED standard data requests for annual grid data (reflect values as of December 2018), WMP Table 13

## Figure 1.1b: Circuit topology breakdown by overhead and underground circuit miles
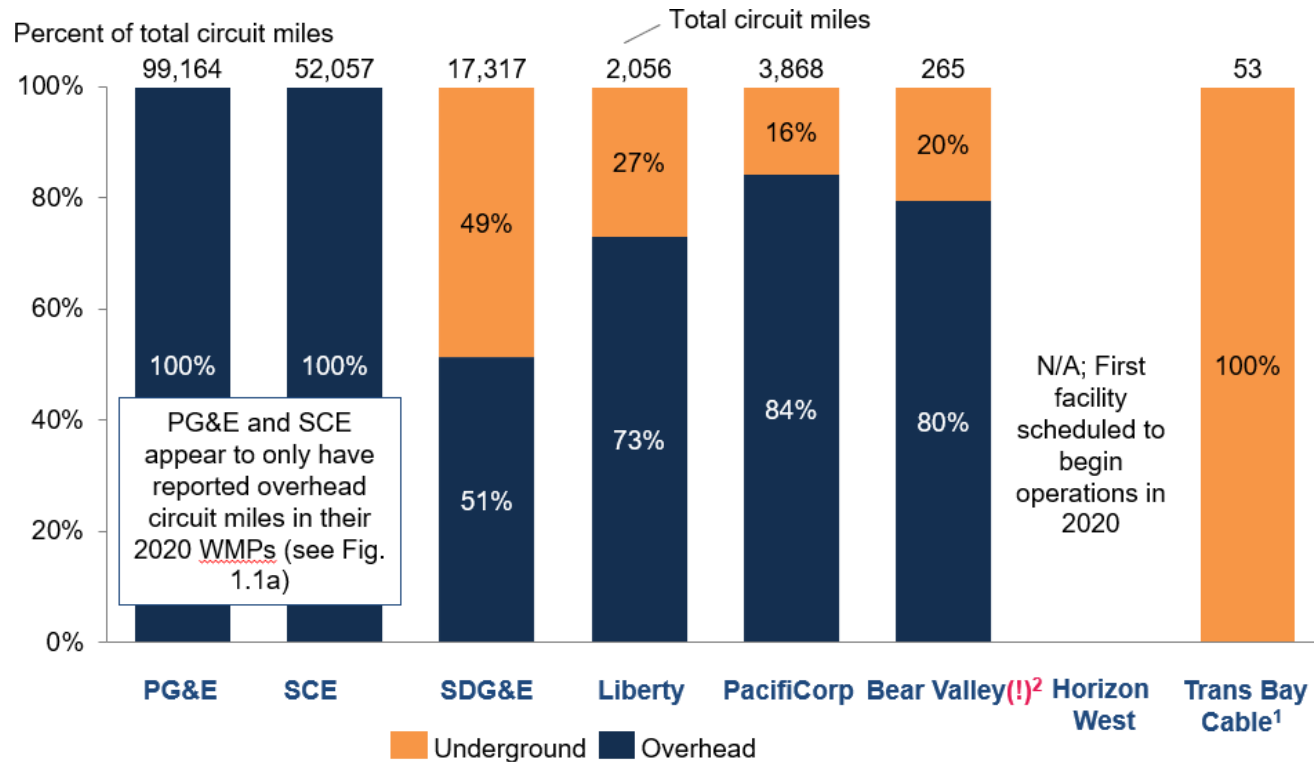


1. Trans Bay Cable did not report underground circuit miles in Table 13 of the WMP, but mentioned on page 8 of its WMP that it had 53 circuit miles of underground submarine cable, which is reflected in this chart.

2. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 13

## Figure 1.2a: Overhead circuit miles by HFTD Tier (Large Utilities)
### *Broken out by distribution (dist.) and transmission (transm.)*

Percent of overhead circuit miles by distribution, transmission and total mileage

Total overhead circuit miles

| | PG&E | | | SCE | | | SDG&E | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | 81,004 | 18,160 | 99,164 | 39,236 | 12,821 | 52,057 | 6,488 | 2,410 | 8,898 |
| HFTD tier 3 | 9% | 7% | 9% | 15% | 19% | 16% | 26% | 13% | 22% |
| HFTD tier 2 | 23% | 23% | 23% | 10% | 15% | 12% | 28% | 33% | 29% |
| Non-HFTD | 68% | 69% | 69% | 75% | 66% | 73% | 46% | 54% | 48% |
| | Dist. | Transm. | Total | Dist. | Transm. | Total | Dist. | Transm. | Total |

Legend: ■ HFTD tier 3 ■ HFTD tier 2 ■ Non-HFTD
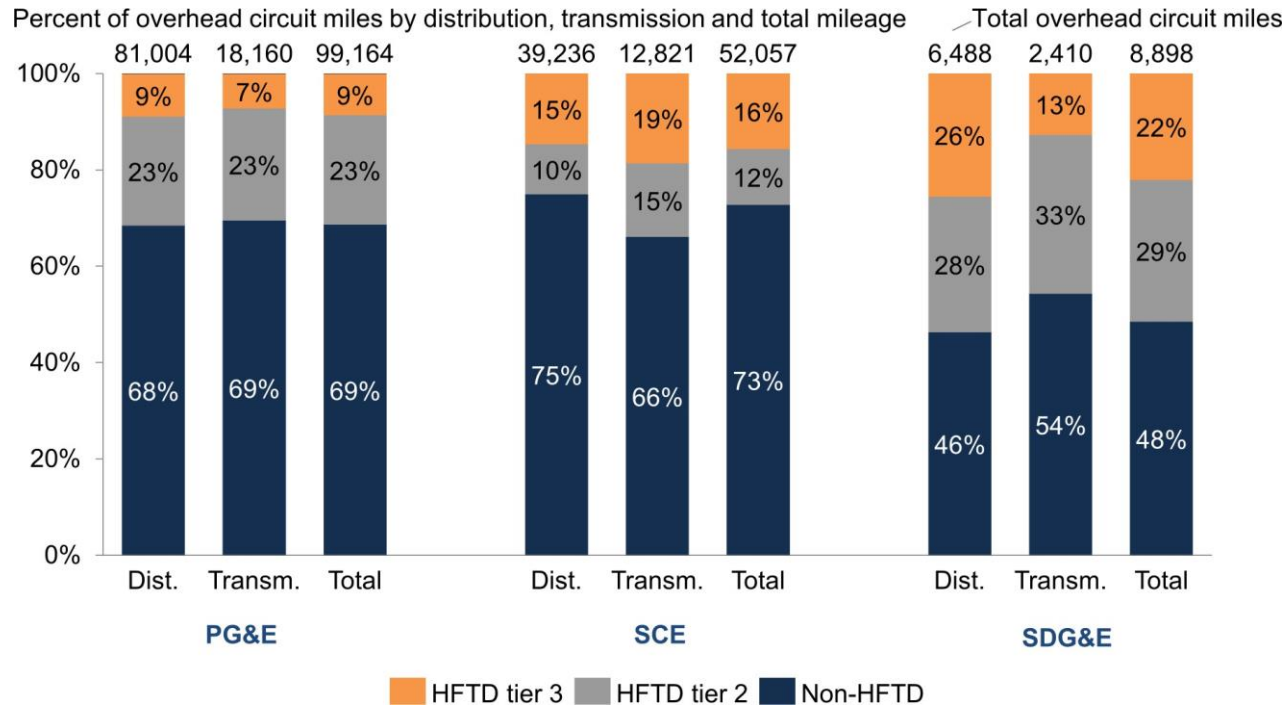
Note: Zone 1 not shown as subtotal.

Source: WMP Table 13

## Figure 1.2b: Overhead circuit miles by HFTD Tier (Small Utilities)
*Broken out by distribution (dist.) and transmission (transm.)*

Percent of overhead circuit miles by distribution, transmission and total mileage



Note: Zone 1 not shown as subtotal.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 13

## Figure 1.3a: Breakdown of overhead transmission and distribution circuit miles by HFTD and WUI location (Large utilities)



Source: WMP Table 13

**Figure 1.3b: Breakdown of overhead transmission and distribution circuit miles by HFTD and WUI location (Small utilities)**
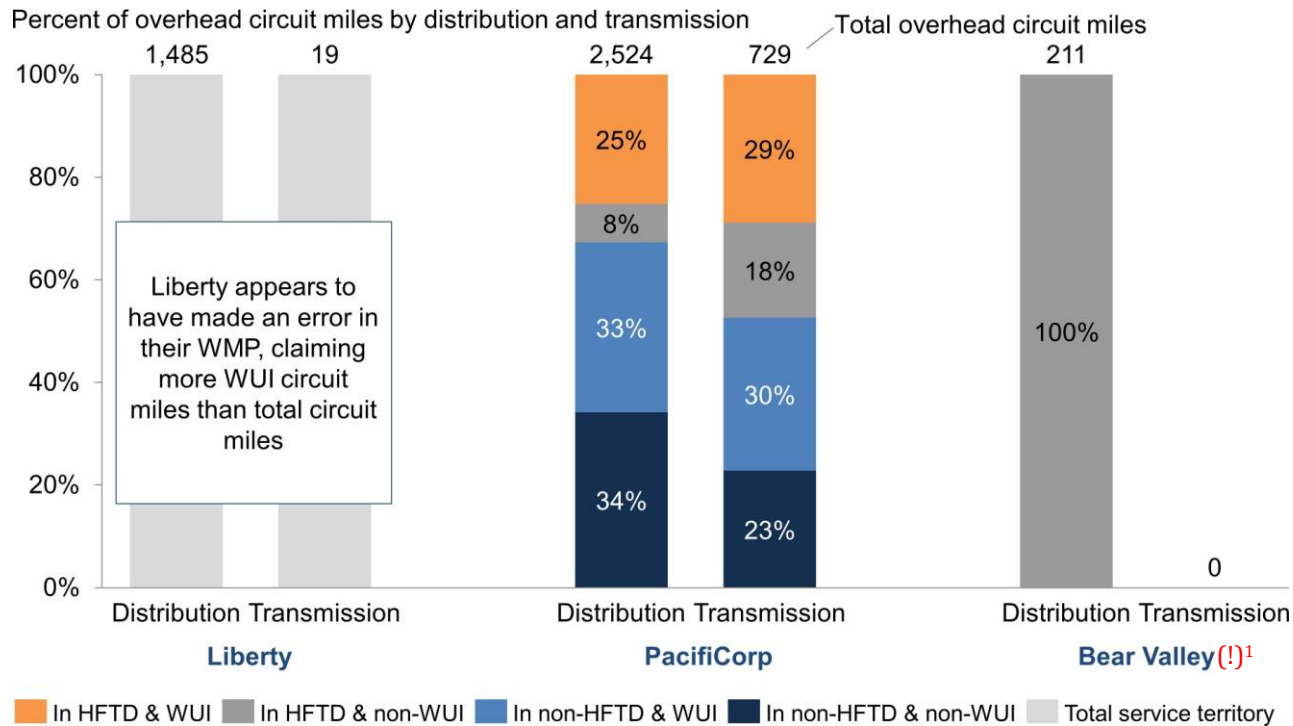


Note: Trans Bay Cable and Horizon West Transmission are not shown. Trans Bay Cable is almost entirely undergroud and submarine, and Horizon West Transmission did not yet have operational facilities at the time it submitted its 2020 WMP.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 13

Figure 1.4a: Breakdown of overhead transmission and distribution circuit miles by HFTD and population density (Large utilities)
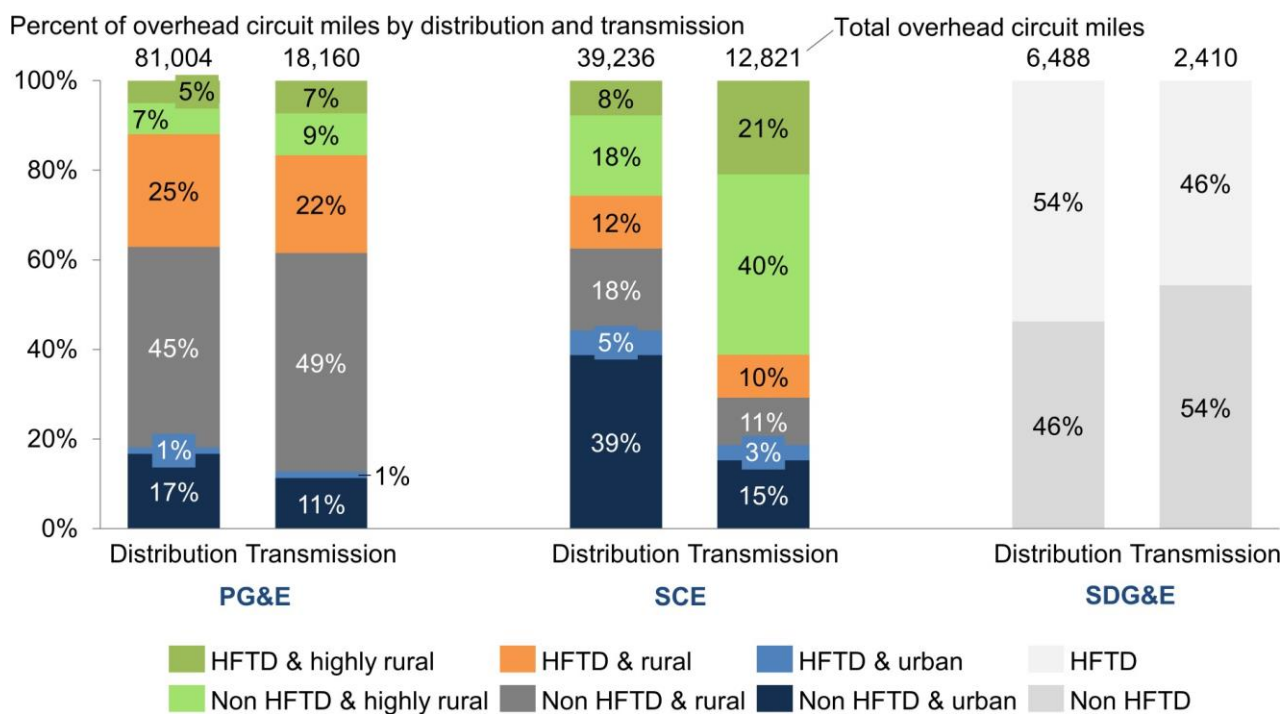


Note: SDG&E did not report breakdown of circuit mileage between areas of different population densities.

Source: WMP Table 13

# Figure 1.4b: Breakdown of overhead transmission and distribution circuit miles by HFTD and population density (Small utilities)
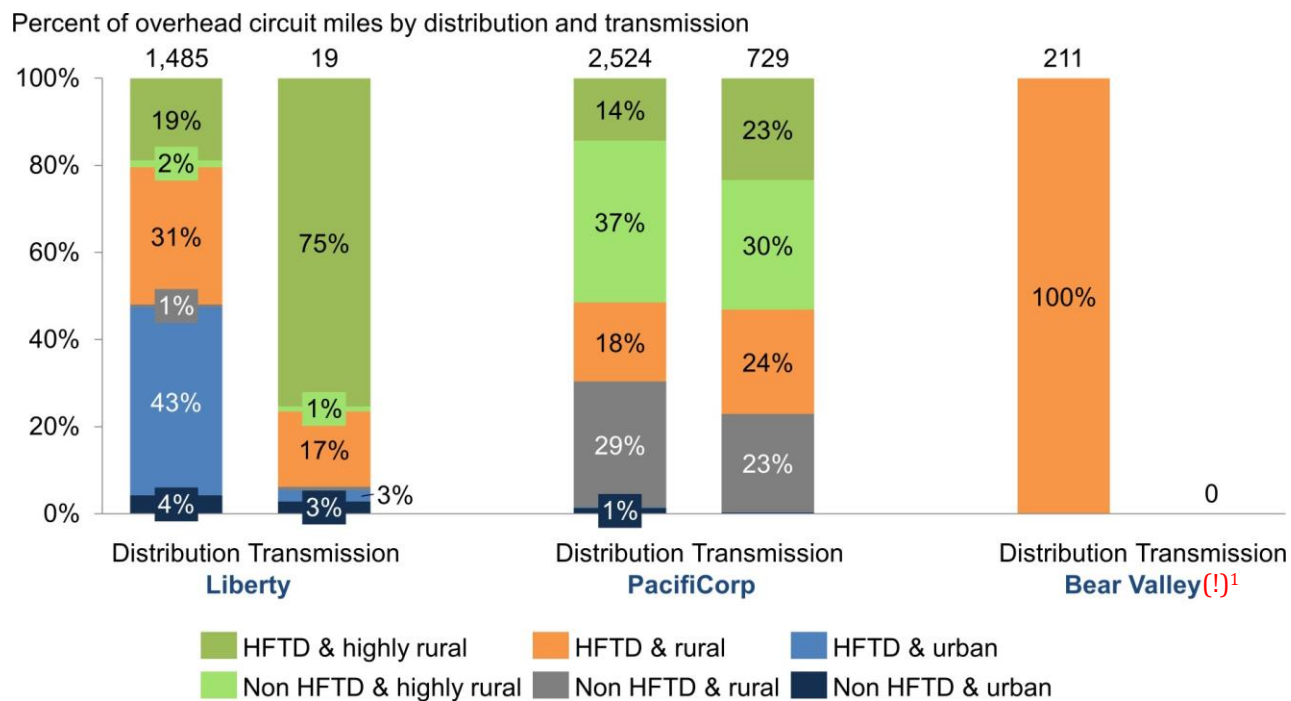


1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 13

## Figure 1.5a: Red flag warning circuit mile days per year by utility (Large utilities)
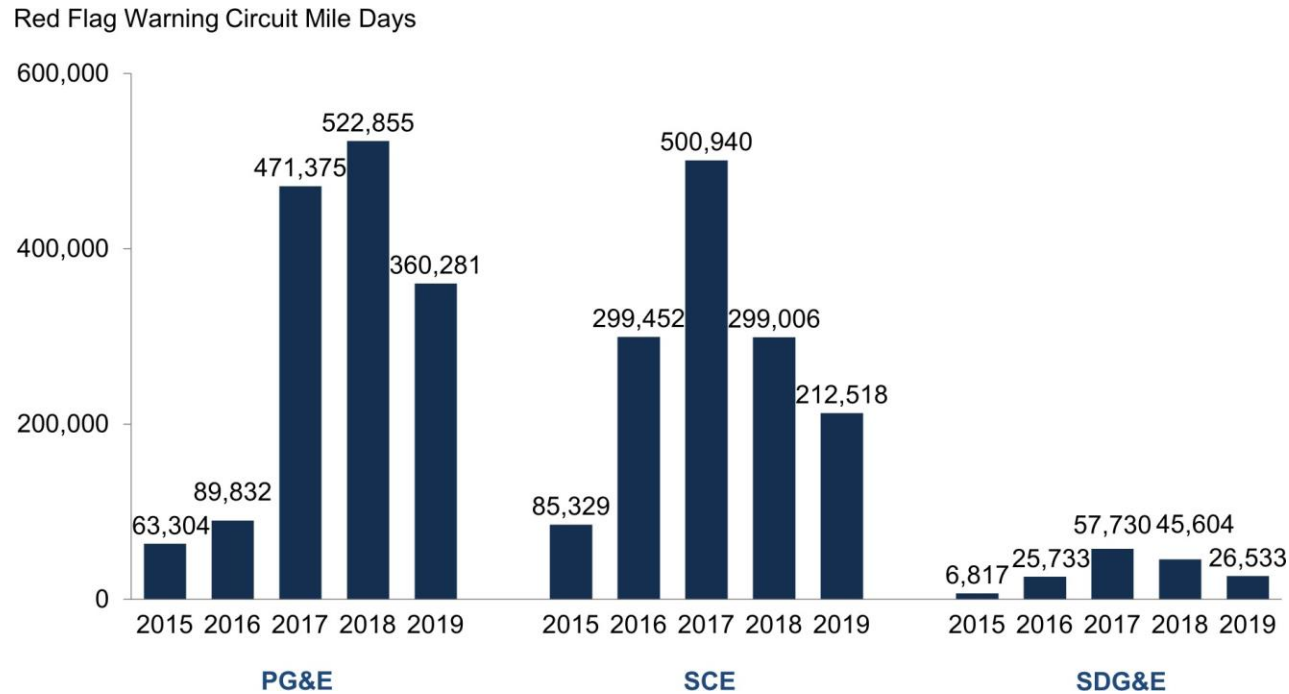


Note: A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

Source: WMP Table 10

# Figure 1.5b: Red flag warning circuit mile days per year by utility (Small utilities)
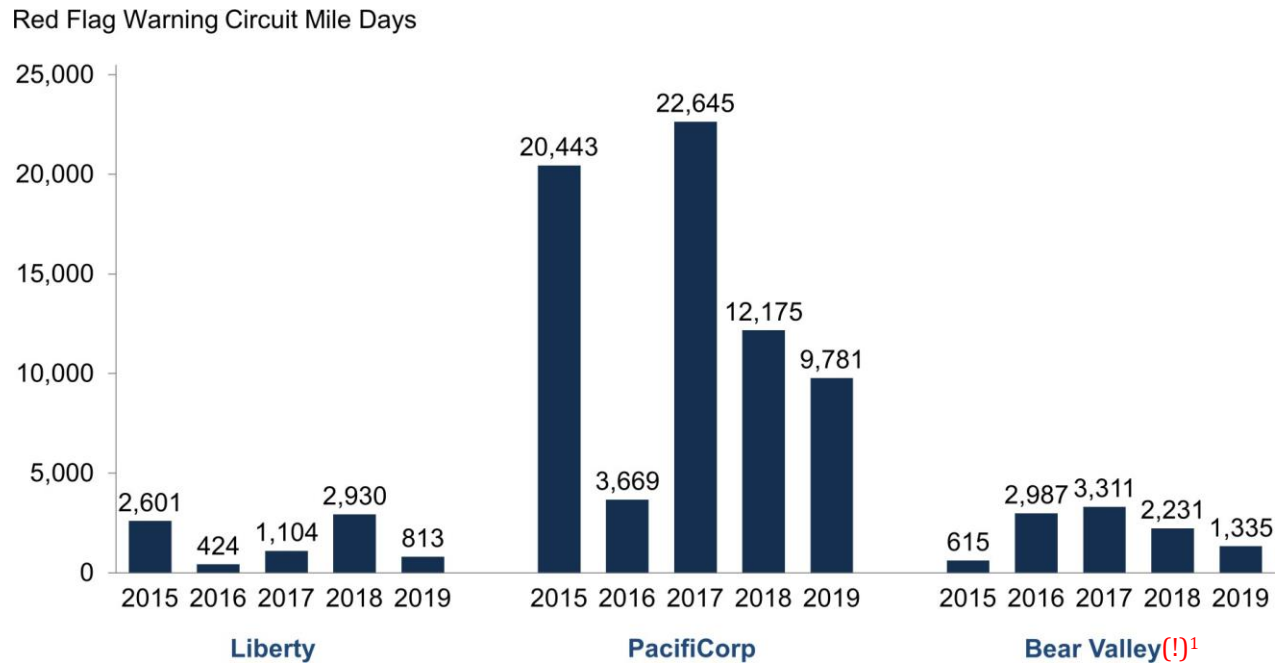


Note: A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 10

Figure 1.5c: 95th and 99th percentile wind conditions (Large utilities)
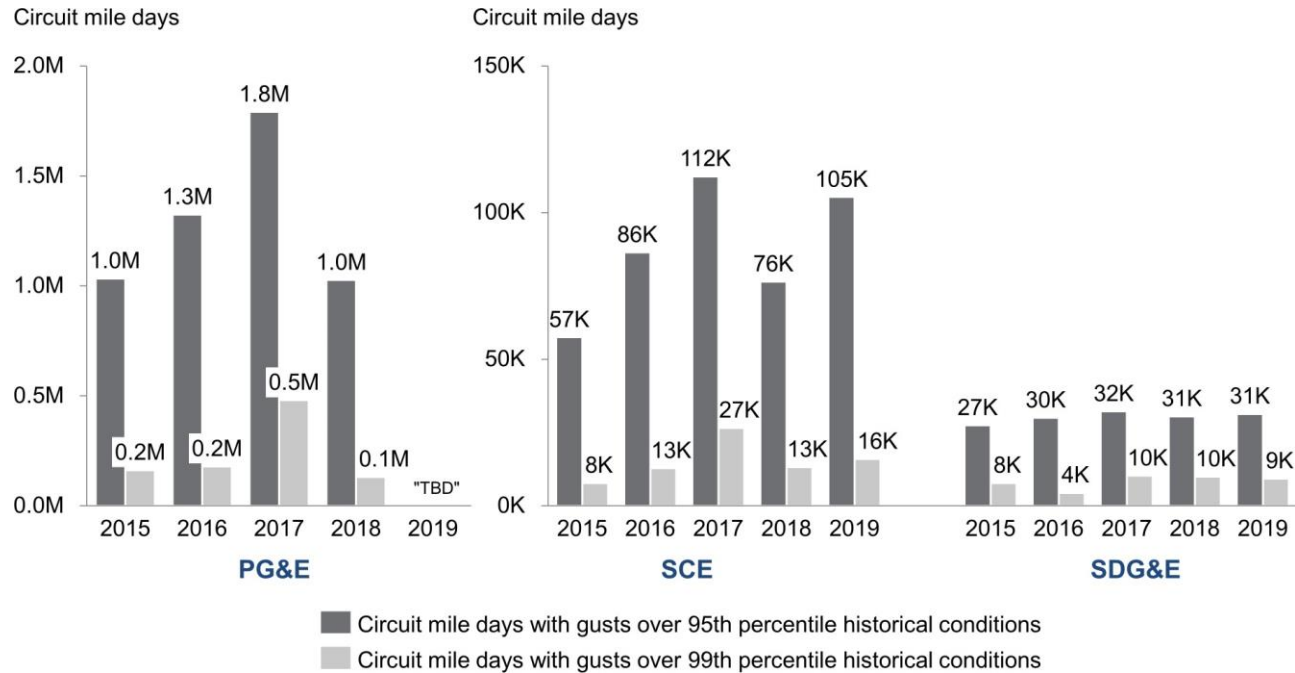


Note: Utilities were directed to report historical conditions as conditions over 10 prior years, 2005-2014. SCE appears to have instead reported historical conditions over the 5 prior years, 2009-2014, thus using a different baseline to calculate 95th and 99th percentile wind speeds. More information is needed to fully address potential inconsistencies between utilities. PG&E stated that 2019 data would not be available until late Q2 2020.

Source: WMP Table 10

Figure 1.5d: 95th and 99th percentile wind conditions (Small utilities)
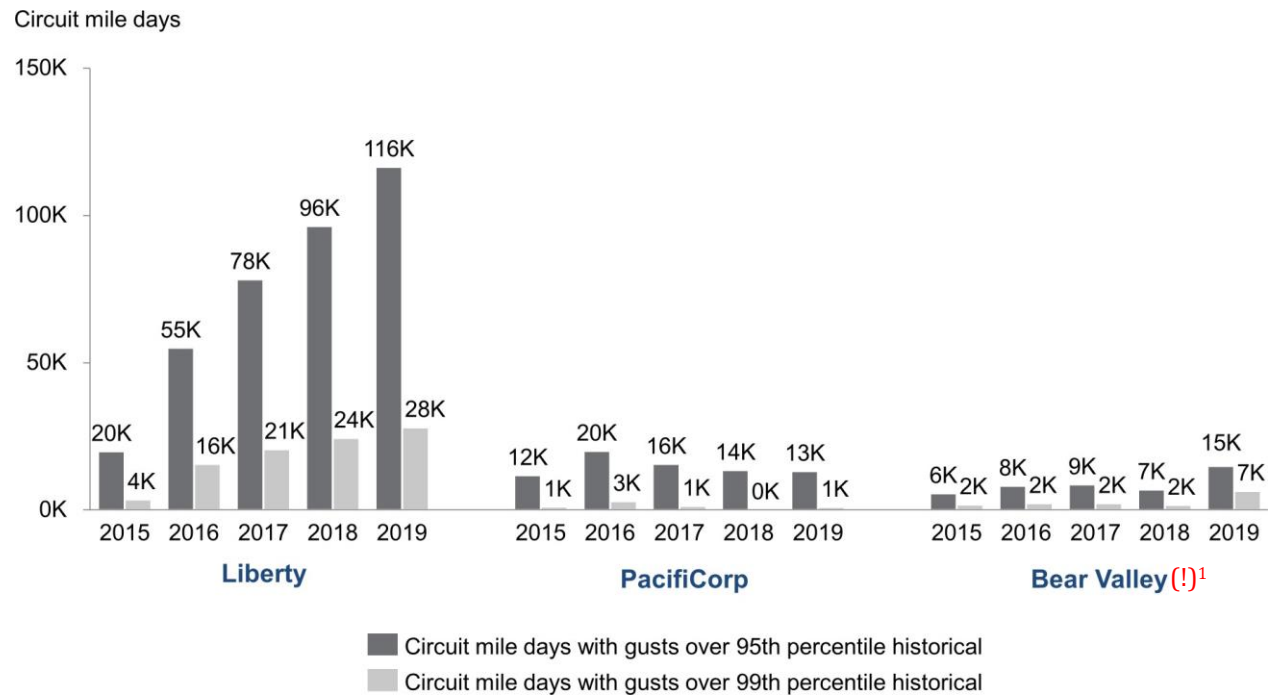


Note: Historical conditions refer to conditions over 10 prior years, 2005-2014.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).
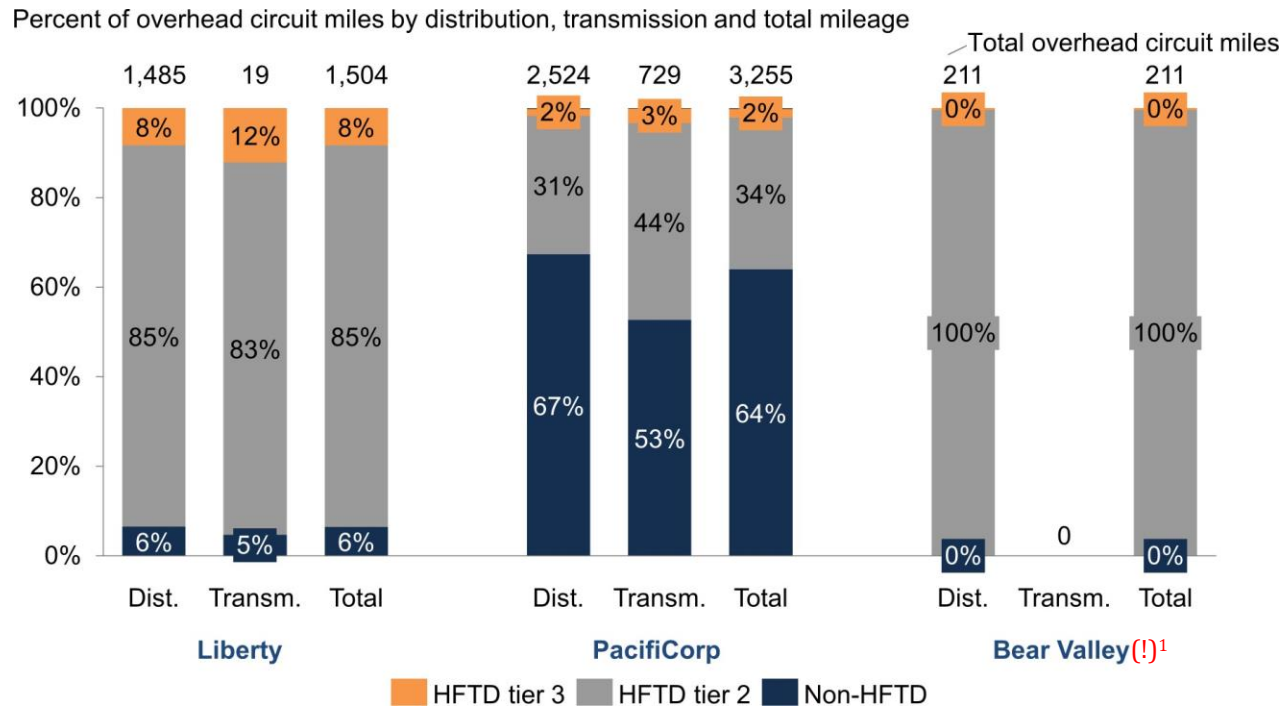
Source: WMP Table 10

## 1.2 Outcome Metrics

Figure 2.1a: Asset inspection findings normalized by total circuit mileage (Large utilities)

Number of Level 1, 2, and 3 asset inspection findings for transmission and distribution, per total circuit mile
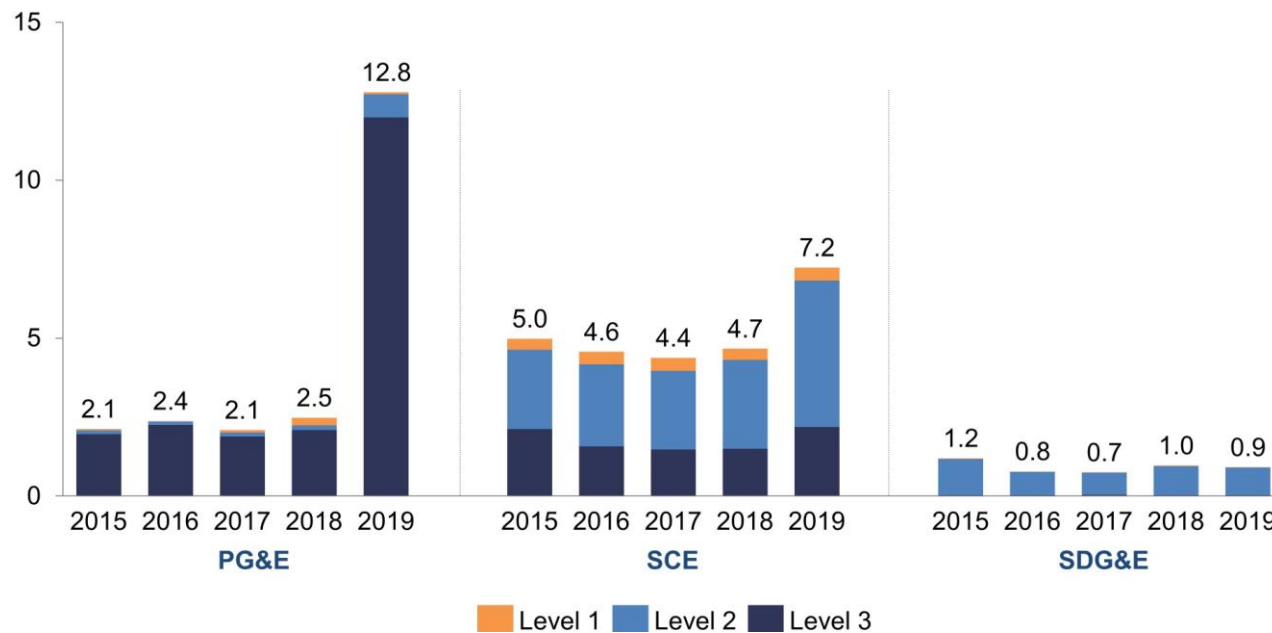


Note: Utilities reported their inspection findings as normalized by total circuit miles in Table 1 of their WMPs.

Source:  WMP Table 1

# Figure 2.1b: Asset inspection findings normalized by total circuit mileage (Small utilities)
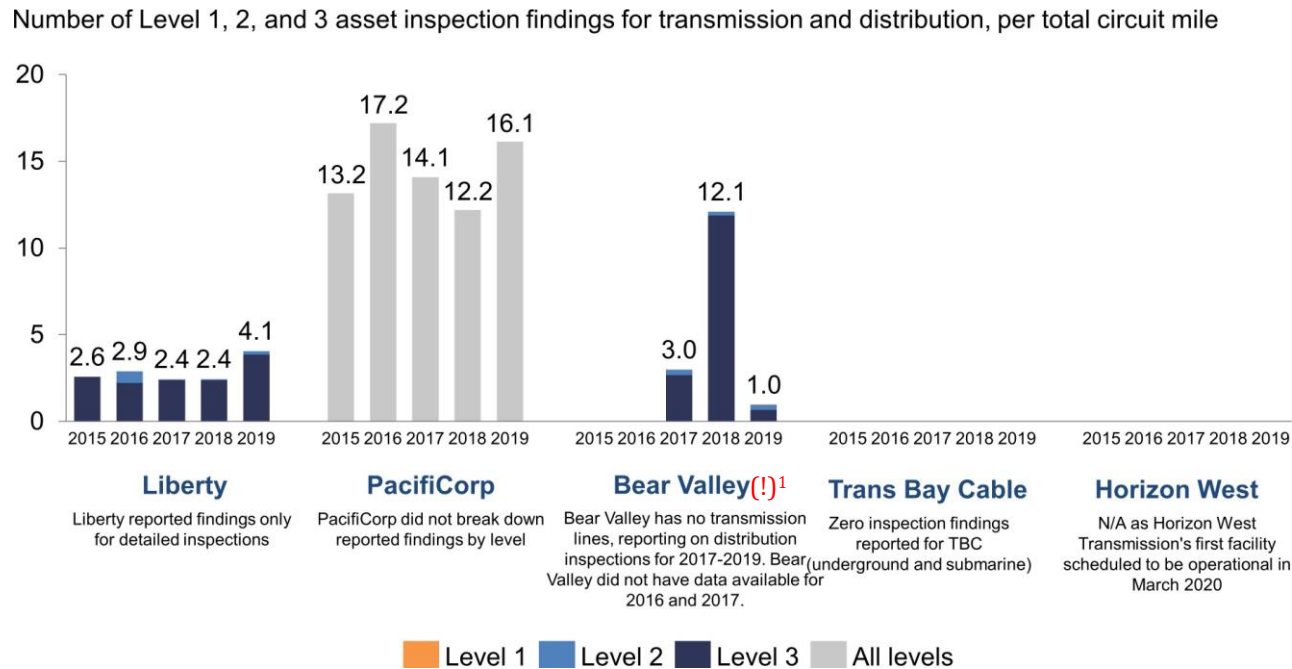
Number of Level 1, 2, and 3 asset inspection findings for transmission and distribution, per total circuit mile



| | Level 1 | Level 2 | Level 3 | All levels |

Note: Utilities reported their inspection findings as normalized by total circuit miles in Table 1 of their WMPs. In Table 1, Liberty reported inspection findings in miles between findings rather than in findings per circuit mile as the 2020 WMP Guidelines directed. To represent inspection findings in a way consistent with the reporting of other utilities, the WSD inverted the metric reported by Liberty to show inspection findings in findings per circuit mile in this chart. Bear Valley reported inspecton findings normalized per overhead cirucit mile rather than per total cirucit mile as instructed. For consistency, the WSD re-normalized these findings per total circuit mile using data from Table 13.
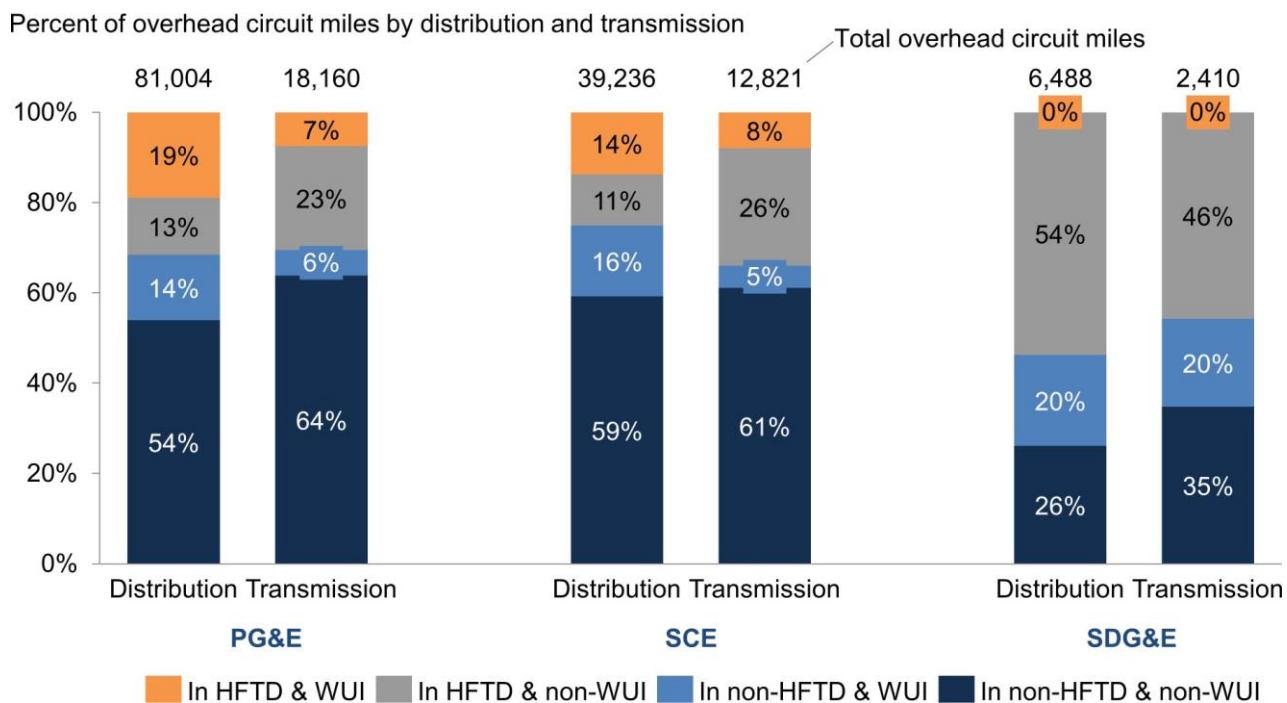
1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: WMP Table 1

## Figure 2.2a: Near miss incidents normalized by overhead circuit mileage (Large utilities)
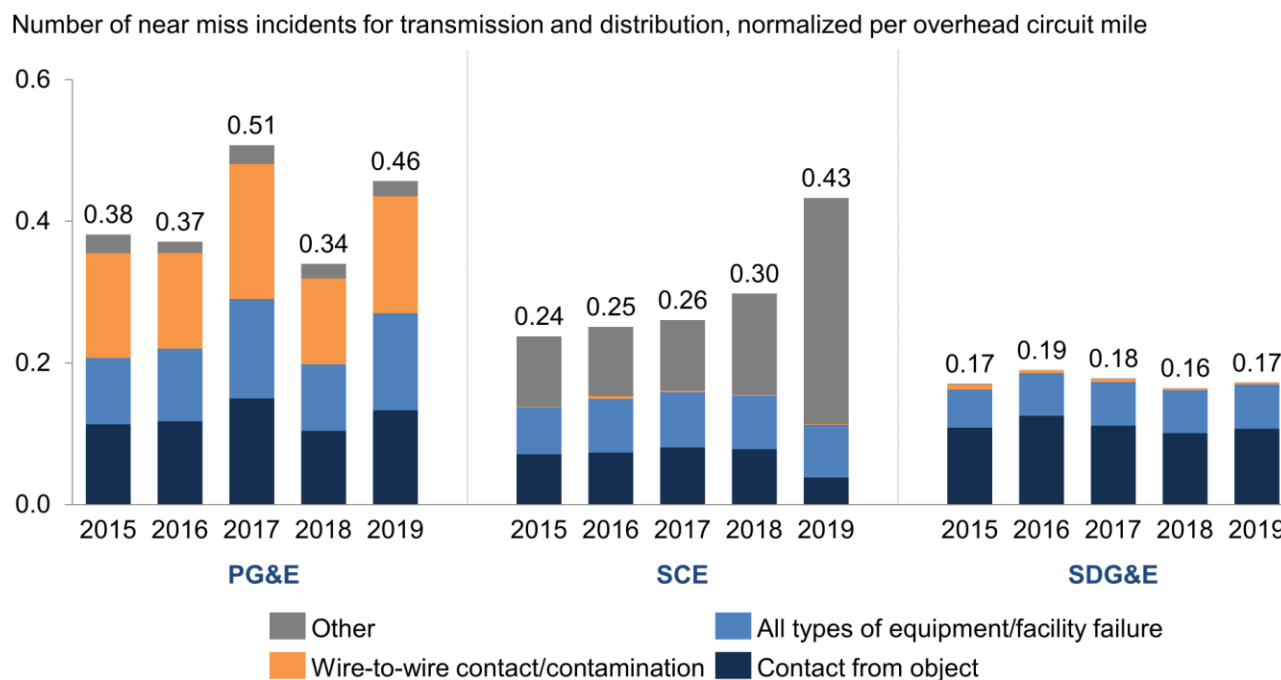
Number of near miss incidents for transmission and distribution, normalized per overhead circuit mile



Note: The measurement of each 'near miss' is not yet perfectly standardized across utilities. The WSD will work toward a more standardized approach for tracking and classifying near miss data for 2021 WMPs. A near miss was defined in the 2020 WMP Guidelines as "An event with significant probability of ignition, including wires down, contacts with objects, line slap, events with evidence of significant heat generation, and other events that cause sparking or have the potential to cause ignition."

Source: Tables 11a and 11b from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs; SDG&E equipment failure numbers adjusted to address inconsistencies in subtotal calculations provided by SDG&E.

## Figure 2.2b: Near miss incidents normalized by overhead circuit mileage (Small utilities)
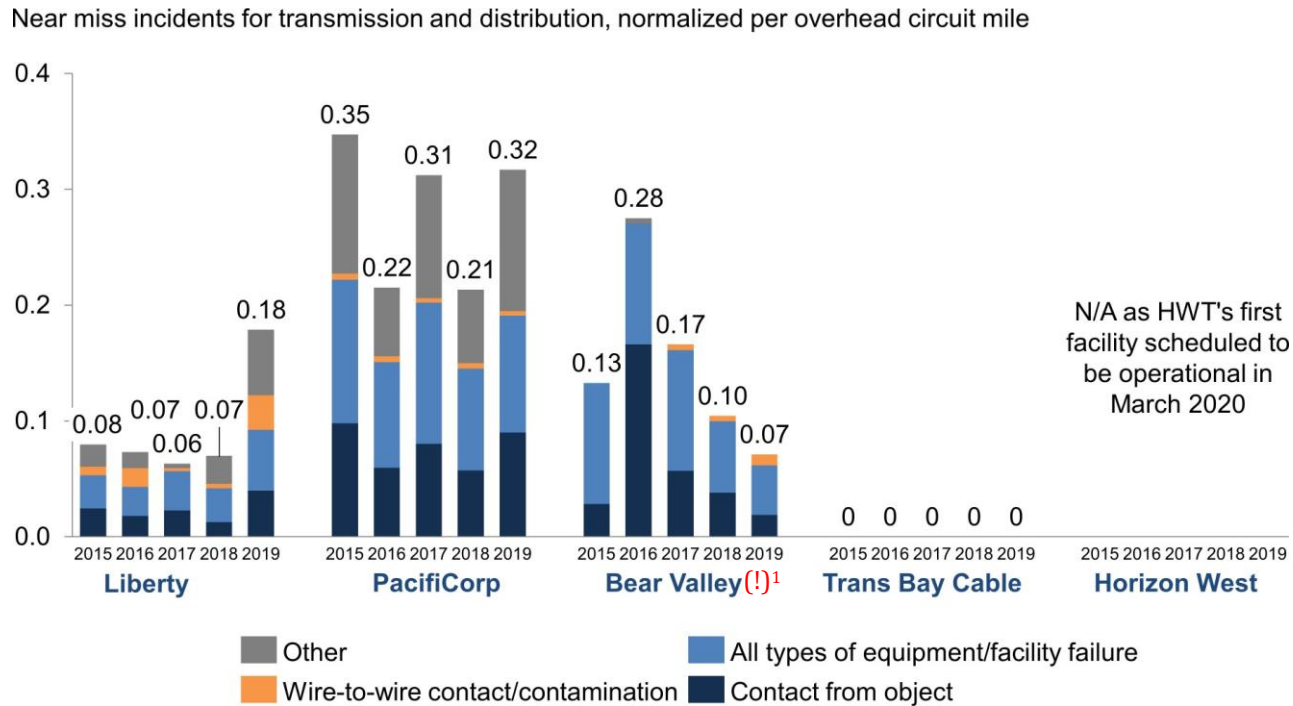
Near miss incidents for transmission and distribution, normalized per overhead circuit mile



Note: The measurement of each 'near miss' is not yet perfectly standardized across utilities. The WSD will work toward a more standardized approach for tracking and classifying near miss data for 2021 WMPs. A near miss was defined in the 2020 WMP Guidelines as "An event with significant probability of ignition, including wires down, contacts with objects, line slap, events with evidence of significant heat generation, and other events that cause sparking or have the potential to cause ignition."

For PacifiCorp, the largest drivers of "Other" near misses were "Other" (50% on average over the 5 year period) and "Unknown" (42% on average over the 5 year period).

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: Tables 11a and 11b from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs; BVES numbers adjusted to address inconsistencies in subtotal calculations provided.

Figure 2.3a: Number of ignitions, normalized by overhead circuit mileage (Large utilities)
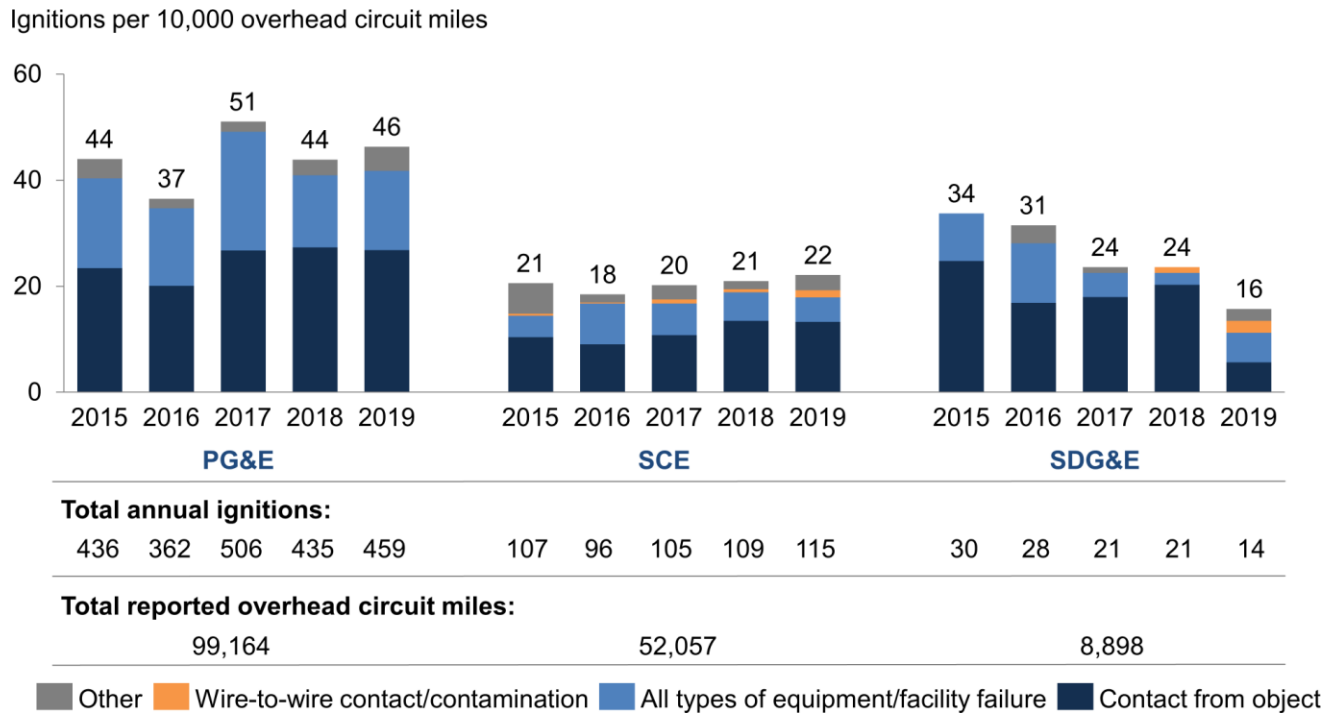
Source: Tables 11a and 11b from utility WMPs and data requests normalized by data from Table 13 of utility WMPs; SDG&E equipment failure numbers adjusted to address inconsistencies in subtotal calculations provided.

Figure 2.3b: Number of ignitions, normalized by overhead circuit mileage (Small utilities)
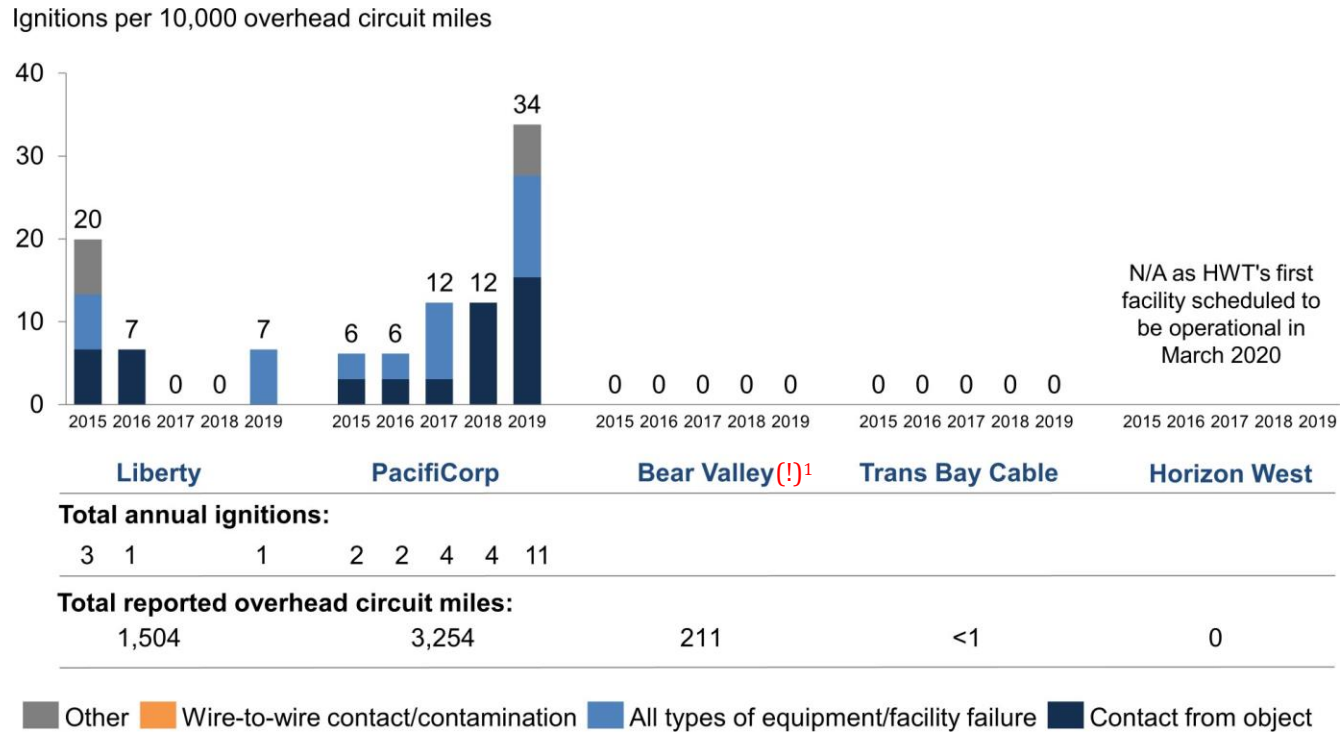
Note: Total number of ignitions only shown for utilities and years where ignitions were greater than zero.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: Tables 11a and 11b from utility WMPs and data requests normalized by data from Table 13 of utility WMPs; PacifiCorp numbers adjusted to account for Tables 11c and 11d.

# Figure 2.4a: Total ignitions by HFTD location (Large utilities)
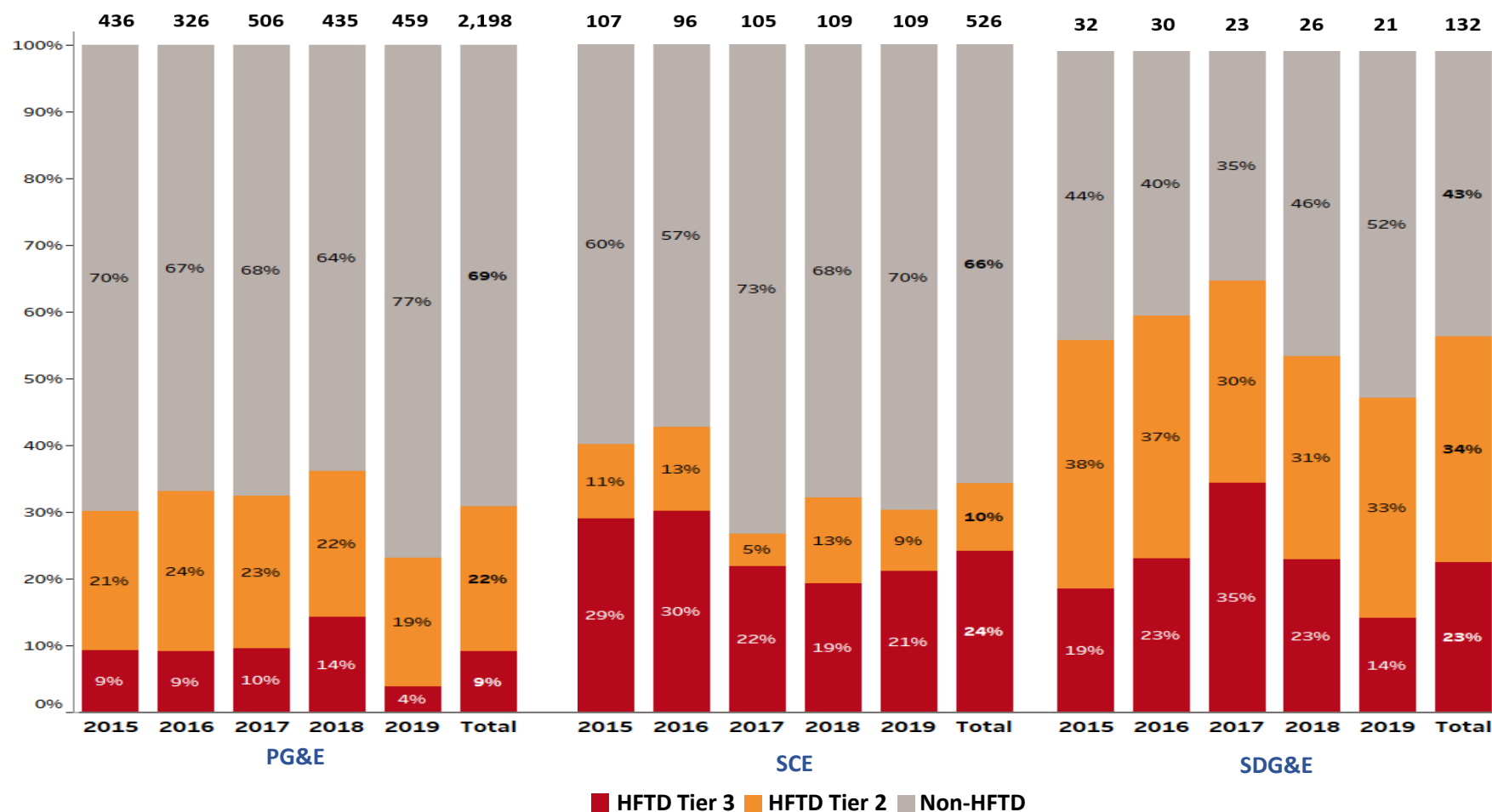


Note: Ignitions in Zone 1 HFTD areas make up less than 1% of total ignitions.
Source: Table 2 from utility WMPs

# Figure 2.4b: Total ignitions by HFTD location (Small utilities)
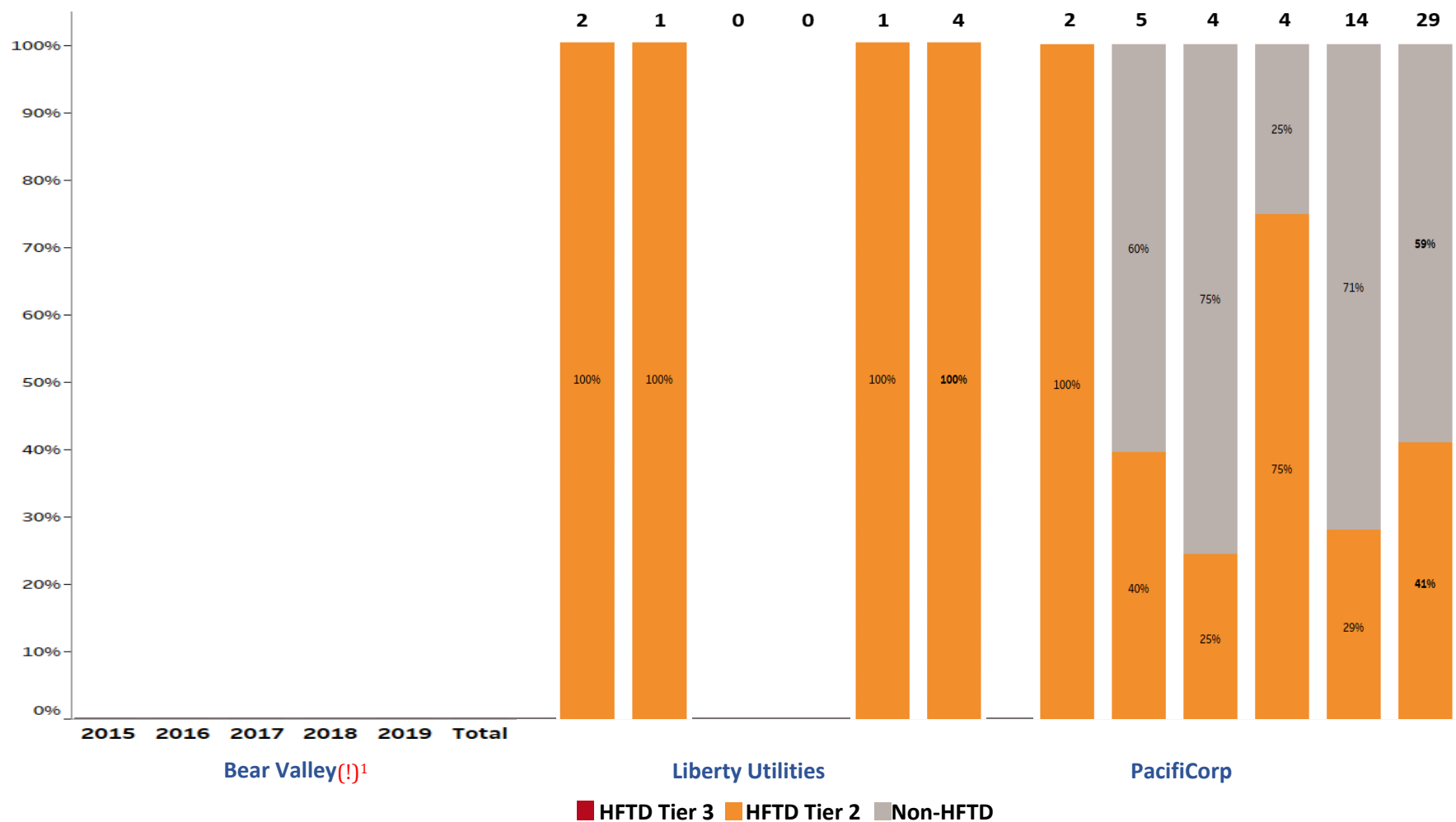


Note: Ignitions in Zone 1 HFTD areas make up less than 1% of total ignitions.

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: Table 2 from utility WMPs

## Figure 2.5a: Ignitions by ignition probability driver type (Large utilities)
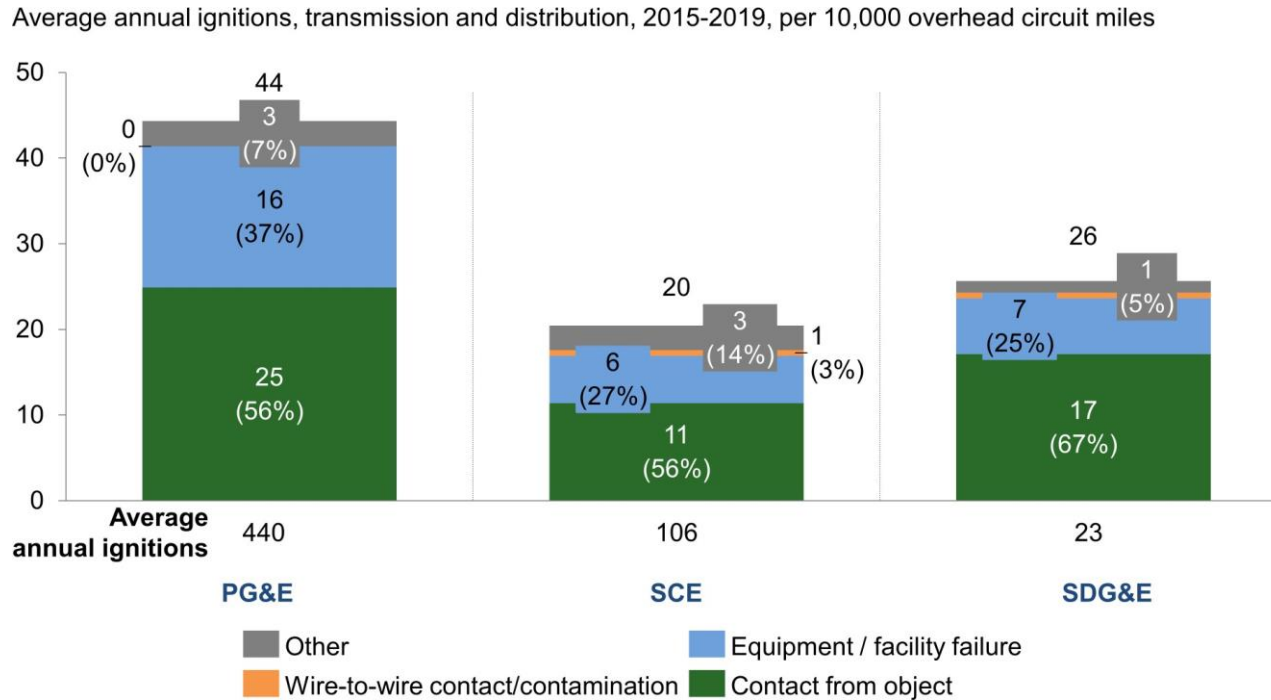
Average annual ignitions, transmission and distribution, 2015-2019, per 10,000 overhead circuit miles



Source: Tables 11a and 11b from utility WMPs and data requests normalized by data from Table 13 of utility WMPs; SDG&E equipment failure numbers adjusted to address inconsistencies in subtotal calculations provided.

# Figure 2.5b: Ignitions by ignition probability driver type (Small utilities)

Average annual number of ignitions, transmission and distribution, 2015-2019, per 10,000 overhead circuit miles
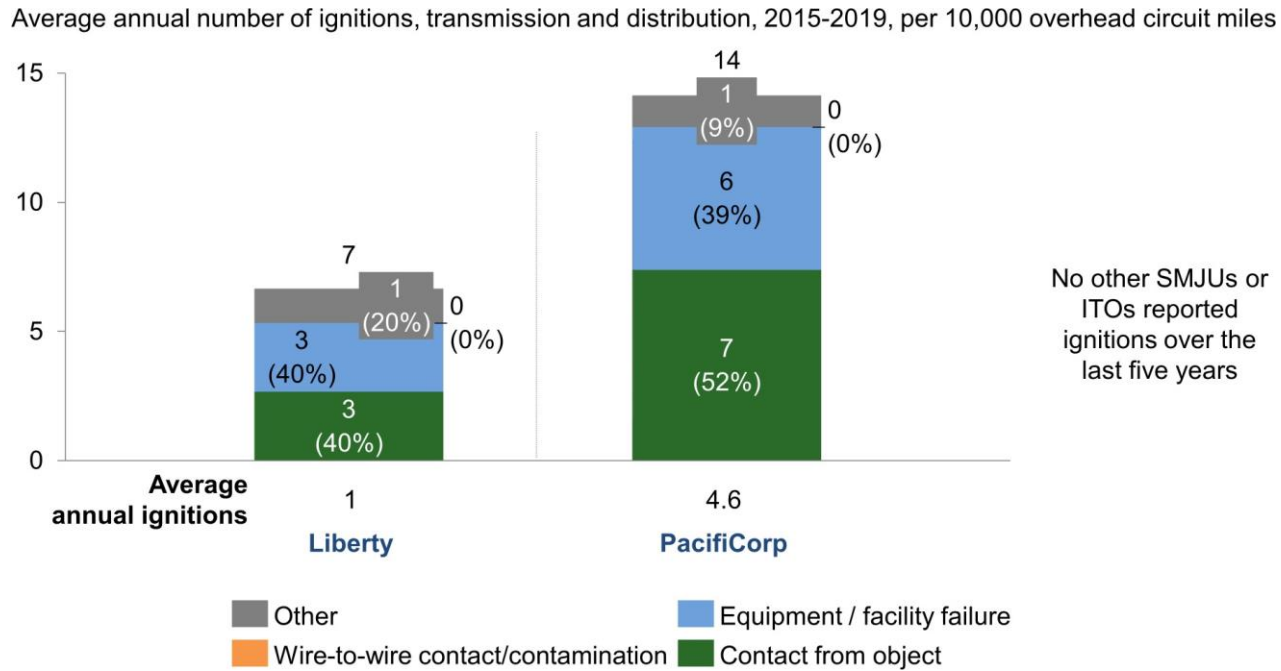


Note: Since Liberty and PacifiCorp have less than 10,000 overhead circuit miles, their average number of total annual ignitions per 10,000 circuit miles is greater than their average number of total annual ignitions.

Source: Tables 11a and 11b from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs; PacifiCorp numbers adjusted to account for Tables 11c and 11d.

Figure 2.6a: Detail: Share of ignitions due to each ignition probability driver (Large utilities)
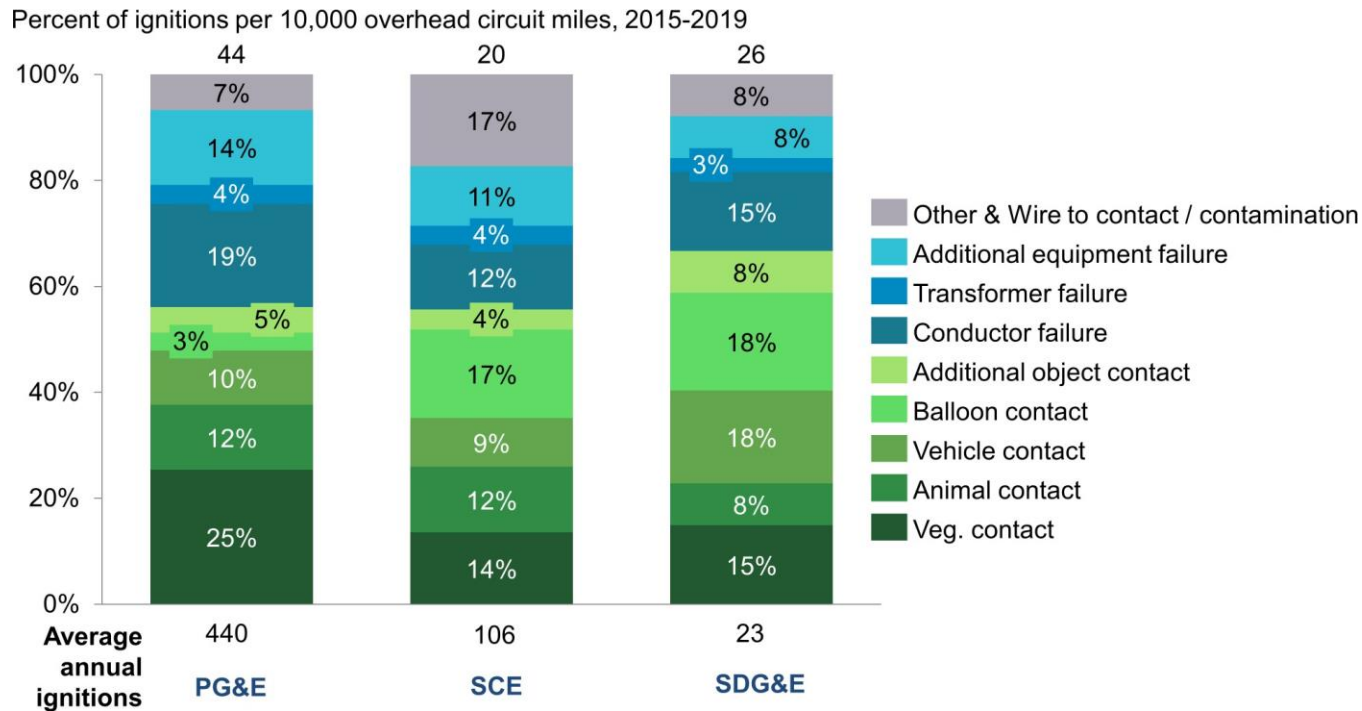


Note: Conductor failure includes conductor failure (as reported), splice, clamp and connector. Other includes wire to wire contact / contamination.

Source: Tables 11a and 11b from utility WMPs and data request normalized by data from Table 13 of utility WMPs; SDG&E equipment failure numbers adjusted to address inconsistencies in subtotal calculations provided. Since SDG&E has less than 10,000 overhead circuit miles, its average number of total annual ignitions per 10,000 circuit miles is greater than its average number of total annual ignitions.

## Figure 2.6b: Detail: Share of ignitions due to each ignition probability driver (Small utilities)

Percent of ignitions per 10,000 overhead circuit miles, 2015-2019
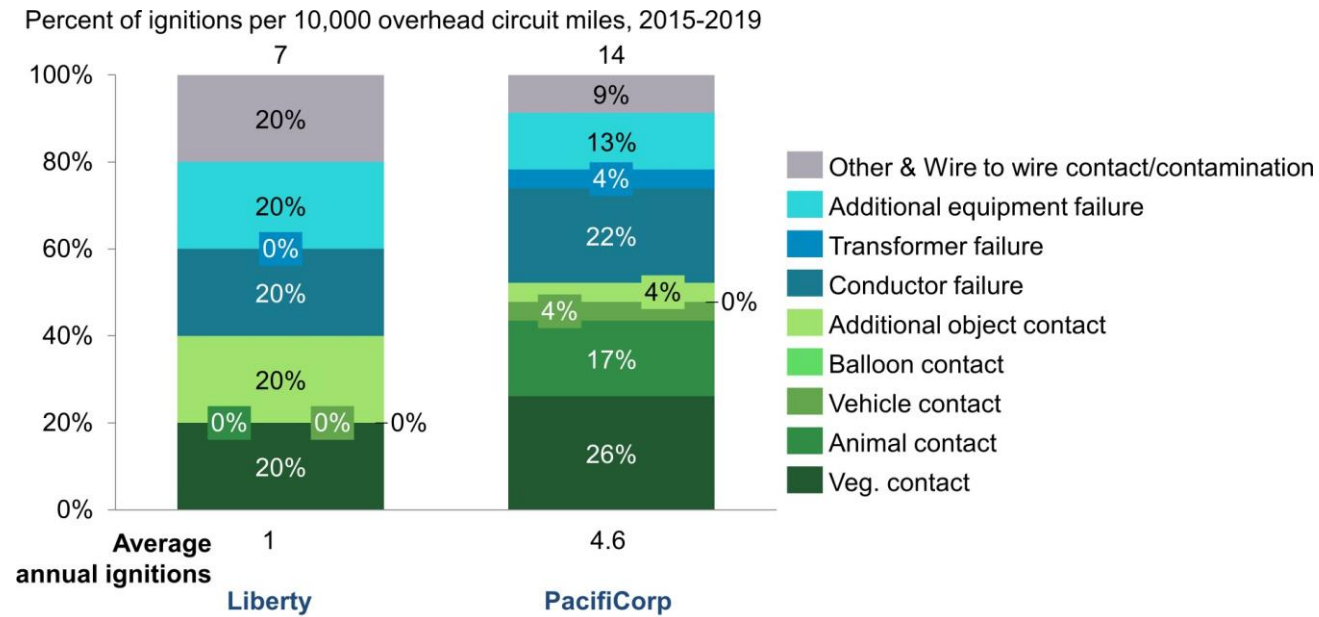


No other small utilities reported ignitions over the last five years

Note: Conductor failure includes conductor failure (as reported), splice, clamp and connector. Other includes wire-to-wire contact / contamination. Since Liberty and PacifiCorp have less than 10,000 overhead circuit miles, their average number of total annual ignitions per 10,000 circuit miles is greater than their average number of total annual ignitions.

Source: Tables 11a and 11b from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs; PacifiCorp numbers adjusted to account for Tables 11c and 11d.

# Figure 2.7a: Actual and projected ignitions for top ignition drivers, 2019 and 2022
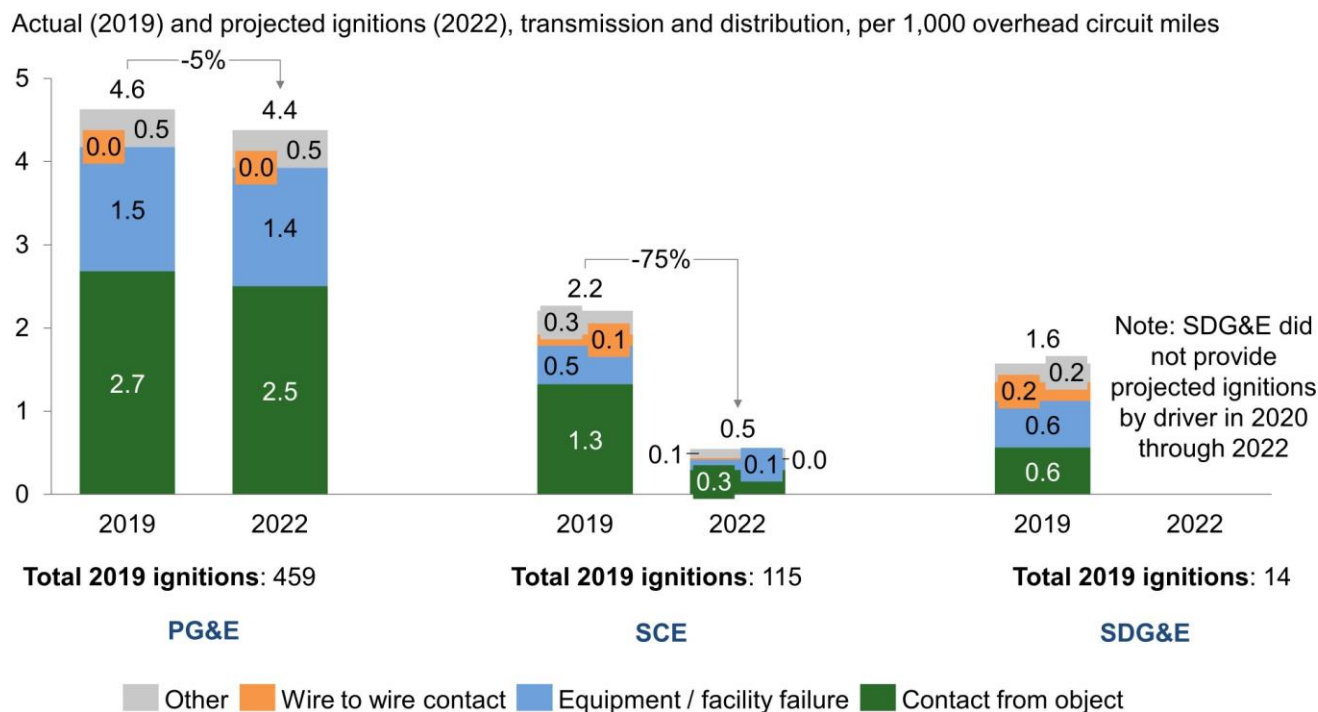


Actual (2019) and projected ignitions (2022), transmission and distribution, per 1,000 overhead circuit miles

Note: SDG&E did not provide projected ignitions by driver in 2020 through 2022

**Total 2019 ignitions**: 459 — PG&E

**Total 2019 ignitions**: 115 — SCE

**Total 2019 ignitions**: 14 — SDG&E

Legend: Other | Wire to wire contact | Equipment / facility failure | Contact from object

Note: Projections assume WMP implementation acording to plan and weather pattens consistent with 5 year historical average. See the 2020 WMP Guidelines for further detail.

Small utilities populated Table 31 either not at all or with all zeroes. Specifically: Horizon West Transmission left it blank as it did not yet have operational facilities when it submitted its 2020 WMP; Trans Bay Cable and Bear Valley Electric Service reported anticipating no ignitions (having seen no ignitions in the past 5 years); Liberty did not populate Table 31; PacifiCorp reported only a general reducing trend anticipated with no discrete data available.

Source: Tables 11a, 11b, 31a, and 31b from utility WMPs and data requests; SDG&E equipment failure numbers adjusted to address inconsistencies in subtotal calculations provided by SDG&E.

## Figure 2.7b: PG&E Detail: Actual and projected ignitions for top ignition drivers, 2019 and 2022

*Figure shows reported 2019 ignitions and projected future ignitions by driver category, for transmission and distribution*
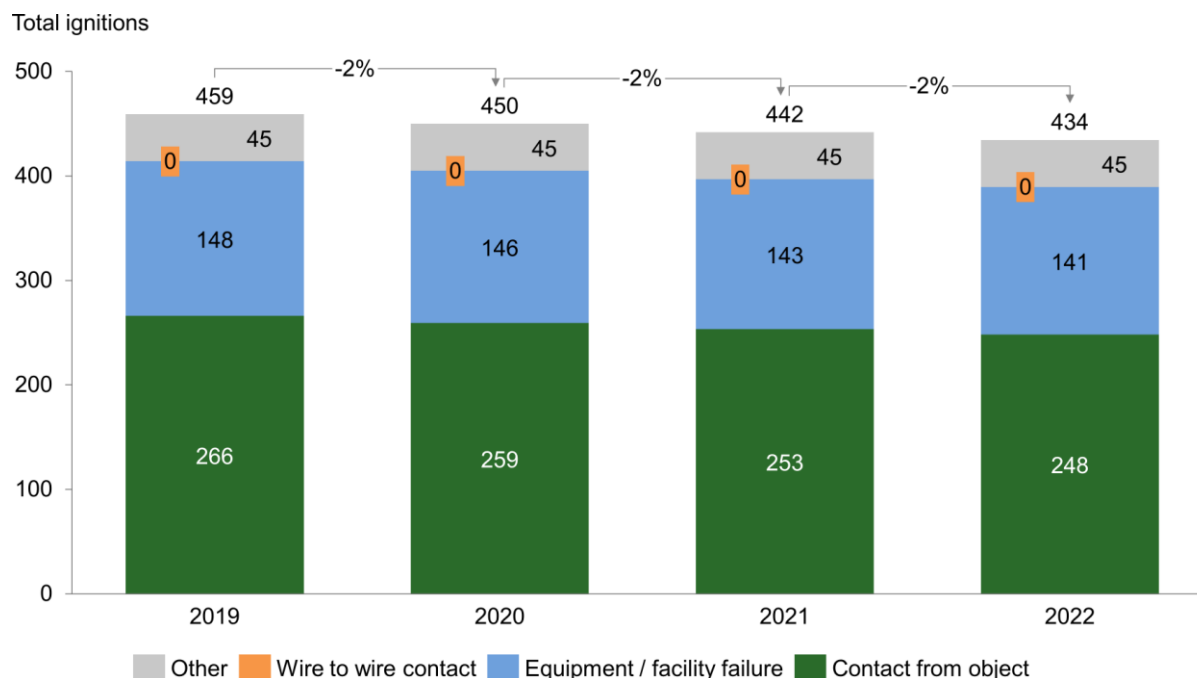


Note: Projections assume WMP implementation according to plan and weather patterns consistent with 5 year historical average. See the 2020 WMP Guidelines for more information on assumptions made.

Source: Tables 11a, 11b, 31a, and 31b from PG&E WMP and data requests

## Figure 2.7c: SCE Detail: Actual and projected ignitions for top ignition drivers, 2019 and 2022

*Figure shows reported 2019 ignitions and projected future ignitions by driver category, for transmission and distribution*
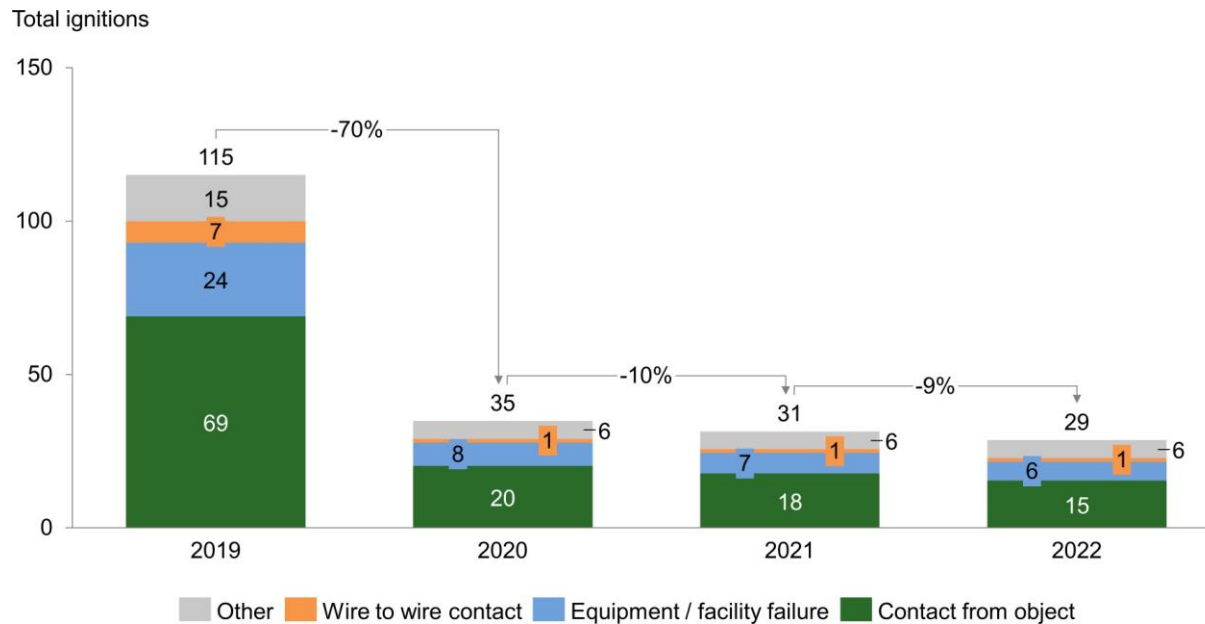


Source: Tables 11a, 11b, 31a, and 31b from SCE WMP and data requests

Note: Projections assume WMP implementation according to plan and weather patterns consistent with 5 year historical average. See the 2020 WMP Guidelines for more information on assumptions made.

# Figure 2.8a: Normalized PSPS duration in customer hours (Large utilities)

Customer hours of PSPS, normalized per Red Flag Warning (RFW) circuit mile day



Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric; more detail is necessary to address potential inconsistencies in how each utility calculates this figure. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year and is calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW (per page 5 of the 2020 WMP Guidelines). For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

Utilities' ability to implement PSPS (including accurate predictions and customer communication) is captured in the Utility Wildfire Mitigation Maturity Model's "PSPS operating model and consequence mitigation" capability.

Source: Table 12 of utility WMPs.

## Figure 2.8b: Normalized PSPS duration in customer hours (Small utilities)

Customer hours of PSPS, normalized per Red Flag Warning (RFW) circuit mile day



No other SMJUs or ITOs reported PSPS use over the last five years

Liberty reported one instance of PSPS use over the last 5 years, for a total of 90 customer hours

**Liberty**

Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric; more detail is necessary to address potential inconsistencies in how each utility calculates this figure. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year and is calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW (per page 5 of the 2020 WMP Guidelines). For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

Utilities' ability to implement PSPS (including accurate predictions and customer communication) is captured in the Utility Wildfire Mitigation Maturity Model's "PSPS operating model and consequence mitigation" capability.

Source: Table 12 of utility WMPs.

# Figure 2.8c: PSPS impacts on critical infrastructure
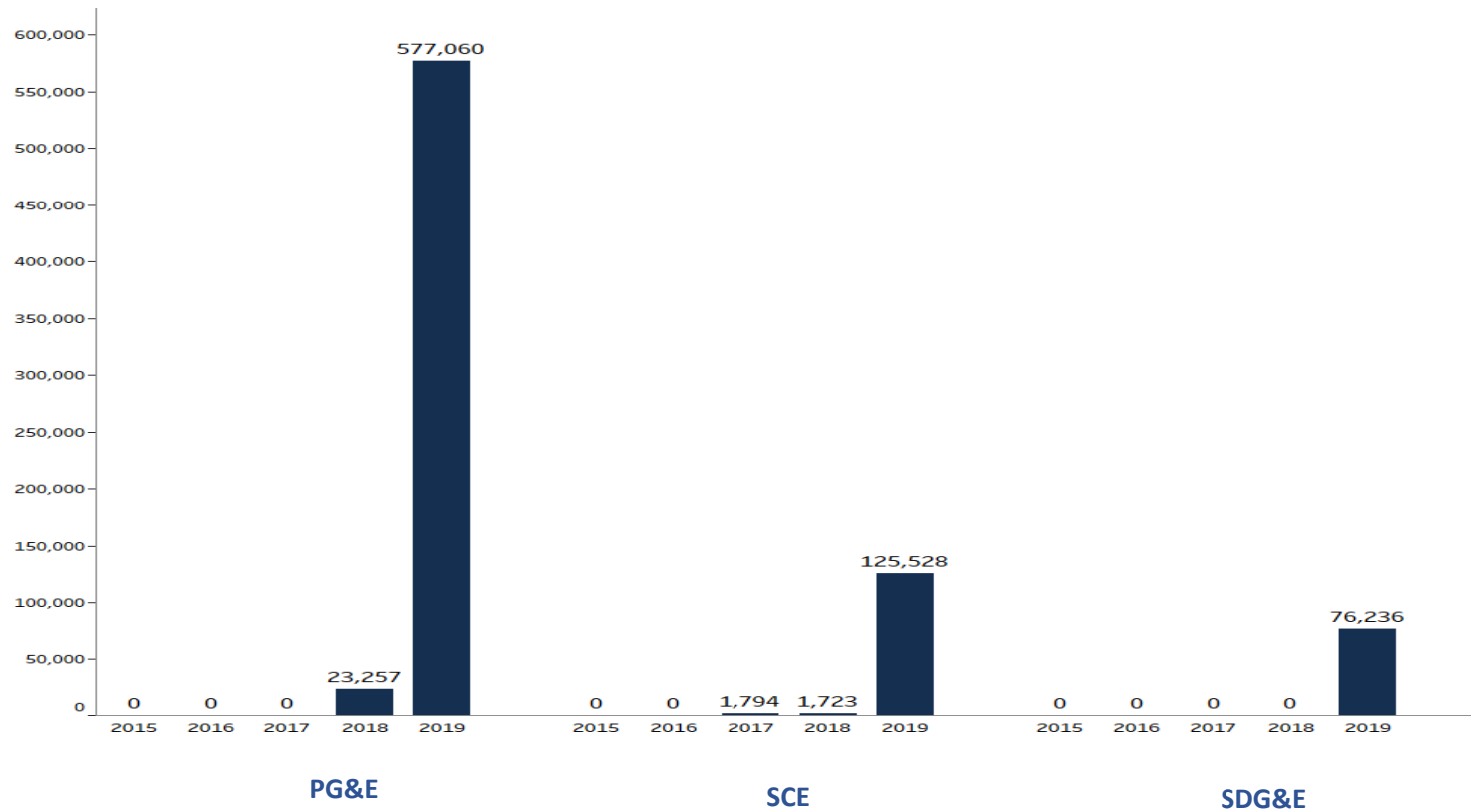


Note: Count is based on number of critical infrastructure locations impacted per hour multiplied by hours offline per year

Source: Table 2 of utility WMPs

## Figure 2.9a: Normalized area burned by utility ignited wildfire (Large utilities)

Acres burned, per 1,000 Red Flag Warning (RFW) circuit mile days



**Total annual acres burned:**

| | | PG&E | | | | | SCE | | | | | SDG&E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,690 | 1,102 | 170,455 | 167,162 | 79,950 | 15,711 | 82,897 | 292,051 | 97,240 | 22,784 | 213 | 7 | 16 | 28 | 8 |

Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110. To address inconsistencies in how utilities normalized this metric in Table 2 of their WMPs, this table shows number of acres burned as reported in Table 2 normalized by RFW Circuit Mile Days as reported in Table 10.

Source: Table 2 and Table 10 of utility WMPs.

## Figure 2.9b: Normalized area burned by utility ignited wildfire (Small utilities)

Acres burned, normalized per 1,000 Red Flag Warning (RFW) circuit mile days



No other SMJUs or ITOs reported any area burned over the last 5 years

Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110. To address inconsistencies in how utilities normalized this metric in Table 2 of their WMPs, this table shows number of acres burned as reported in Table 2 normalized by RFW Circuit Mile Days as reported in Table 10.

Source: Table 2 and Table 10 of utility WMPs.

## Figure 2.10: Number of structures damaged by utility ignited wildfire

Number of structures damaged by utility-ignited wildfire per 1,000 Red Flag Warning (RFW) circuit mile days



**Total annual structures damaged:**

| | PG&E | | | | | | SCE | | | | | | SDG&E | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 965 | 0 | 2,299 | 18,805 | 374 | | 45 | 290 | 1,072 | 1,667 | 26 | | 0 | 0 | 0 | 1 | 0 |
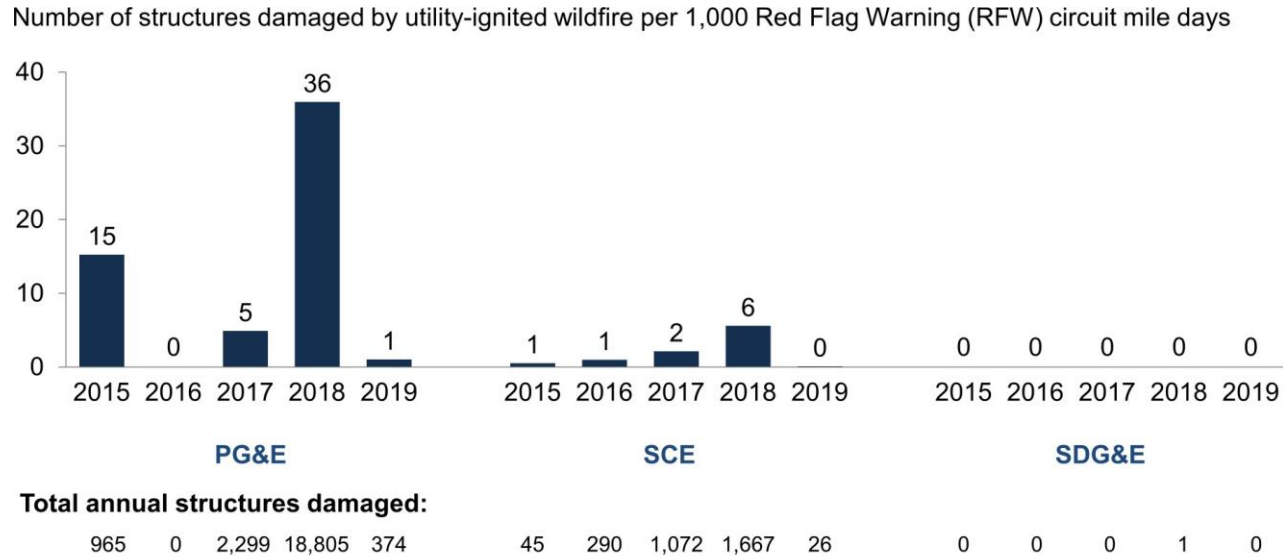
No SMJUs or ITOs reported number of structures damaged over the past 5 years

Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

This figure is shown for IOUs only because the smaller utilities did not report structures damaged in a comparable way. PacifiCorp reported the value of assets desroyed, rather than number of structures damaged; Liberty reported no homes destroyed, only 18 utility poles; and no other SMJUs or ITOs reported any structures damaged.

Source: Table 2 of utility WMPs.

## Figure 2.11: Fatalities due to utility ignited wildfire

Number of fatalities due to utility-ignited wildfire per 10,000 Red Flag Warning (RFW) circuit mile days
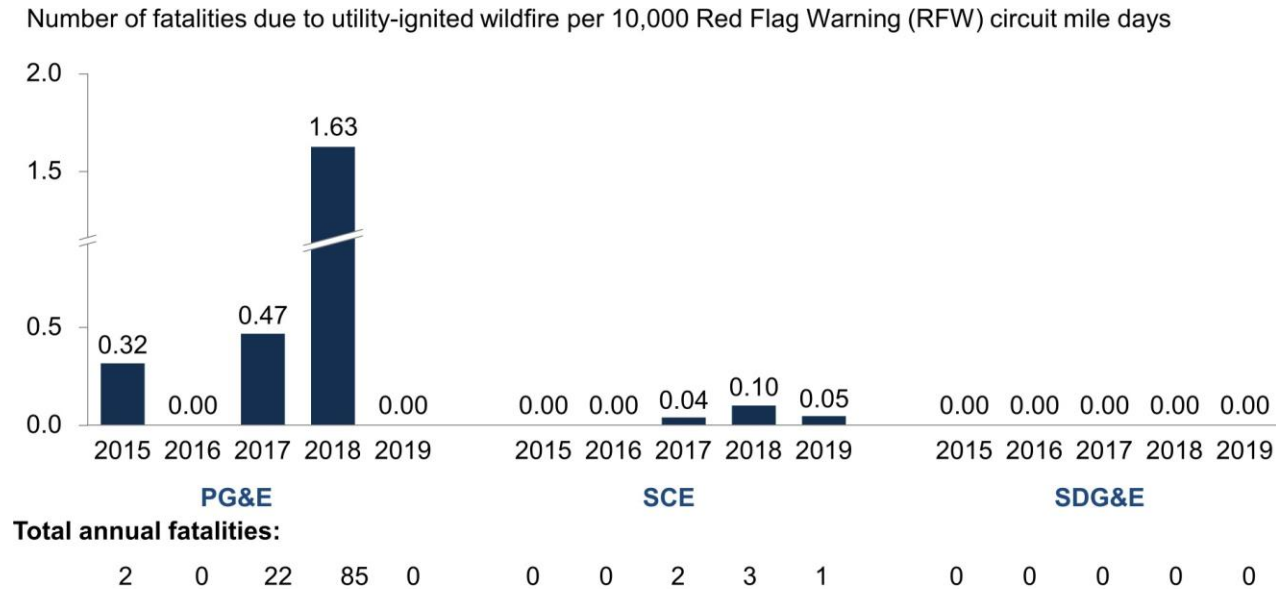


No SMJUs or ITOs reported fatalities due to utility ignited wildfire over the past 5 years

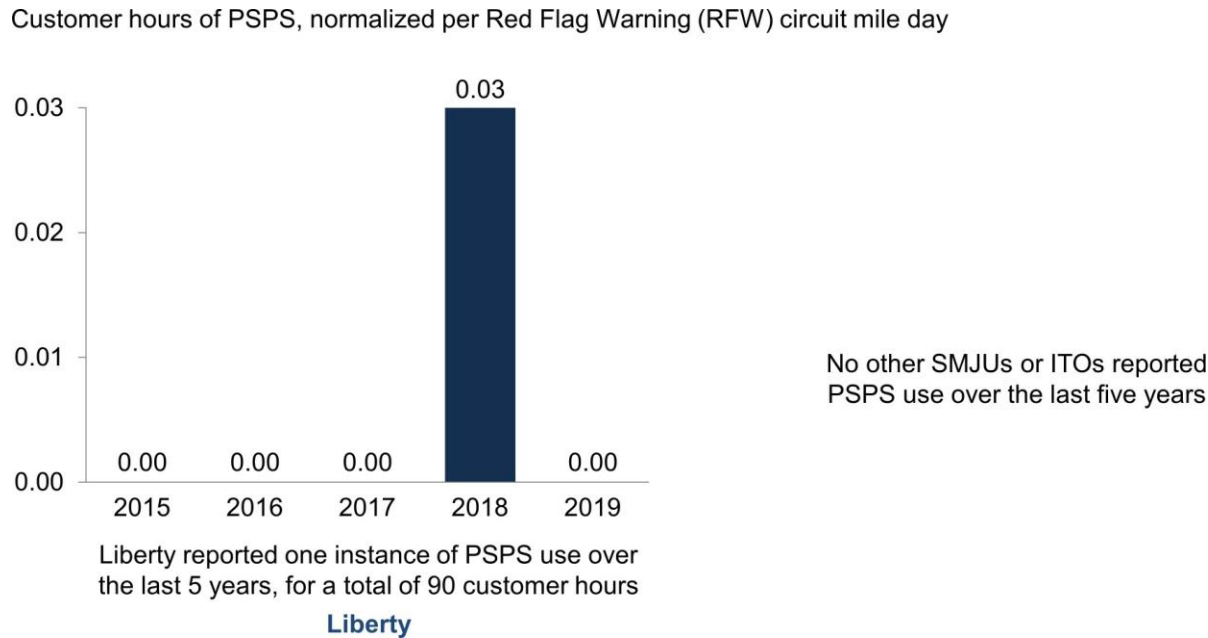Note: Normalization using RFW circuit mile days helps take into account fire weather conditions based on a commonly used metric. A "Red Flag Warning (RFW) Circuit Mile Day" is intended to capture the duration and scope of the fire weather that year. It is defined on page 5 of the 2020 WMP Guidelines to be calculated as the number of circuit miles that were under a RFW multiplied by the number of days those miles were under said RFW. For example, if 100 circuit miles were under a RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW circuit mile days would be 110.

Source: Table 2 of utility WMPs.

## 1.3 Resource Allocation

Figure 3.1a: Overview of total plan spend across utilities (Large utilities)

| | | PG&E | SCE | SDG&E |
|---|---|---|---|---|
| **Total spend** | 2019 planned spend | $2,296M | $671M | $255M |
| | 2019 actual spend | $2,999M | $1,557M | $307M |
| | 2020 planned spend | $3,171M | $1,606M | $444M |
| | 2021 planned spend | $3,130M | $1,404M | $445M |
| | 2022 planned spend | $3,247M | $1,501M | $448M |
| | Total planned spend as for 2020, 2021 and 2022, as reported by utility | **$9,548M** | **$4,511M** | **$1,336M**[1] |
| **Normalized spend** | Total planned spend for 2020, 2021 and 2022 per overhead HFTD circuit mile | $307K | $318K | $291K |

1. Totals for SDG&E include a calculation error on the part of SDG&E in which the sum of the reported spend for 2020, 2021, and 2022 is not equal to the reported total 2020-2022 planned spend. This error has not been corrected by the WSD in this table.

Note: "M" stands for millions, "K" stands for thousands.

Source: Tables 21-30 from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs

Figure 3.1b: Overview of total plan spend across utilities (Small utilities)

| | | Liberty | PacifiCorp | Bear Valley(!)[2] | Horizon West | Trans Bay Cable |
|---|---|---|---|---|---|---|
| **Total spend** | 2019 planned spend | $4M | $1M | $12M | $0M | $0M |
| | 2019 actual spend | $7M | $13M | $12M | $0M | $0M |
| | 2020 planned spend | $30M | $26M | $84M | $4M | $0M |
| | 2021 planned spend | $32M | $38M | $79M | $4M | $0M |
| | 2022 planned spend | $27M | $37M | $79M | $0M | $0M |
| | Total planned spend as for 2020, 2021 and 2022, as reported by utility | $88K[1] | $101M[1] | $247M[1] | $8M | $0M |
| **Normalized spend** | Total planned spend for 2020, 2021 and 2022 per overhead HFTD circuit mile | $63K | $86K | $1,168K | NA – no operational facilities as of WMP submission | $0K |

1. Totals for Liberty, PacifiCorp, and Bear Valley include calculation errors on the part of utilities in which the reported sum of the spend for 2020, 2021, and 2022 is not equal to the total reported 2020-2022 planned spend. This error has not been corrected by the WSD in this table.

2. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Note: "M" stands for millions, "K" stands for thousands.

Source: Tables 21-30 from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs

# Figure 3.2a: Overview of total plan spend across utilities (Large utilities)



Percentage of total 2020-2022 planned spend

Total planned spend per overhead HFTD circuit mile (in $k, 2020-22 plan total)

**PG&E** — 307
- All other: 5%
- Grid operations and protocols: 8%
- Asset management and inspections: 5%
- Veg. management and inspections: 28%
- Grid design and system hardening: 53%

**SCE** — 318
- All other: 7%
- Grid operations and protocols: 4%
- Asset management and inspections: 5%
- Veg. management and inspections: 13%
- Grid design and system hardening: 70%

**SDG&E** — 291[1]
- All other: 6%
- Grid operations and protocols: 5%
- Asset management and inspections: 11%
- Veg. management and inspections: 14%
- Grid design and system hardening: 64%

Legend:
- All other
- Grid operations and protocols
- Asset management and inspections
- Veg. management and inspections
- Grid design and system hardening

1. Totals for SDG&E include a calculation error on the part of SDG&E which has not been corrected by the WSD in this chart. Specifically, the sum of the reported spend for 2020, 2021, and 2022 is not equal to the reported total 2020-2022 spend as reported by SDG&E.

Source: Tables 21-30 from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs

## Figure 3.2b: Overview of total plan spend across utilities (Small utilities)



Percentage of total 2020-2022 planned spend

Total planned spend per overhead HFTD circuit mile (in $k, 2020-22 plan total)

| | Liberty | PacifiCorp | Bear Valley(!)[2] |
|---|---|---|---|
| Total ($k) | 63[1] | 86[1] | 1,169[1] |
| All other | 5% | 1% | 2% |
| Grid operations and protocols | 0% | 6% | 0% |
| Asset management and inspections | 13% | 4% | 4% |
| Veg. management and inspections | 31% | 22% | 4% |
| Grid design and system hardening | 51% | 68% | 90% |

Legend:
- ■ All other
- ■ Grid operations and protocols
- ■ Asset management and inspections
- ■ Veg. management and inspections
- ■ Grid design and system hardening

1. Totals for Liberty, PacifiCorp and Bear Valley include calculation errors on the part of those utilities which have not been corrected by the WSD in this chart. Specifically, the sum of the spend for 2020, 2021, and 2022 is not equal to the total 2020-2022 spend as reported by those utilities.

2. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Note: Spending for ITOs not shown here. Trans Bay Cable reports no planned spend. Horizon West Transmission (HWT) does not yet have operational facilities but reports up to $8M in planned spending, shown in HWT detailed appendix.

Source: Tables 21-30 from utility WMPs and data requests, normalized by data from Table 13 of utility WMPs

### Figure 3.3a: Breakdown of planned spend by category (Large utilities)

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| Category | PG&E | | SCE | | SDG&E | |
| --- | --- | --- | --- | --- | --- | --- |
| | Total plan spend, $M | % of total | Total plan spend, $M | % of total | Total plan spend, $M | % of total |
| Grid design / system hardening | 5,102 | 53% | 3,162 | 70% | 853 | 64% |
| Vegetation mgt. and inspections | 2,645 | 28% | 583 | 13% | 187 | 14% |
| Asset mgt. and inspections | 499 | 5% | 232 | 5% | 146 | 11% |
| Grid operations and protocols | 788 | 8% | 198 | 4% | 68[1] | 5% |
| Data governance | 177 | 2% | 39 | 1% | 1 | 0% |
| Situational awareness and forecasting | 140 | 2% | 90 | 2% | 24 | 2% |
| Emergency planning and preparedness | 114 | 1% | 72 | 2% | 18 | 1% |
| Stakeholder cooperation & community engagement | 84 | 1% | 0 | 0% | 0 | 0% |
| Resource allocation methodology | 0 | 0% | 133 | 3% | 26 | 2% |
| Risk assessment and mapping | 0 | 0% | 0 | 0% | 14 | 1% |
| **Total plan, 2020-2022** | **9,548** | **100%** | **4,511** | **100%** | **1,336** | **100%** |

1. SDG&E has reported an incorrect total (reported 2020-2022 total plan spend is not equal to the sum of planned 2020, 2021, and 2022 spend). This error has not been corrected by the WSD in this table.

Source: Tables 21-30 of utility WMPs

## Figure 3.3b: Breakdown of planned spend by category (Small utilities)

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| Category | Liberty | | PacifiCorp | | Bear Valley(!)[2] | |
|---|---|---|---|---|---|---|
| | Total plan spend, $M | % of total | Total plan spend, $M | % of total | Total plan spend, $M | % of total |
| Grid design / system hardening | 45 | 51% | 68 | 68% | 222[1] | 90% |
| Vegetation mgt. and inspections | 28 | 31% | 22 | 22% | 10 | 4% |
| Asset mgt. and inspections | 11[1] | 13% | 4[1] | 4% | 10 | 4% |
| Grid operations and protocols | 0 | 0% | 6 | 6% | 1 | 0% |
| Data governance | 1 | 2% | | 0% | 0 | 0% |
| Situational awareness and forecasting | 2 | 2% | 1 | 1% | 4 | 2% |
| Emergency planning and preparedness | 1 | 1% | 0 | 0% | 0 | 0% |
| Stakeholder cooperation & community engagement | 0 | 0% | 0 | 0% | 0 | 0% |
| Resource allocation methodology | 0 | 0% | 0 | 0% | 0 | 0% |
| Risk assessment and mapping | 0 | 0% | 0 | 0% | 0 | 0% |
| **Total plan, 2020-2022** | **88** | **100%** | **101** | **100%** | **247** | **100%** |

1. Totals for Liberty, PacifiCorp, and BVES include calculation errors on the part of utilities where reported 2020-2022 plan total spend is different from the sum of reported spend for 2020, 2021 and 2022. These errors have not been corrected by the WSD in this table.
2. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Source: Tables 21-30 of utility WMPs

## Figure 3.4a: PG&E resource allocation detail for top 5 initiatives by planned spend

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total planned spend |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
| 1 | 17-1. Updates to grid topology to minimize risk of ignition in HFTDs - System Hardening, Distribution | Grid design and system hardening | 229 | 287 | 367 | 566 | 698 | 1,631 | 17% |
| 2 | 15. Remediation of at-risk species - Enhanced Vegetation Management | Vegetation management and inspections | 295 | 424 | 449 | 463 | 477 | 1,388 | 15% |
| 3 | 15. Transmission tower maintenance and replacement | Grid design and system hardening | 444 | 750 | 297 | 305 | 312 | 914 | 10% |
| 4 | 6. Distribution pole replacement and reinforcement, including with composite poles | Grid design and system hardening | 255 | 109 | 212 | 218 | 223 | 654 | 7% |
| 5 | 12-4. Other corrective action - Distribution | Grid design and system hardening | 322 | 167 | 200 | 205 | 210 | 614 | 6% |
| | **Total spend for top 5 initiatives by planned spend** | | **1,545** | **1,738** | **1,525** | **1,756** | **1,920** | **5,201** | **54%** |

Source: Tables 21-30 of utility WMP

**Figure 3.4b: PG&E resource allocation detail for top 4 categories by planned spend**

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| Category | Total Category Planned Spend | Category spend as percent of total planned spend | Top 3 initiatives by planned spend in category<br>Initiative names as reported in WMP | Initiative spend as percent of total planned spend |
|---|---|---|---|---|
| Grid design and system hardening | $5.1B | 53% | 17-1. System Hardening, Distribution | 17% |
| | | | 15. Transmission tower maintenance and replacement | 10% |
| | | | 6. Distribution pole replacement and reinforcement, including with composite poles | 7% |
| Vegetation management and inspections | $2.6B | 28% | 15. Remediation of at-risk species-Enhanced Veg Mgt. | 15% |
| | | | 2. Detailed inspections of vegetation-Distribution | 6% |
| | | | 9. Other discretionary inspection of veg. around distribution lines and equipment, beyond those required by regulations | 3% |
| Asset management of inspections | $499M | 5% | 1. Detailed inspections of distribution electric lines/equip. | 3% |
| | | | 2. Detailed inspections of transmission electric lines/equip. | 2% |
| | | | 15-1 Substation inspections - Transmission Substation | 0% |
| Grid operations and protocols | $788M | 8% | 5-1. PSPS events and mitigation of PSPS impacts-Distribution | 4% |
| | | | 5-3. PSPS events and mitigation of PSPS impacts - Additional PSPS Mitigation Initiatives, Distribution | 2% |
| | | | 2. Crew-accompanying ignition prevention and suppression resources and services | 1% |

Note: "M" stands for millions, "B" stands for billions.

Source: Tables 21-30 of utility WMP

## Figure 3.5a: SCE resource allocation detail for top 5 initiatives by planned spend

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total planned spend |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
| 1 | 3.1. Covered conductor installation: covered conductor (SH-1) | Grid design and system hardening | 42 | 240 | 454 | 656 | 772 | 1,883 | 42% |
| 2 | 12.1. Other corrective action: distribution remediation (SH-12.1) | Grid design and system hardening | 192 | 395 | 328 | 125 | 85 | 538 | 12% |
| 3 | 20. Vegetation management to achieve clearances around electric lines and equipment | Vegetation management and inspections | 76 | 247 | 76 | 64 | 61 | 201 | 4% |
| 4 | 6.1. Distribution pole replacement and reinforcement, including with composite poles: composite poles and crossarms (SH-3) | Grid design and system hardening | 5 | Reported as "NA" - part of 3.1 | 57 | 64 | 74 | 194 | 4% |
| 5 | 16.1. Removal and remediation of trees with strike potential to electric lines and equipment: hazard tree (VM-1) | Vegetation management and inspections | 57 | 15 | 54 | 59 | 72 | 186 | 4% |
| **Total spend for top 5 initiatives by planned spend** | | | **372** | **897** | **969** | **969** | **1063** | **3002** | **67%** |

Source: Tables 21-30 of utility WMP

### Figure 3.5b: SCE resource allocation detail for top 4 categories by planned spend
*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| Category | Total Category Planned Spend | Category spend as percent of total planned spend | Top 3 initiatives by planned spend<br>Initiative names in some cases abbreviated to fit in this table | Initiative spend as percent of total plan spend |
|---|---|---|---|---|
| Grid design and system hardening | $3.1B | 70% | 3.1. Covered conductor installation: covered conductor | 42% |
| | | | 12.1. Other corrective action: Distribution remediation | 12% |
| | | | 6.1. Distribution pole replacement and reinforcement, including with composite poles: Composite poles and crossarms | 4% |
| Vegetation management and inspections | $583M | 13% | 20. Vegetation management to achieve clearances around electric lines and equipment | 4% |
| | | | 16.1. Removal and remediation of trees with strike potential to electric lines and equipment: Hazard tree | 4% |
| | | | 16.2. Removal and remediation of trees with strike potential to electric lines and equipment: DRI quarterly inspections and tree removals | 2% |
| Asset management of inspections | $232M | 5% | 9.2. Distribution aerial inspections | 2% |
| | | | 15. Substation inspections | 1% |
| | | | 10.2. Transmission aerial inspections | 1% |
| Grid operations and protocols | $198M | 4% | 5.8. PSPS events and mitigation of PSPS impacts: SGIP resiliency | 3% |
| | | | 5. PSPS events and mitigation of PSPS impacts | 0% |
| | | | 5.3. PSPS events and mitigation of PSPS impacts: income qualified critical care (IQCC) customer battery backup incentive program | 0% |

Source: Tables 21-30 of utility WMP

## Figure 3.6a: SDG&E resource allocation detail for top 5 initiatives by planned spend
*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total plan spend |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
| 1 | Undergrounding of Electric Lines and/or Equipment | Grid design and system hardening | 2 | 5 | 31 | 157 | 188 | 376 | 28% |
| 2 | Distribution Overhead Fire Hardening (OH) | Grid design and system hardening | 75 | 121 | 87 | 12 | 7 | 106 | 8% |
| 3 | LTE Communication Network | Grid design and system hardening | 11 | 7 | 32 | 32 | 42 | 105 | 8% |
| 4 | Tree Trimming | Vegetation management and inspections | Not provided[1] | 34 | 28 | 28 | 28 | 83 | 6% |
| 5 | Drone Inspections (O&M) – Engr and construction | Asset management and inspections | Listed "NA" | Listed "NA" | 27 | 24 | 20 | 71 | 5% |
| | **Total spend for top 5 initiatives by planned spend** | | **88** | **166** | **204** | **253** | **284** | **741** | **55%** |

1. Incorporated into 2019 base costs.

Source: Tables 21-30 of utility WMP

## Figure 3.6b: SDG&E resource allocation detail for top 4 categories by planned spend

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| Category | Total Category Planned Spend | Category spend as percent of total planned spend | Top 3 initiatives by planned spend<br>Initiative names as reported in WMP | Initiative spend as percent of total planned spend |
|---|---|---|---|---|
| Grid design and system hardening | $853M | 64% | Undergrounding of Electric Lines and/or Equipment | 28% |
| | | | Distribution Overhead Fire Hardening (OH) | 8% |
| | | | LTE Communication Network | 8% |
| Vegetation management and inspections | $187M | 14% | Tree Trimming | 6% |
| | | | Enhanced Inspections Patrols and Trimming | 5% |
| | | | Pole Brushing | 1% |
| Asset management of inspections | $146M | 11% | Drone Inspections (O&M) *Engineering & Construction | 5% |
| | | | Drone Inspections (O&M) *Flights & Assessments | 4% |
| | | | Drone Inspections (capital) | 1% |
| Grid operations and protocols | $68M | 5% | Aviation Firefighting Program (O&M) | 2% |
| | | | Aviation Firefighting Program (Capital) | 2% |
| | | | Communication Practices (O&M)[1] | 1% |

1. Totals for SDG&E include a calculation error on the part of SDG&E in which the sum of the reported spend for 2020, 2021, and 2022 is not equal to the reported total 2020-2022 planned spend. This error has not been corrected by the WSD in this table.

Note: "M" stands for millions

Source: Tables 21-30 of utility WMP

## Figure 3.7: Liberty resource allocation detail for top 5 initiatives by planned spend

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total plan spend |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
| 1 | Covered Conductor Installation | Grid design and system hardening | 1 | 1 | 3 | 8 | 10 | 21 | 24% |
| 2 | Remediation of at-risk-species | Vegetation management and inspections | 0 | 5 | 5 | 5 | 5 | 14 | 16% |
| 3 | 13. Pole loading infrastructure hardening and replacement program based on pole loading assessment program | Grid design and system hardening | 1 | 1 | 2 | 3 | 4 | 8 | 9% |
| 4 | Undergrounding electric lines and/or equipment | Grid design and system hardening | 0 | 0 | 2 | 6 | 0 | 8 | 9% |
| 5 | Fuel management and reduction of "slash" from vegetation management activities | Vegetation management and inspections | 0 | 0 | 2 | 3 | 3 | 7 | 8% |
| **Total spend for top 5 initiatives by planned spend** | | | **2** | **6** | **13** | **24** | **21** | **58** | **66%** |

Note: "M" stands for millions.

Source: Tables 21-30 of utility WMP

## Figure 3.8: PacifiCorp resource allocation detail for top 5 initiatives by planned spend

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total plan spend |
|---|---|---|---|---|---|---|---|---|---|
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
| 1 | 3b. Covered conductor installation - distribution | Grid design and system hardening | 0 | 0 | 8 | 11 | 12 | 31 | 31% |
| 2 | 6b. Transmission pole replacement and reinforcement, including with composite poles | Grid design and system hardening | 0 | 0 | 4 | 4 | 4 | 12 | 12% |
| 3 | 3. Covered conductor installation - transmission | Grid design and system hardening | 0 | 0 | 0 | 6 | 6 | 12 | 12% |
| 4 | 20. Vegetation management to achieve clearances around electric lines and equipment | Vegetation management and inspections | 0 | 4 | 3 | 3 | 3 | 10 | 10% |
| 5 | 6. Distribution pole replacement and reinforcement, including with composite poles | Grid design and system hardening | 0 | 0 | 0 | 3 | 3 | 5 | 5% |
| **Total spend for top 5 initiatives by planned spend** | | | **0** | **4** | **15** | **27** | **28** | **70** | **70%** |

Note: "M" stands for millions.

Source: Tables 21-30 of utility WMP

## Figure 3.9: Bear Valley resource allocation detail for top 5 initiatives by planned spend(!)[1]

*Total plan spend is shown for 2020-2022 plan period as calculated by utility*

| | Initiative | Category | Planned spend, $M | | | | | 2020-2022 plan total | Initiative spend as percent of total plan spend |
| | | | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 16. Undergrounding of electric lines and/or equipment (35 kV system) | Grid design and system hardening | 0 | 0 | 39 | 39 | 39 | 118 | 27% |
| 2 | 16. Undergrounding of electric lines and/or equipment (4 kV system) | Grid design and system hardening | 0 | 0 | 13 | 13 | 13 | 40 | 9% |
| 3 | 18. Other / not listed (Covering overhead conductor) | Grid design and system hardening | 0 | 0 | 4 | 4 | 4 | 11 | 2% |
| 4 | 2. Detailed inspections of vegetation around distribution electric lines and equipment | Vegetation management and inspections | 3 | 3 | 3 | 3 | 3 | 10 | 2% |
| 5 | 20. Other / not listed (energy storage facility) | Grid design and system hardening | 0 | 0 | 0 | 5 | 5 | 9 | 2% |
| **Total spend for top 5 initiatives by planned spend** | | | **3** | **3** | **59** | **64** | **64** | **187** | **43%** |

1. BVES submitted errata on 5/20/2020 that changed their WMP. Those updates are not reflected here (WSD analysis forthcoming).

Note: "M" stands for millions.

Source: Tables 21-30 of utility WMP

## Figure 3.10: Horizon West Transmission allocation detail for all planned initiatives

*Total plan spend is shown for 2020-2022 plan period as calculated by utility. Horizon West reported only four initiatives with allocated spend*

| Initiative | Upper range[1] of planned spend, $M | | | | | | Initiative spend as percent of total plan spend |
|---|---|---|---|---|---|---|---|
| | 2019 plan | 2019 actual | 2020 plan | 2021 plan | 2022 plan | 2020-2022 plan total | |
| SVC Site Hardening | 0.00 | 0.00 | 2.20 | 4.30 | 0.00 | 6.50 | 77% |
| Underground of 115 feet of overhead line | 0.00 | 0.00 | 1.70 | 0.00 | 0.00 | 1.70 | 20% |
| Advanced weather monitoring, weather stations and OH line/pole cameras | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 | 0.15 | 2% |
| Inspections (Training, facility, vegetation, and fuel modification) | 0.00 | 0.00 | 0.04 | 0.04 | 0.04 | 0.11 | 1% |
| **Total 2020-2022 planned spend** | **0.00** | **0.00** | **4.09** | **4.34** | **0.04** | **8.46** | **100%** |

1. For some initiatives, Horizon West reported a range of possible future spend. The higher number in that reported range is displayed in this table.

Note: "M" stands for millions.

Source: Tables 21-30 of utility WMP

**(End of Appendix B)**

# APPENDIX C

# SCE Maturity Model Summary

# 0. SCE: Description of Data Sources

Data related to the Maturity Model is based on the latest submitted versions of 2020 Utility Wildfire Mitigation Maturity Survey ("Survey") as of April 10th, 2020. Data for the Maturity Model is pulled from Survey responses unless stated otherwise.

All source data (the WMP and the Survey responses) are available at cpuc.ca.gov/wildfiremitigationplans

All the analysis and corresponding tables presented in this appendix rely upon data that is self-reported by the utilities. By utilizing and presenting this self-reported data in this appendix, the WSD is not independently validating that all data elements submitted by utilities are accurate. The WSD will continue to evaluate utility data, conduct data requests, and conduct additional compliance activities to ensure that data provided is accurate.

# 1. SCE: Maturity Model Summary

**Contents**

## 1.1 SCE: Maturity Summary by Category

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| **A. Risk assessment and mapping**<br><br>Median automated maturity levels:<br><br>2020: 1<br>2023: 1 | • SCE plans to increase its maturity level by 2023 in three of five capabilities. Specifically, by capability:<br>  • **1. Climate Scenario Modeling**: SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE determines wildfire risk based on weather and its impacts. By 2023, SCE plans to use a partially automated climate scenario modelling tool to estimate the risk for various weather scenarios.<br>  • **2. Ignition Risk Estimation:** SCE's survey responses do not indicate an increased maturity level in 2023. However, SCE projects some growth within the capability: currently risk of ignition is categorized into two categories (i.e. high and low) but by 2023 SCE plans to quantitatively and accurately assess the risk of ignition.<br>  • **3. Estimation of Wildfire Consequences for Communities:** SCE's survey responses indicate an increased maturity level in 2023. Currently, estimation of ignition risk is manual and based on level and conditions of vegetation and weather. By 2023 SCE plans to have a partially automated tool that is independently assessed by experts and real-time learning and based on levels and conditions of vegetation and weather as well as the characteristics of the area surrounding impact area.<br>  • **4. Estimation of wildfire and PSPS risk-reduction impact:** SCE's survey responses indicate an increased maturity level in 2023. Currently, risk reduction of initiatives is estimated categorically (e.g. low, medium, high). By 2023, risk reduction potential estimates will be made quantitatively at the asset level, using weather, vegetation, and initiative-specific impact as inputs.<br>  • **5. Risk maps and simulation algorithms**: SCE's survey responses do not indicate an increased maturity level in 2023. However, SCE projects some growth within the capability: currently, only SCE's data is used to make decisions to update algorithms but by 2023 SCE plans to also use data from other sources to make these decisions. |
| **B. Situational awareness and forecasting**<br><br>Median automated maturity levels:<br><br>2020: 1 | • SCE plans to increase its maturity level by 2023 in zero of five capabilities. Specifically, by capability:<br>  • **6. Weather variables collected:** SCE's survey responses project no growth in this capability. SCE uses a range of weather variables from multiple sources in its models and forecasts.<br>  • **7. Weather data resolution:** SCE's survey responses project no growth in this capability. SCE collects weather data automatically at least six times an hour in all areas needed to predict weather on the grid.<br>  • **8. Weather forecasting ability:** SCE's survey responses project no growth in this capability. SCE uses a combination of internal and external weather data to make forecasts with circuit-level granularity. |

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| 2023: 1 | • **9. External sources used in weather forecasting:** SCE's survey responses project no growth in this capability. SCE uses a combination of data sources to create a single visual and configurable live map that is used to help make decisions.<br>• **10. Wildfire detection processes and capabilities:** SCE's survey responses project no growth in this capability. SCE has well defined procedures for detecting ignitions that include notification of suppression forces and key stakeholders. |
| **C. Grid design and system hardening**<br><br>Median automated maturity levels:<br><br>2020: 1<br>2023: 2 | • SCE plans to increase its maturity level by 2023 in two of five capabilities. Specifically, by capability:<br>• **11. Approach to prioritizing initiatives across territory:** SCE's survey responses indicate an increased maturity level in 2023. Currently, risk reduction initiatives are prioritized based on risk modeling that uses local environment and circuit-specific characteristics as inputs. By 2023, SCE plans to also account for power delivery uptime.<br>• **12. Grid design for minimizing ignition risk:** SCE's survey responses project no growth in this capability. SCE's grid design meets minimum G095 requirements and loading standards in HFTD areas.<br>• **13. Grid design for resiliency and minimizing PSPS:** SCE's survey responses project no growth in this capability. SCE's transmission has (n-1) redundancy for all circuits subject to PSPS.<br>• **14. Risk based hardening and cost efficiency:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE has an accurate understanding of the relative cost and effectiveness of different initiatives. By 2023, SCE plans to tailor this understanding to the specific circumstances of different locations on the grid.<br>• **15. Grid design and asset innovation:** SCE's survey responses project no growth in this capability. SCE evaluates hardening initiatives based on installation into grid and measurement of direct reduction in ignition events and near-misses. |
| **D. Asset management and inspections**<br><br>Median automated maturity levels:<br><br>2020: 2 | • SCE plans to increase its maturity level by 2023 in zero of five capabilities. Specifically, by capability:<br>• **16. Asset inventory and condition assessments:** SCE's survey responses do not indicate an increased maturity level in 2023. However, SCE projects some growth within the capability: currently SCE has an accurate inventory of equipment that may contribute to wildfire risk, and by 2023 SCE plans to include records of all inspections and repairs, as well as up-to-date work plans on expected future repairs and replacements, in this inventory.<br>• **17. Asset inspection cycle:** SCE's survey responses project no growth in this capability. SCE patrol inspections are above minimum regulatory requirements, with more frequent inspections for highest risk equipment. |

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| 2023: 2 | • **18. Asset inspection effectiveness:** SCE's survey responses project no growth in this capability. SCE's inspection procedures include all items required by statute and regulations.<br>• **19. Asset maintenance and repair:** SCE's survey responses do not indicate an increased maturity level in 2023. However, SCE projects some growth within the capability: currently, service intervals are set based on wildfire risk in relevant area, but by 2023, SCE plans to set them based on risk in the relevant circuit.<br>• **20. QA/QC for asset management:** SCE's survey responses do not indicate an increased maturity level in 2023. However, SCE projects some growth within the capability: currently, QA/QC information is used to identify deficiencies in quality of work/inspections, and by 2023 SCE plans to additionally recommend trainings based on these deficiencies. |
| **E. Vegetation management and inspections**<br><br>Median automated maturity levels:<br><br>2020: 2<br>2023: 2 | • SCE plans to increase its maturity level by 2023 in zero of six capabilities. Specifically, by capability:<br>• **21. Vegetation inventory and condition assessments:** SCE's survey responses project no growth in this capability. SCE has a centralized inventory of vegetation clearances that includes individual vegetation species as well as individual high risk trees across the grid.<br>• **22. Vegetation inspection cycle**: SCE's survey responses project no growth in this capability. All types of vegetation inspections are above minimum regulatory requirements, with more frequent inspections in the highest risk areas.<br>• **23. Vegetation inspection effectiveness**: SCE's survey responses project no growth in this capability. Inspection procedures and checklists include all item required by statute and regulations as well as the vegetation types typically responsible for ignitions and near misses.<br>• **24. Vegetation grow-in mitigation**: SCE's survey responses project no growth in this capability. SCE meets minimum statutory and regulatory clearance around all lines and equipment.<br>• **25. Vegetation fall-in mitigation**: SCE's survey responses project no growth in this capability. SCE systematically removes vegetation outside of its right of way and informs relevant communities of removal.<br>• **26. QA/QC for vegetation management**: SCE's survey responses project no growth in this capability. Contractor and employee activity is audited through an established and functioning audit process. |
| **F. Grid operations and protocols**<br><br>Median automated maturity levels:<br><br>2020: 2 | • SCE plans to increase its maturity level by 2023 in two of six capabilities. Specifically, by capability:<br>• **27. Protective equipment and device settings**: SCE's survey responses project no growth in this capability. SCE adjusts sensitivity of grid elements through a partially automated process based on risk mapping and monitoring of near misses during high threat weather conditions.<br>• **28**. **Incorporating ignition risk factors in grid control:** SCE's survey responses project no growth in this capability. SCE has a clearly explained process for determining whether to operate the grid beyond current or voltage designs. |

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| 2023: 2 | <ul><li>**29. PSPS op. model and consequence mitigation:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE forecasts and communicates details of PSPS events to >95% of affected customers and >99% of medical baseline customers. By 2023, SCE plans to communicate PSPS events to >99.9% of affected customers and 100% of medical baseline customers in advance, and for the average downtime per customer to fall below 30 minutes</li><li>**30. Protocols for PSPS initiation:** SCE's survey responses project no growth in this capability. SCE has explicit policies and explanation for the thresholds above which PSPS is activated as a measure of last resort.</li><li>**31. Protocols for PSPS re-energization:** SCE's survey responses project no growth in this capability. Currently, there is an existing process for accurately inspecting de-energized sections of the grid prior to re-energization. By 2023, SCE plans to augment this inspection process with sensors and aerial tools, and to get the average time to re-energization to below 8 hours</li><li>**32. Ignition prevention and suppression:** SCE's survey responses indicate an increased maturity level in 2023. SCE has explicit policies about the role of crews, including contractors / subcontractors, at the ignition site.</li></ul> |
| **G. Data Governance**<br><br>Median automated maturity levels:<br><br>2020: 0<br>2023: 3 | <ul><li>SCE plans to increase its maturity level by 2023 in three of four capabilities. Specifically, by capability:</li><ul><li>**33. Data collection and curation**: SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE does not have a centralized database of situational, operational, and risk data. By 2023, SCE 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.</li><li>**34. Data transparency and analytics:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE does not have a single document cataloguing all fire-related data, algorithms, analyses, and data process. By 2023, SCE plans to have a document of this type that includes an explanation of sources, assumption, and documentation of analyses.</li><li>**35. Near-miss tracking:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE cannot simulate wildfire potential given an ignition with certain characteristics. By 2023, SCE 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</li><li>**36. Data sharing with research community:** SCE's survey responses project no growth in this capability. SCE makes data disclosures beyond what is required.</li></ul></ul> |

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| **H. Resource allocation methodology**<br><br>Median automated maturity levels:<br><br>2020: 1<br>2023: 2 | • SCE plans to increase its maturity level by 2023 in six of six capabilities. Specifically, by capability:<br>　• **37. Scenario analysis across different risk levels** SCE's survey responses indicate an increased maturity level in 2023. Currently, scenario projections have regional granularity. By 2023, SCE plans to have scenario projections with asset level granularity.<br>　• **38. Presentation of relative risk spend efficiency for portfolio of initiatives:** SCE's survey responses indicate an increased maturity level in 2023. Currently SCE estimates expected overall reduction with regional granularity. By 2023, SCE plans to provide estimates of impact on reliability factors as well as expected overall reduction in risk with asset-level granularity.<br>　• **39. Process for determining risk spend efficiency of vegetation management initiatives:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE has an accurate relative understanding of the cost and effectiveness of producing a reliable RSE estimate. By 2023, SCE plans to have an accurate quantitative understanding of the cost and effectiveness of a reliable RSE estimate.<br>　• **40. Process for determining risk spend efficiency of system hardening initiatives:** SCE's survey responses indicate an increased maturity level in 2023. Currently, Currently, SCE has an accurate relative understanding of the cost and effectiveness to produce a reliable RSE estimate. By 2023, SCE plans to have an accurate quantitative understanding of the cost and effectiveness to produce a reliable RSE estimate.<br>　• **41. Portfolio-wide initiative allocation methodology:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE considers estimates of RSE when allocating capital. By 2023, SCE plans to use accurate RSE estimates that consider the state of specific assets / implementation location when determining allocation of capital.<br>　• **42. Portfolio-wide innovation in new wildfire initiatives:** SCE's survey responses indicate an increased maturity level in 2023. Currently, there is no program in place to develop and evaluate the RSE of new wildfire initiatives. By 2023, SCE plans to use total cost of ownership to develop / evaluate the risk spend efficiency on new wildfire initiatives |
| **I. Emergency planning and preparedness**<br><br>Median automated maturity levels:<br><br>2020: 4 | • SCE plans to increase its maturity level by 2023 in one of five capabilities. Specifically, by capability:<br>　• **43. Wildfire plan integrated with overall disaster/emergency plan**: SCE's survey responses project no growth in this capability. SCE's wildfire plan is an integrated component of overall disaster and emergency plans.<br>　• **44. Plan to restore service after wildfire related outages:** SCE's survey responses project no growth in this capability. SCE has detailed and actionable procedures in place to restore service after a wildfire related outage. |

| Maturity Model Category | Summary of Maturity Assessment<br>Focused on areas where utility plans to grow over the 2020-2022 WMP period |
|---|---|
| 2023: 4 | - **45. Emergency community engagement during and after wildfire:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE provides clear and substantially complete communication of available information relevant to affected customers. By 2023, SCE plans to also refer customers affected by wildfires to other relevant emergency management agencies.<br>- **46. Protocols in place to learn from wildfire events:** SCE's survey responses project no growth in this capability. SCE has a protocol in place to record the outcome of emergency events and to clearly and actionably document learnings and potential process improvements.<br>- **47. Processes for continuous improvement after wildfire and PSPS:** SCE's survey responses project no growth in this capability. SCE has a process for improvement of wildfire plan / response after wildfire and PSPS events. |
| **J. Stakeholder cooperation and community engagement**<br><br>Median automated maturity levels:<br><br>2020: 2<br>2023: 2 | - SCE plans to increase its maturity level by 2023 in one of five capabilities. Specifically, by capability:<br>  - **48. Cooperation and best practice sharing with other utilities**: SCE's survey responses project no growth in this capability. SCE identifies best practices from other global utilities and implements them.<br>  - **49. Engagement with communities on utility wildfire mitigation initiatives:** SCE's survey responses project no growth in this capability. SCE has a clear and actionable plan to develop / maintain a collaborative relationship with local communities.<br>  - **50. Engagement with LEP[1] and AFN[2] populations:** SCE's survey responses indicate an increased maturity level in 2023. Currently, SCE does not have a specific annually updated action plan to further reduce wildfire and PSPS risk to LEP and AFN communities. By 2023, SCE intends to have this plan.<br>  - **51. Collaboration with emergency response agencies:** SCE's survey responses project no growth in this capability. SCE cooperates with suppression agencies by notifying them of ignitions.<br>  - **52. Collaboration on wildfire mitigation plan with stakeholders:** SCE's survey responses project no growth in this capability. SCE works closely with stakeholders on fuel management.<br><br>1. Limited English Proficiency<br>2. Access and Functional Needs |

## 1.2  SCE: Maturity Detail by Capability

### 1.2.1    A. Risk assessment and mapping

#### 1.2.1.1    Capability 1: Climate scenario modeling

| Capability 1: Climate scenario modeling | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** <br> *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend <br><br> 2020 / 2023 / Both | Current state <br> As of February 2020 | Planned state for 2023 <br> "Three years from now" as of February 2020 <br><br> **Bold responses have planned growth between 2020 and 2023** |
| 4 <br><br> 3 <br><br> 2 <br><br> 1 | a. Wildfire risk can be reliably determined based on weather and its impacts <br><br> b. Scenarios are assessed by independent experts, supported by historical data of incidents and near misses <br><br> c. Climate scenario modelling tool models with circuit level granularity <br><br> d. The climate scenario modelling tool is not automated <br><br> e. Weather measured at the circuit level, how weather effects failure modes and propagation, and existing hardware are used to estimate model weather scenarios and their risk <br><br> f. Future climate change is not accounted for in estimating future weather and resulting risk | **a. Risk for various weather scenarios is planned to be reliably estimated** <br><br> b. Scenarios are planned to be assessed by independent experts, supported by historical data of incidents and near misses <br><br> c. Climate scenario modelling tool is planned to model with circuit level granularity <br><br> **d. The climate scenario modelling tool is planned to be partially automated (<50%)** <br><br> **e. Weather measured at the circuit level, how weather effects failure modes and propagation, existing hardware, and level of vegetation are planned to be used to estimate model weather scenarios and their risk** <br><br> **f. Utility plans to model with multiple scenarios that estimate effects of a changing climate on future** |

| Capability 1: Climate scenario modeling | | |
|---|---|---|
| 0 | | **weather and risk, taking into account difference in geography and vegetation, and considering increase in extreme weather event frequency** |
| | **Criteria missing to reach a maturity level of 1 or more:**<br><br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br><br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.1.2    Capability 2: Ignition risk estimation

| Capability 2: Ignition risk estimation | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a.  Tools and processes can reliably categorize the risk of ignition across the grid into at least two categories based on characteristics and condition of lines and equipment, surrounding vegetation, and localized weather patterns<br>b.  Ignition risk calculation tool is partially automated (<50%)<br>c.  Ignition risk calculation tool estimates with asset level granularity<br>d.  Ignition risk assessment is confirmed by experts and historical data<br>e.  Utility uses >95% confidence interval in its wildfire risk assessments | **a.  Tools and processes are planned to be able to quantitatively and accurately assess the risk of ignition across the grid based on characteristics and condition of lines and equipment, surrounding vegetation, and localized weather patterns**<br>b.  Ignition risk calculation tool is planned to be partially automated (<50%)<br>c.  Ignition risk calculation tool is planned to estimate with asset level granularity<br>d.  Ignition risk assessment is planned to be confirmed by experts and historical data<br>e.  Utility plans to use >95% confidence interval in its wildfire risk assessments |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.1.3 Capability 3: Estimation of wildfire consequences for communities

| Capability 3: Estimation of wildfire consequences for communities | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 2023 Both | | |
| 4 / 3 / 2 / 1 | a. Consequences of ignition events are quantitatively, accurately, and precisely estimated<br>b. Consequence of ignition risk is calculated as a function of at least potential fatalities, and one or both of structures burned or area burned<br>c. Ignition risk impact analysis is not available for all seasons<br>d. The ignition risk estimation process is not automated<br>e. Ignition risk estimation process has asset level granularity<br>f. Outputs of ignition risk estimation process are independently assessed by experts and confirmed by historical data<br>g. Level and conditions of vegetation and weather are also used as inputs to estimate impact | a. Consequences of ignition events are planned to be quantitatively, accurately, and precisely estimated<br>b. Consequence of ignition risk is planned to be calculated as a function of at least potential fatalities, and one or both of structures burned or area burned<br>**c. Ignition risk estimation process is planned to be available for all seasons**<br>**d. The ignition risk estimation process is planned to be partially automated (<50%)**<br>e. Ignition risk estimation process is planned to have asset level granularity<br>**f. Outputs of ignition risk estimation process are planned to be independently assessed by experts, and confirmed based on real time learning, for example, using machine learning**<br>**g. Levels and conditions of vegetation and weather, including the vegetation specifies immediately surrounding the ignition site and up-to-date** |

| Capability 3: Estimation of wildfire consequences for communities | | |
|---|---|---|
| 0 | | **moisture content, and local patterns are also planned to be used as inputs to estimate impact** |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>i) Partially automated tools to reliably categorize ignition events as low or high risk to communities | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

1.2.1.4    Capability 4. Estimation of wildfire and PSPS reduction impact

| Capability 4. Estimation of wildfire and PSPS reduction impact | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Risk reduction potential estimation approach accurately estimates risk reduction potential of initiatives categorically (e.g., high, medium, low)<br><br>b. Ignition risk reduction impact assessment tool is partially automated (<50%)<br><br>c. Ignition risk reduction impact assessment tool has regional granularity<br><br>d. Ignition risk reduction impact assessment tool estimates are assessed by independent experts<br><br>e. Existing hardware type and condition, including operating history, is also used to estimate risk reduction impact | **a. Risk reduction potential estimation approach is planned to reliably estimate risk reduction potential of initiatives on an interval scale (e.g., specific quantitative units) with a confidence interval**<br><br>b. Ignition risk reduction impact assessment tool is planned to be partially automated (<50%)<br><br>**c. Ignition risk reduction impact assessment tool is planned to have asset-based granularity**<br><br>d. Ignition risk reduction impact assessment tool estimates are planned to be assessed by independent experts<br><br>**e. Existing hardware type and condition, including operating history; level and condition of vegetation; weather; and combination of initiatives already deployed are planned to be used to estimate risk reduction impact** |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.1.5 Capability 5. Risk maps and simulation algorithms

| Capability 5. Risk maps and simulation algorithms | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 2023 Both | | |
| 4 | a. Risk mapping algorithms are updated based on detected deviations of risk model to ignitions and propagation | a. Risk mapping algorithms are planned to be updated based on detected deviations of risk model to ignitions and propagation |
| 3 | b. Mechanism to determine whether to update algorithms based on deviations is not automated | b. Decision to update algorithms based on deviations is not planned to be automated |
| 2 | c. Deviations from risk model to ignitions and propagation detected manually <br> d. Decisions to update algorithms are evaluated independently by experts and by historical data | c. Deviations from risk model to ignitions and propagations are planned to be calculated manually <br> d. Decisions to update algorithms are planned to be evaluated independently by experts and historical data |
| 1 | e. Current and historic ignition and propagation data, as well as near-miss data, is also used to make decisions on whether to update algorithms | **e. Current and historic ignition and propagation data, as well as near-miss data and data from other utilities and other sources, is planned to be used to decide whether to update algorithms** |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.2 B. Situational awareness and forecasting

#### 1.2.2.1 Capability 6: Weather variables collected

| Capability 6: Weather variables collected | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 \| 2023 \| Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 / 3 / 2 / 1 / 0 | a. A range of accurate weather variables (e.g., humidity, precipitation, surface and atmospheric wind conditions) that impact probability of ignition and propagation from utility assets is collected by utility <br> b. Measurements are validated through manual field calibration measurements <br> c. Elements that cannot be reliably measured in real time are being predicted (e.g., fuel moisture content) <br> d. More than one data source is used for each weather metric collected | a. A range of accurate weather variables (e.g. humidity, precipitation, surface and atmospheric wind conditions) that impact probability of ignition and propagation from utility assets is planned to be collected by utility <br> b. Measurements are planned to be validated through manual field calibration <br> c. Elements that cannot be reliably measured in real time (e.g., fuel moisture content) are planned to be predicted <br> d. More than one data source is planned to be used for each weather metric collected |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.2.1.1 Capability 7: Weather data resolution

| Capability 7: Weather data resolution | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 | a. Weather data has sufficient granularity to reliably measure weather conditions in HFTD areas, along the entire grid, and in all areas needed to predict weather on the grid | a. Weather data is planned to have sufficient granularity to reliably measure conditions in HFTD areas, along the entire grid, and in all areas needed to predict weather on the grid |
| 3 | | |
| 2 | b. Weather data collected at least six times per hour<br>c. Weather data resolution has circuit level granularity<br>e. Measurement of weather conditions is fully automated | b. Weather data is planned to be collected at least six times per hour<br>c. Weather data resolution is planned to have circuit level granularity |
| 1 | | d. Measurement of weather conditions is planned to be fully automated |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.2.2    Capability 8: Weather forecasting ability

| Capability 8: Weather forecasting ability | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020  2023  Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a.  Utility has the ability to use a combination of accurate weather stations and external weather data to make accurate forecasts<br>b.  Accurate forecasts are prepared less than two weeks in advance<br>c.  Weather forecasts have circuit level granularity<br>d.  Forecast results are error checked against historical weather patterns and subsequently error checked against measured weather data<br>e.  Forecast process is mostly (>=50%) automated | a.  Utility plans to have the ability to use a combination of accurate weather stations and external weather data to make accurate forecasts<br>b.  Accurate forecasts are planned to be prepared less than two weeks in advance<br>c.  Weather forecasts are planned to have circuit level granularity<br>d.  Forecast results are planned to be error checked against historical weather patterns and subsequently error checked against measured weather data<br>e.  Forecast process is planned to be mostly (>=50%) automated |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>•  N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>•  N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.2.3    Capability 9: External sources used in weather forecasting

| Capability 9: External sources used in weather forecasting | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a.  Utility uses a combination of accurate weather stations and external weather data, and elects to use the data set, as a whole or in composite, that is most accurate | a.  Utility plans to use a combination of accurate weather stations and external weather data, and plans to elect to use data set, as a whole or in composite, that is most accurate |
| 3 | | |
| 2 | b.  Utility uses a mostly manual processes for error checking weather stations with external data sources | b.  Utility plans to use mostly manual processes for error checking weather stations with external data sources |
| 1 | c.  Weather data is used to create a single visual and configurable live map that can be used to help make decisions | c.  Weather data is planned to be used to create a single visual and configurable live map that can be used to help make decisions |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.2.4    Capability 10: Wildfire detection processes and capabilities

| Capability 10: Wildfire detection processes and capabilities | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a. Well-defined procedures for detecting ignitions along the grid exist | a. Well-defined procedures for detecting ignitions along the grid are planned to exist |
| 3 | b. Well-defined equipment for detecting ignitions along grid, including remote detection equipment including cameras, are used | b. Well-defined equipment for detecting ignitions along grid, including remote detection equipment including cameras, are planned to be used |
| 2 | c. Procedure exists for notifying suppression forces and key stakeholders | c. Procedure for notifying suppression forces and key stakeholders is planned to exist |
| 1 | d. Ignition detection software is not currently deployed | d. Ignition detection software is not planned to be deployed |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.3 C. Grid design and system hardening

### 1.2.3.1 Capability 11: Approach to prioritizing initiatives across territory

| Capability 11: Approach to prioritizing initiatives across territory | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 | a.  Plan prioritizes risk reduction initiatives at the span level based on (i) risk modeling driven by local geography and climate/weather conditions, fuel loads and moisture content and topography, as well as (ii) detailed wildfire and PSPS risk simulations across individual circuits | a.  **SCE plans to prioritize wildfire risk reduction initiatives at the asset level based on (i) risk modeling driven by local geography and climate / weather conditions, fuel loads and moisture content and topography, (ii) risk estimates across individual circuits, including estimates of actual consequence, and (iii) power delivery uptime (e.g., reliability, PSPS, etc.)** |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.3.2 Capability 12: Grid design for minimizing ignition risk

| | Capability 12: Grid design for minimizing ignition risk | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020  2023  Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 | a. Grid design meets minimum G095 requirements and loading standards in HFTD areas | a. Grid design is planned to meet minimum G095 requirements and loading standards in HFTD areas |
| 3 | b. Utility does not provide micro grids or islanding where traditional grid infrastructure is impracticable and wildfire risk is high | b. Utility plans to provide micro grids or islanding where traditional grid infrastructure is impracticable and wildfire risk is high |
| 2 | c. Routing of new portions of the grid does not take wildfire risk into account | c. Routing of new portions of the grid is not planned to take wildfire risk into account |
| 1 | d. Efforts are made to include the latest asset management strategies and new technologies into grid topology across the entire service area | d. Efforts are planned to be made to include the latest asset management strategies and new technologies into grid topology across the entire service area |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br>• Routing of new portions of grid takes wildfire risk into account | **Criteria missing to reach a maturity level of 1 or more:** <br>• Routing of new portions of grid takes wildfire risk into account |

### 1.2.3.3 Capability 13: Grid design for resiliency and minimizing PSPS

| Capability 13: Grid design for resiliency and minimizing PSPS | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 2023 Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 3 2 1 0 | a. Utility's transmission architecture has (n-1) redundancy for all circuits subject to PSPS<br><br>b. Utility's distribution architecture has (n-1) redundancy covering at least 50% of customers in HFTD<br><br>c. Utility's distribution architecture is sectionalized to have switches in HFTD areas to individually isolate circuits, such that no more than 200 customers sit within one switch<br><br>d. Utility does not consider egress points in its grid topology | a. Utility's transmission architecture is planned to have (n-1) redundancy for all circuits subject to PSPS<br><br>b. Utility's distribution architecture is planned to have (n-1) redundancy covering at least 50% of customers in HFTD<br><br>c. Utility's distribution architecture is planned to be sectionalized to have switches in HFTD areas to individually isolate circuits, such that no more than 200 customers sit within one switch<br><br>d. Utility is not planned to consider egress points in its grid topology |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.3.4    Capability 14: Risk-based grid hardening and cost efficiency

| Capability 14: Risk-based grid hardening and cost efficiency | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 | a. Utility has an accurate understanding of the relative cost and effectiveness of different initiatives | **a. Utility plans to have an accurate understanding of the relative cost and effectiveness of different initiatives, tailored to the circumstances of different locations on its grid** |
| 3 | b. Estimates can be prepared with regional granularity <br> c. Estimates are updated annually or more frequently <br> d. Utility has most grid hardening initiatives included within its evaluation | **b. Estimates planned to be prepared with asset-based granularity** <br> **c.** Estimates are planned to be updated annually or more frequently |
| 2 | e. Utility cannot evaluate risk reduction synergies from combination various initiatives | **d.** Utility plans to include most grid hardening initiatives included within its evaluation |
| 1 | | **e. Utility plans to be able to evaluate risk reduction synergies from combination of various initiatives** |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.3.5   Capability 15: Grid design and asset innovation

| Capability 15: Grid design and asset innovation | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020 / 2023 / Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. New grid hardening initiatives are evaluated based on installation into grid and measurement of direct reduction in ignition events and measuring reduction impact on near-miss metrics<br><br>b. Results of pilot and commercial deployments, including project performance, project cost, geography, climate, vegetation etc. are shared in sufficient detail to inform decision making at a limited set of partners<br><br>c. Performance of new initiatives is not independently audited | a. New initiatives are planned to be evaluated based on installation into grid and measurement of direct reduction in ignition events, and measuring reduction impact on near-miss metrics<br><br>b. Results of pilot and commercial deployments, including project performance, project cost, geography, climate, vegetation etc. are planned to be shared in sufficient detail to inform decision making at a limited set of partners<br><br>c. Performance of new initiatives is not independently audited |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.4 D. Asset management and inspections

1.2.4.1 Capability 16: Asset inventory and condition assessments

| Capability 16: Asset inventory and condition assessments | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020 |
| 2020  2023  Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. There is an accurate inventory of equipment that may contribute to wildfire risk, including age, state of wear, and expected lifecycle, including records of all inspections and repairs<br>b. Condition assessment is updated monthly<br>c. A system and approach are in place to reliably detect incipient malfunctions likely to cause ignition in HFTD areas<br>d. Inventory is kept with asset level granularity | **a. SCE plans to have an accurate inventory of equipment that may contribute to wildfire risk, including age, state of wear, and expected lifecycle, including records of all inspections and repairs and up-to-date work plans on expected future repairs and replacements**<br>**b.** Condition assessment is planned to be updated monthly<br>**c. Sensorized, continuous monitoring equipment is planned to be in place to reliably detect incipient malfunctions likely to cause ignition in HFTD areas**<br>**d.** Inventory is planned to be kept with asset level granularity |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.4.2  Capability 17: Asset inspection cycle

| Capability 17: Asset inspection cycle | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020   2023   Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1 | a. Patrol inspections are above minimum regulatory requirements, with more frequent inspections for highest risk equipment<br>b. Patrol inspections are based on annual or periodic schedules<br>c. At least annually updated or verified static maps of equipment and environment are the inputs for scheduling patrol inspections<br>d. Detailed inspections are above minimum regulatory requirements, with more frequent inspections for highest risk equipment<br>e. Detailed inspections are based on risk, as determined by predictive modeling of equipment failure probability and risk causing ignition<br>f. Predictive modeling of equipment failure probability and risk is the input for scheduling patrol inspections<br>g. Other inspections are above minimum regulatory requirements, with more frequent inspections for highest risk equipment<br>h. Other inspections are based on annual or periodic schedules | a. Patrol inspections are planned to be above minimum regulatory requirements, with more frequent inspections for highest risk equipment<br>b. Patrol inspections are planned to be based on annual or periodic schedules<br>c. At least annually updated or verified static maps of equipment and environment are planned to be the inputs for scheduling patrol inspections<br>d. Detailed inspections are planned to be above minimum regulatory requirements, with more frequent inspections for highest risk equipment<br>e. Detailed inspections are planned to be based on risk, as determined by predictive modeling of equipment failure probability and risk causing ignition<br>f. Predictive modeling of equipment failure probability and risk is planned to be the input for scheduling patrol inspections<br>g. Other inspections are planned to be above minimum regulatory requirements, with more frequent inspections for highest risk equipment |

| Capability 17: Asset inspection cycle | | |
|---|---|---|
| 0 | i. At least annually updated or verified static maps of equipment and environment are inputs for scheduling patrol inspections | h. Other inspections are planned to be based on annual or periodic schedules<br><br>i. At least annually updated or verified static maps of equipment and environment are planned to be inputs for scheduling patrol inspections |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.4.3    Capability 18: Asset inspection effectiveness

| Capability 18: Asset inspection effectiveness | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br>2020 / 2023 / Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by stature and regulations<br>b. Procedures and inspection checklists are determined based on predictive modeling based on vegetation and equipment type, age, and condition<br>c. Checklists, training, and procedures are customized with service territory-level granularity | a. Patrol, detailed, enhanced, and other inspection procedures and checklists are planned to include all items required by stature and regulations<br>b. Procedures and inspection checklists are planned to be determined based on predictive modeling based on vegetation and equipment type, age, and condition<br>c. Checklists, training, and procedures are planned to be customized with service territory-level granularity |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.4.4 Capability 19: Asset maintenance and repair

| | Capability 19: Asset maintenance and repair | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020   2023   Both | | |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Electrical lines and equipment maintained as required by regulation, and additional maintenance is done in areas of grid at highest wildfire risk based on detailed risk mapping<br><br>b. Service intervals are set based on wildfire risk in relevant area<br><br>c. Maintenance and repair procedures take wildfire risk, performance history, and past operating conditions most into account | a. Electrical lines and equipment are planned to be maintained as required by regulation, and additional maintenance is planned to be done in areas of grid at highest wildfire risk based on detailed risk mapping<br><br>**b. Service intervals are planned to be set based on wildfire risk in relevant circuit**<br><br>c. Maintenance and repair procedures are planned to take wildfire risk, performance history, and past operating conditions most into account |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.4.5  Capability 20: QA/QC for asset management

| Capability 20: QA/QC for asset management | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a. Contractor activity is audited through an established and functioning audit process to manage and confirm work completed by subcontractors<br>b. Contractors follow the same processes and standards as utility's own employees<br>c. QA/QC information is regularly used to identify deficiencies in quality of work performance and inspections performance<br>d. QA/QC information is used to identify systemic deficiencies in quality of work and inspections<br>e. Workforce management software tools are used to manage and confirm work completed by subcontractors | a. Contractor activity is planned to be audited through an established and demonstrably functioning audit process to manage and confirm work completed by subcontractors<br>b. Contractors are planned to follow the same processes and standards as utility's own employees<br>c. QA/QC information is planned to be regularly used to identify deficiencies in quality of work performance and inspections performance<br>**d. QA/QC information is planned to be used to identify systemic deficiencies in quality of work and inspections, and recommend training based on weaknesses**<br>e. Workforce management software tools are planned to be used to manage and confirm work completed by subcontractors |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.5 Vegetation Management and inspections

1.2.5.1    Capability 21: Vegetation inventory for condition assessments

| Capability 21: Vegetation inventory for condition assessments | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 · 2023 · Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 / 3 / 2 / 1 / 0 | a. Centralized inventory of vegetation clearances, including individual vegetation species and their expected growth rate, as well as individual high risk-trees across grid<br>b. Inventory is updated within one day of collection<br>c. Inspections are independently verified by third party experts<br>d. Inventory has asset level granularity | a. Planned centralized inventory of vegetation clearances, including predominant vegetation species and their expected growth rate, as well as individual high risk trees across grid<br>b. Inventory planned to be updated within one day of collection<br>c. Inspections are planned to be independently verified by third party experts<br>d. Inventory planned to have asset level granularity |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.5.2    Capability 22: Vegetation inspection cycle

| Capability 22: Vegetation inspection cycle | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a. All types of vegetation inspections are above minimum regulatory requirements, with more frequent inspections for highest risk areas<br><br>b. Vegetation inspections are scheduled based on up-to-date static maps of predominant vegetation species and environment<br><br>c. Inputs for scheduling vegetation inspections include up to date, static maps of vegetation and environment, as well as data on annual growing conditions | a. All types of vegetation inspections are planned to be above minimum regulatory requirements, with more frequent inspections for highest risk areas<br><br>b. Vegetation inspections are planned to be scheduled based on up to date static maps of predominant vegetation species and environment<br><br>c. Planned inputs for scheduling vegetation inspections include up to date, static maps of vegetation and environment, as well as data on annual growing conditions |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.5.3 Capability 23: Vegetation inspection effectiveness

| Capability 23: Vegetation inspection effectiveness | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020   2023   Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations, and includes vegetation types typically responsible for ignitions and near misses<br><br>b. Procedures and checklists are based on predictive modeling based on vegetation and equipment type, age, and condition<br><br>c. Checklists, training, and procedures are customized across a region | a. Patrol, detailed, enhanced, and other inspection procedures and checklists are planned to include all items required by statute and regulations, and includes vegetation types typically responsible for ignitions and near misses<br><br>b. Procedures and checklists are planned to be based on predictive modeling based on vegetation and equipment type, age, and condition<br><br>c. Checklists, training, and procedures are planned to be customized across a region |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.5.4 Capability 24: Vegetation grow-in mitigation

| Capability 24: Vegetation grow-in mitigation | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** _Each letter indicates a survey question, with the relevant response shown below._ | |
| Legend<br><br>2020  2023  Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1 | a. Utility meets minimum statutory and regulatory clearances around all lines and equipment<br>b. Utility meets or exceeds minimum statutory or regulatory clearances during all seasons<br>c. Both ignition risk modeling and propagation risk modeling is used to guide clearances around lines and equipment<br>d. Species growth rates and species limb failure rates, cross referenced with local climatological conditions are used to guide clearance around lines and equipment<br>e. Community organizations are engaged in setting local clearances and protocols<br>f. Utility removes vegetation waste along its right of way across the entire grid<br>g. Utility removes vegetation waste along the right of way on the same day as cutting | a. Utility plans to meet minimum statutory and regulatory clearances around all lines and equipment<br>b. Utility plans to meet or exceed minimum statutory or regulatory clearances during all seasons<br>c. Both ignition risk modeling and propagation risk modeling is planned to be used to guide clearances around lines and equipment<br>d. Species growth rates and species limb failure rates, cross referenced with local climatological conditions are planned to be used to guide clearance around lines and equipment<br>e. Community organizations are planned to be engaged in setting local clearances and protocols<br>f. Utility plans to remove vegetation waste along its right of way across the entire grid<br>g. Utility plans to remove vegetation waste along the right of way on the same day as cutting |

| Capability 24: Vegetation grow-in mitigation | | |
|---|---|---|
| 0 | h. Utility does not work with local landowners to provide a cost effective use for cutting vegetation<br><br>i. Utility does not work with partners to identify new cost effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste | h. Utility does not plan to work with local landowners to provide a cost effective use for cutting vegetation<br><br>i. Utility does not plan to work with partners to identify new cost effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.5.5    Capability 25: Vegetation fall-in mitigation

| Capability 25: Vegetation fall-in mitigation | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 / 3 / 2 / 1 | a.  Utility systematically removes vegetation outside of right of way, informing relevant communities of removal<br>b.  Potential vegetation that may pose a threat identified based on the probability and consequences of impact on electric lines and equipment as determined by risk modeling, as well as regular and accurate systematic inspections for high risk trees outside the right of way or environmental and climatological conditions contributing to increased risk<br>c.  Vegetation is removed with cooperation from the community<br>d.  Utility removes vegetation waster outside its right of way across the entire grid<br>e.  Utility removes vegetation outside its right of way on the same day as cutting | a.  Utility planned to systematically remove vegetation outside of right of way, informing relevant communities of removal<br>b.  Potential vegetation that may pose a threat planned to be identified based on the probability and consequences of impact on electric lines and equipment as determined by risk modeling, as well as regular and accurate systematic inspections for high risk trees outside the right of way or environmental and climatological conditions contributing to increased risk<br>c.  Vegetation is planned to be removed with cooperation from the community<br>d.  Utility does plans to remove vegetation waste outside its right of way across the entire grid<br>e.  Utility plans to remove vegetation outside its right of way on the same day as cutting |

| | Capability 25: Vegetation fall-in mitigation | |
|---|---|---|
| 0 | f.   Utility does not work with local landowners to provide a cost effective use for cutting vegetation<br><br>j.   Utility does not work with partners to identify new cost effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste | f.   Utility does not plan to work with local landowners to provide a cost effective use for cutting vegetation<br><br>g.   Utility does not plan to work with partners to identify new cost effective uses for vegetation, taking into consideration environmental impacts and emissions of vegetation waste |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.5.6    Capability 26: QA/QC for vegetation management

| Capability 26: QA/QC for vegetation management | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** <br> *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend <br><br> 2020 / 2023 / Both | Current state <br> As of February 2020 | Planned state for 2023 <br> "Three years from now" as of February 2020 <br><br> **Bold responses have planned growth between 2020 and 2023** |
| 4 <br><br> 3 <br><br> **2** <br><br> 1 <br><br> 0 | a.  Contractor and employee activity audited through an established and functioning audit process to manage and confirm work completed by subcontractors <br> b.  Contractors follow the same processes and standards as utility's own employees <br> c.  QA/QC information is used regularly to identify deficiencies in quality of work performance and inspections performance <br> d.  QA/QC information is used to identify systemic deficiencies in quality of work and inspections <br> e.  Workforce management software tools are used to manage and confirm work completed by subcontractors | a.  Contractor and employee activity planned to be audited through an established and functioning audit process to manage and confirm work completed by subcontractors <br> b.  Contractors are planned to follow the same processes and standards as utility's own employees <br> c.  QA/QC information is planned to be used regularity to identify deficiencies in quality of work performance and inspections performance <br> d.  QA/QC information is planned to be used to identify systemic deficiencies in quality of work and inspections, and recommend training based on weaknesses <br> e.  Workforce management software tools are planned to be used to manage and confirm work completed by subcontractors |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.6 F. Grid operations and protocols

#### 1.2.6.1 Capability 27: Protective equipment and device settings

| Automated maturity levels based on Maturity Rubric | Responses to survey questions<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
|---|---|---|
| **Legend**<br><br>2020 \| 2023 \| Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br>3<br>2<br>1<br>0 | a. Utility increases sensitivity of risk reduction elements during high threat weather conditions based on risk mapping and monitors near misses<br>b. A partially automated process adjusts sensitivity of grid elements and evaluates effectiveness<br>c. There is a predetermined protocol driven by fire conditions for adjusting sensitivity of grid elements | a. Utility plans to increase sensitivity of risk reduction elements during high threat weather conditions based on risk mapping and monitors near misses<br>b. A partially automated process is planned to adjust sensitivity of grid elements and evaluate effectiveness<br>c. SCE plans to have a predetermined protocol driven by fire conditions for adjusting sensitivity of grid elements |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

*Capability 27: Protective equipment and device settings*

### 1.2.6.2 Capability 28: Incorporating ignition risk factors in grid control

| Capability 28: Incorporating ignition risk factors in grid control | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 / 3 / 2 / 1 / 0 | a. Utility has a clearly explained process for determining whether to operate the grid beyond current or voltage designs<br><br>b. Utility has systems in place to automatically track operation history including current, loads, and voltage throughout the grid at circuit level<br><br>c. Utility uses predictive modeling to estimate the expected life and make equipment maintenance, rebuild, or replacement decisions based on grid operating history; modeling not evaluated by external experts<br><br>d. Utility never operates the grid above rated voltage and current load only in conditions that are unlikely to cause wildfire | a. Utility plans to have a clearly explained process for determining whether to operate the grid beyond current or voltage designs<br><br>b. Utility plans to have systems ins place to automatically track operation history including current, loads, and voltage throughout the grid at circuit level<br><br>c. Utility plans to use predictive modeling to estimate the expected life and make equipment maintenance, rebuild, or replacement decisions based on grid operating history; modeling is not planned to be evaluated by external experts<br><br>d. Utility plans to never operate the grid above rated voltage and current load only in conditions that are unlikely to cause wildfire |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.6.3 Capability 29: PSPS op. model and consequence mitigation

| Capability 29: PSPS op. model and consequence mitigation | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 | a. PSPS events are generally forecasted accurately with fewer than 25% of predictions being false positives | a. PSPS events are planned to generally forecast accurately with fewer than 25% of predictions being false positives |
| 3 | b. PSPS events are communicated to >95% of affected customers and >99% of medical baseline customers in advance of PSPS action | **b. PSPS events are planned to be communicated to >99.9% of affected customers and 100 % of medical baseline customers in advance of PSPS action** |
| 2 | c. Less than 0.5% of customers complain during PSPS events | c. Less than 0.5% of customers are planned to complain during PSPS events |
| | d. Website does not go down during PSPS events | d. Website is not planned to go down during PSPS events |
| 1 | e. Average downtime per customer is less than 1 hour | **e. Average downtime per customer is planned to be less than 0.5 hours** |
| | f. Specific resources are provided to all affected customers to alleviate the impact of the power shutoff (e.g., providing backup generators, supplies, batteries, etc.) | f. Specific resources are planned to be provided to all affected customers to alleviate the impact of the power shutoff (e.g., providing backup generators, supplies, batteries, etc.) |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.6.4    Capability 30: Protocols for PSPS initiation

| Capability 30: Protocols for PSPS initiation | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 2023 Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a.  Utility has explicit policies and explanation for the thresholds above which PSPS is activated as a measure of last resort<br><br>b.  Utility takes into account a partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs when making PSPS decisions<br><br>c.  Utility de-energizes circuits upon detection of damaged conditions of electric equipment, when circuit presents a safety risk to suppression or other personnel, when equipment has come into contact with foreign objects posing ignition risk, and for additional reasons not listed<br><br>d.  Given condition of the grid, utility expects greater than 5% probability of any large scale PSPS events affecting more than 10,000 people to occur in the coming year; grid condition paired with risk indicates that PSPS may be necessary in 2020 in some areas | a.  Utility plans to have explicit policies and explanation for the thresholds above which PSPS is activated as a measure of last resort<br><br>b.  Utility plans to take into account a partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs when making PSPS decisions<br><br>c.  Utility plans to de-energize circuits upon detection of damaged conditions of electric equipment, when circuit presents a safety risk to suppression or other personnel, when equipment has come into contact with foreign objects posing ignition risk, and for additional reasons not listed<br><br>d.  Given condition of the grid, Utility plans to expect greater than 5% probability of any large scale PSPS events affecting more than 10,000 people to occur in the coming year; grid condition paired with risk indicates that PSPS may be necessary in 2020 in some areas |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.6.5 Capability 31: Protocols for PSPS re-energization

| Capability 31: Protocols for PSPS re-energization | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020  2023  Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. There is an existing process for accurately inspecting de-energized sections of the grid prior to re-energization<br>b. There is a partially automated process (<50%) for inspecting de-energized sections of the grid prior to re-energization<br>c. Average time it takes to re-energize grid from a PSPS once weather has subsided to below your de-energization threshold is less than 12 hours<br>d. Utility has accurate quantitative understanding of ignition risk following re-energization by asset, validated by historical data and near misses | **a. SCE plans to have an existing process for accurately inspecting de-energized sections of the grid prior to re-energization, augmented with sensors and aerial tools**<br>**b.** SCE plans to have a partially automated (<50%) for inspecting de-energized sections of the grid prior to re-energization<br>**c. Average time it takes to re-energize grid from a PSPS once weather has subsided to below your de-energization threshold is planned to be less than 8 hours**<br>**d.** Utility plans to have accurate quantitative understanding of ignition risk following re-energization by asset, validated by historical data and near misses |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.6.6    Capability 32: Ignition prevention and suppression

| Capability 32: Ignition prevention and suppression | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 / 2023 / Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 / 3 / 2 / 1 / 0 | a. Utility has explicit policies about the role of crews, including contractors and subcontractors, at the site of ignition<br>b. Training and communications tools are provided to immediately report ignitions caused by workers or in immediate vicinity of workers; in addition, suppression tools and training to suppress small ignitions caused by workers or in immediate vicinity of workers are provided<br>c. No Cal/OSHA reported injuries or fatalities occurred in the last year in events where workers have encountered an ignition<br>d. Utility provides training to other workers at other utilities and outside the utility industry on best practices to minimize, report, and suppress ignition | a. Utility plans to have explicit policies about the role of crews, including contractors and subcontractors, at the site of ignition<br>b. Training and communications tools are planned to be provided to immediately report ignitions caused by workers or in immediate vicinity of workers; in addition, suppression tools and training to suppress small ignitions caused by workers or in immediate vicinity of workers are planned to be provided<br>c. No Cal/OSHA reported injuries or fatalities are planned to occur in events where workers have encountered an ignition<br>d. Utility plans to provide training to other workers at other utilities and outside the utility industry on best practices to minimize, report, and suppress ignition |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.7    G. Data Governance

#### 1.2.7.1    Capability 33: Data collection and curation

| Capability 33: Data collection and curation | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020  2023  Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a.  Utility does not have a centralized database of situational, operational, and risk data<br>b.  Utility is able to use advanced analytics on its centralized database of situational, operational, and risk data to make short-term operational and investment decisions<br>c.  Utility collects data from all sensored portions of electric lines, equipment, weather stations, etc.<br>d.  Utility's database of situational, operational, and risk data is not able to ingest and share data using real-time API protocols with a wide variety of stakeholders<br>e.  Utility identifies highest priority additional data sources to improve decision making<br>f.  Utility shares best practices for database management and use with other utilities in California and beyond | **a.  Utility plans to have a centralized database of situational, operational, and risk data**<br>**b.  Utility plans to use advanced analytics on its centralized database of situational, operational, and risk data to make short-term and long-term operational and investment decisions**<br>c.  Utility plans to collect data from all sensored portions of electric lines, equipment, weather stations, etc.<br>d.  Utility's database of situational, operational, and risk data is not planned to be able to ingest and share data using real-time API protocols with a wide variety of stakeholders<br>e.  Utility plans to identify highest priority additional data sources to improve decision making<br>f.  Utility plans to share best practices for database management and use with other utilities in California and beyond |

| Capability 33: Data collection and curation | |
|---|---|
| **Criteria missing to reach a maturity level of 1 or more:**<br>i) Utility has centralized repository of accurate situational, operational, and risk data | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.7.2 Capability 34: Data transparency and analytics

| Automated maturity levels based on Maturity Rubric | Responses to survey questions<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
|---|---|---|
| **Capability 34: Data transparency and analytics** | | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020   2023   Both | | |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. There is not a single document cataloguing all fire-related data and algorithms, analyses, and data processes<br>b. There is not an explanation of the sources, cleaning processes, and assumptions made in the single document catalog<br>c. All analyses, algorithms, and data processing are documented<br>d. There is not a system capable of sharing data in real time across multiple levels of permissions<br>e. Most relevant wildfire related data algorithms disclosed to regulators and other relevant stakeholders upon request | **a. There is planned to be a single document cataloguing all fire-related data and algorithms, analyses, and data processes**<br>**b. There is planned to be an explanation of the sources, cleaning processes, and assumptions made in the single document catalog**<br>**c. All analyses, algorithms, and data processing are planned to be documented and explained**<br>d. There is not planned to be a system capable of sharing data in real time across multiple levels of permissions<br>e. Most relevant wildfire related data algorithms is planned to be disclosed to regulators and other relevant stakeholders upon request |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>i) All wildfire-related data and algorithms used by utility are catalogued in a single document,<br>ii) including an explanation of the sources, and assumptions made; and | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.7.3    Capability 35: Near-miss tracking

| Capability 35: Near-miss tracking | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a.  Utility tracks near miss data for all near misses with wildfire ignition potential<br>b.  Utility is not able to simulate wildfire potential given an ignition based on event characteristics, fuel loads, and moisture using captured near miss data<br>c.  Utility does not capture data related to the specific mode of failure when capturing near-miss data<br>d.  Utility is not able to predict the probability of a near miss in causing an ignition based on a set of event characteristics<br>e.  Utility does not use data from near misses to change grid operation protocols in real time | a.  Utility plans to track near miss data for all near misses with wildfire ignition potential<br>**b.  Utility plans to be able to simulate wildfire potential given an ignition based on event characteristics, fuel loads, and moisture using captured near miss data**<br>**c.  Utility plans to capture data related to the specific mode of failure when capturing near-miss data**<br>**d.  Utility plans to be able to predict the probability of a near miss in causing an ignition based on a set of event characteristics**<br>**e.  Utility plans to use data from near misses to change grid operation protocols in real time** |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• Tracking of near miss data for all near misses with wildfire ignition potential and associated event characteristics, including capturing data related to the specific mode of failure | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.7.4 Capability 36: Data sharing with research community

| Capability 36: Data sharing with research community | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 / 2023 / Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 | a. Utility makes required data disclosures, and shares data beyond what is required<br><br>b. Utility funds and participates in both independent and collaborative research, and ensures that research, where possible, is abstracted and applied to other utilities<br><br>c. Utility research addresses utility ignited wildfires and risk reduction initiatives<br><br>d. Utility promotes best practices based on latest independent scientific and operational research | a. Utility plans to make required data disclosures, and share data beyond what is required<br><br>b. Utility plans to fund and participate in both independent and collaborative research, and plans to ensure that research, where possible, is abstracted and applied to other utilities<br><br>c. Utility research is planned to address utility ignited wildfires and risk reduction initiatives<br><br>d. Utility plans to promote best practices based on latest independent scientific and operational research |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.8 H. Resource allocation methodology

#### 1.2.8.1 Capability 37: Scenario analysis across different risk levels

| Capability 37: Scenario analysis across different risk levels | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** <br> *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend <br><br> 2020 \| 2023 \| Both | Current state <br> As of February 2020 | Planned state for 2023 <br> "Three years from now" as of February 2020 <br><br> **Bold responses have planned growth between 2020 and 2023** |
| 4 <br><br> 3 <br><br> 2 <br><br> 1 <br><br> 0 | a. Utility provides an accurate high-risk reduction and low-risk reduction scenario, in addition to their proposed scenario, and the projected cost and total risk reduction potential <br> b. Utility provides projections for each scenario with regional granularity <br> c. Utility does not include a long term (e.g., 6-10 year) risk estimate taking into account macro factors (climate change, etc.) as well as planned risk reduction initiatives in its scenarios <br> d. Utility provides an estimate of impact on reliability factors in its scenarios | a. Utility plans to provide an accurate high-risk reduction and low-risk reduction scenario, in addition to their proposed scenario, and the projected cost and total risk reduction potential <br> **b. Utility plans to provide projections for each scenario at asset level granularity** <br> c. Utility does not plan to include a long term (e.g., 6-10 year) risk estimate taking into account macro factors (climate change, etc.) as well as planned risk reduction initiatives in its scenarios <br> d. Utility plans to provide an estimate of impact on reliability factors in its scenarios |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.8.2    Capability 38: Presentation of relative risk spend efficiency for portfolio of initiatives

| Capability 38: Presentation of relative risk spend efficiency for portfolio of initiatives | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend<br><br>2020   2023   Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Utility does present accurate qualitative rankings for its initiatives by risk spend efficiency<br>b. All commercial initiatives are captured in the ranking of risk spend efficiency<br>c. Utility includes figures for present value cost and project risk reduction impact of each initiative, clearly documenting all assumptions (e.g., useful life, discount rate, etc.)<br>d. Utility provides an explanation of their investment in each particular initiative, including the expected overall reduction in risk<br>e. Utility is able to provide risk efficiency figures with regional granularity | a. Utility plans to present accurate qualitative rankings for its initiatives by risk spend efficiency<br>b. All commercial initiatives are planned to be captured in the ranking of risk spend efficiency<br>c. Utility plans to include figures for present value cost and project risk reduction impact of each initiative, clearly documenting all assumptions (e.g., useful life, discount rate, etc.)<br>**d. Utility plans to provide an explanation of their investment in each particular initiative, including the expected overall reduction in risk and estimates of impact on reliability factors**<br>**e. Utility plans to be able to provide risk efficiency figures with asset level granularity** |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.8.3 Capability 39: Process for determining risk spend efficiency of vegetation management initiatives

| Capability 39: Process for determining risk spend efficiency of vegetation management initiatives | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 · 2023 · Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Utility has an accurate relative understanding of the cost and effectiveness to produce a reliable risk spend efficiency estimate<br><br>b. Risk spend efficiency estimates of vegetation management initiatives can be prepared with regional granularity<br><br>c. Risk spend efficiency estimates of vegetation management initiatives are updated annually or more frequently<br><br>d. Some vegetation management initiatives are included within its evaluation<br><br>e. Utility cannot evaluate risk reduction synergies from combination of various initiatives | **a. Utility plans to have accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate**<br><br>**b. Risk spend efficiency estimates of vegetation management initiatives are planned to be able to be prepared with circuit level granularity**<br><br>c. Risk spend efficiency estimates of vegetation management initiatives are planned to be updated annually or more frequently<br><br>**d. Most vegetation management initiatives are planned to be included within its evaluation**<br><br>**e. Utility plans to be able to evaluate risk reduction synergies from combination of various initiatives** |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.8.4    Capability 40: Process for determining risk spend efficiency of system hardening initiatives

| Capability 40: Process for determining risk spend efficiency of system hardening initiatives | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a. Utility has accurate relative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate of system hardening initiatives | **a. Utility plans to have accurate quantitative understanding of cost and effectiveness to produce a reliable risk spend efficiency estimate of system hardening initiatives** |
| 3 | b. Risk spend efficiency of system hardening initiatives can be prepared with regional granularity | **b. Risk spend efficiency of system hardening initiatives is planned to be prepared with asset level granularity** |
| 2 | c. Estimates of system hardening initiatives are updated annually or more frequently | c. Estimates of system hardening initiatives are planned to be updated annually or more frequently |
| 1 | d. All commercially available grid hardening initiatives are included in the utility risk spend efficiency analysis | d. All commercially available grid hardening initiatives are planned to be included in the utility risk spend efficiency analysis |
| 0 | e. Utility cannot evaluate risk reduction effects from the combination of various initiatives | **e. Utility plans to be able to evaluate risk reduction effects from the combination of various initiatives** |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.8.5    Capability 41: Portfolio-wide initiative allocation methodology

| Capability 41: Portfolio-wide initiative allocation methodology | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 / 3 / 2 / 1 / 0 | a. Utility considers estimates of RSE when allocating capital<br>b. Utility takes into account the average estimate of RSE by initiative category when generating RSE estimates<br>c. RSE estimates are verified with historical or experimental pilot data<br>d. Utility takes into consideration impact on safety, reliability, and other priorities when making spending decisions | **a. Accurate RSE estimates for all initiatives are planned to be used to determine capital allocation within categories only (e.g., to choose the best vegetation management initiative)**<br>**b. Utility takes into account specific information by initiative at the asset level, including state of specific assets and location where initiative will be implemented when generating RSE estimates**<br>c. Utility plans to verify RSE estimates with historical or experimental pilot data<br>d. Utility plans to take into consideration impact on safety, reliability, and other priorities when making spending decisions |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>ii) Utility allocates spend within each category of wildfire risk reduction by accurate risk spend efficiency estimates | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.8.6    Capability 42: Portfolio-wide innovation in new wildfire initiatives

| Automated maturity levels based on Maturity Rubric | Responses to survey questions<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
|---|---|---|
| **Capability 42: Portfolio-wide innovation in new wildfire initiatives** | | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020  2023  Both | | |
| 4 | a. Utility uses pilots, followed by in-field testing, measuring reduction in ignition events and near-misses | a. Utility plans to use pilots, followed by in-field testing, measuring reduction in ignition events and near-misses |
| 3 | b. No program is in place to develop and evaluate the risk spend efficiency of new wildfire initiatives | **b. Utility uses total cost of ownership to develop and evaluate the risk spend efficiency of new wildfire initiatives** |
| 2 | c. Utility measures efficacy of new wildfire initiatives with asset level granularity | c. Utility plans to measure efficacy of new wildfire initiatives with asset level granularity |
| 1 | d. Reviews of innovative initiatives are not audited by independent parties | d. Reviews of innovative initiatives are not planned to be audited by independent parties |
| 0 | e. Utility shares the findings of its evaluation of innovative initiatives with other utilities, academia, and the general public | e. Utility plans to share the findings of its evaluation of innovative initiatives with other utilities, academia, and the general public |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.9 I. Emergency planning and preparedness

1.2.9.1 Capability 43: Wildfire plan integrated with overall disaster / emergency plan

| Capability 43: Wildfire plan integrated with overall disaster / emergency plan | | |
|---|---|---|
| Automated maturity levels based on Maturity Rubric | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 2023 Both | | |
| 4 | a. Wildfire plan is an integrated component of overall disaster and emergency plans<br>b. Utility runs drills to audit the viability and execution of its wildfire plans<br>c. Impact of confounding events or multiple simultaneous disasters is considered in the planning process<br>d. Wildfire plan is integrated with disaster and emergency preparedness plans of other relevant stakeholders (e.g., CAL FIRE, Fire Safe Councils, etc.)<br>e. Utility takes a leading role in planning, coordinating, and integrating plans across stakeholders | a. Wildfire plan is planned to be an integrated component of overall disaster and emergency plans<br>b. Utility plans to run drills to audit the viability and execution of its wildfire plans<br>c. Impact of confounding events or multiple simultaneous disasters are planned to be considered in the planning process<br>d. Wildfire plan is planned to be integrated with disaster and emergency preparedness plans of other relevant stakeholders (e.g., CAL FIRE, Fire Safe Councils, etc.)<br>e. Utility plans to take a leading role in planning, coordinating, and integrating plans across stakeholders |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** | **Criteria missing to reach a maturity level of 1 or more:** |

- C57 -

| | Capability 43: Wildfire plan integrated with overall disaster / emergency plan | |
|---|---|---|
| | • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.9.2 Capability 44: Plan to restore service after wildfire related outage

| Capability 44: Plan to restore service after wildfire related outage | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| **Legend** <br><br> 2020 \| 2023 \| Both | Current state <br> As of February 2020 | Planned state for 2023 <br> "Three years from now" as of February 2020 <br><br> **Bold responses have planned growth between 2020 and 2023** |
| 4 <br><br> 3 <br><br> 2 <br><br> 1 <br><br> 0 | a. Detailed and actionable procedures are in place to restore service after a wildfire related outage <br> b. Employee and subcontractor crews are trained in and aware of plans <br> c. Procedures to restore service after a wildfire-related outage are customized with circuit level granularity <br> d. Customized procedure to restore service is based on topography, vegetation, and community needs <br> e. There is an inventory of high risk spend efficiency resources available for repairs <br> f. Wildfire plan is an integrated component of overall disaster and emergency plans | a. Detailed and actionable procedures are planned to be in place to restore service after a wildfire related outage <br> b. Employee and subcontractor crews are planned to be trained in and be aware of plans <br> c. Procedures to restore service after a wildfire-related are planned to be customized with circuit level granularity <br> d. Customized procedure to restore service is planned to be based on topography, vegetation, and community needs <br> e. SCE plans to have an inventory of high risk spend efficiency resources available for repairs <br> f. Wildfire plan is planned to be an integrated component of overall disaster and emergency plans |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.9.3    Capability 45: Emergency community engagement during and after wildfire

| Capability 45: Emergency community engagement during and after wildfire | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 / 3 / 2 / 1 | a. Utility provides clear and substantially complete communication of available information relevant to affected customers<br><br>b. >99.9% of customers receive complete details of available information<br><br>c. >99.9% of affected medical baseline customers receive complete details of available information<br><br>d. Utility assists where helpful with communication of information related to power outages to customers through availability of relevant evacuation information and links on website/toll-free telephone number, and assisting disaster response professionals as requested<br><br>e. Utility has detailed and actionable established protocols for engaging with emergency management organizations<br><br>f. Utility communicates and coordinates resources to communities during emergencies (e.g., shelters, supplies, transportation, etc.) | **a. Utility plans to provide clear and substantially complete communication of available information relevant to affected customers, along with referrals to other agencies**<br><br>**b.** >99.9% of customers are planned to receive complete details of available information<br><br>**c.** >99.9% of medical baseline customers are expected to receive complete details of available information<br><br>**d.** Utility plans to assist where helpful with communication of information related to power outages to customers through availability of relevant evacuation information and links on website/toll-free telephone number, and assisting disaster response professionals as requested<br><br>**e.** Utility plans to have detailed and actionable established protocols for engaging with other emergency management organizations during emergency situations |

| Capability 45: Emergency community engagement during and after wildfire | | |
|---|---|---|
| 0 | | f.   Utility plans to communicate and coordinate resources during emergencies (e.g., shelters, supplies, transportation, etc.) |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>•   N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>•   N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.9.4    Capability 46: Protocols in place to learn from wildfire events

| Capability 46: Protocols in place to learn from wildfire events | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| **2020  2023  Both** | | |
| 4 | a. There is a protocol in place to record the outcome of emergency events and to clearly and actionably document learnings and potential process improvements | a. SCE plans to have a protocol in place to record the outcome of emergency events and to clearly and actionably document learnings and potential process improvements |
| 3 | b. There is a defined process and staff responsible for incorporating learnings into emergency plan | b. SCE plans to have a defined process and staff responsible for incorporating learnings into emergency plan |
| 2 | c. "Dry runs" are used to test plans updated based on learnings and improvements to confirm its effectiveness | c. SCE plans to have "dry runs" to test plans updated based on learnings and improvements to confirm its effectiveness |
| 1 | d. There is a defined process to solicit input from a variety of other stakeholders and incorporate learnings from other stakeholders into the emergency plan | d. SCE plans to have a defined process to solicit input from a variety of other stakeholders and incorporate learnings from other stakeholders into the emergency plan |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.9.5    Capability 47: Processes for continuous improvement after wildfire and PSPS

| Capability 47: Processes for continuous improvement after wildfire and PSPS | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 · 2023 · Both | | |
| 4<br><br>3<br><br>2<br><br>1 | a. Utility conducts an evaluation or debrief process after a wildfire<br>b. Utility conducts a customer survey and utilizes partners to disseminate requests for stakeholder engagement<br>c. Utility engages in public listening sessions, debriefs with partners, and others<br>d. Utility shares findings with partners about what can be improved<br>e. Feedback and recommendations on potential improvements are made public<br>f. Utility conducts proactive outreach to local agencies and organizations to solicit additional feedback on what can be improved<br>g. Utility has a clear plan for post-event listening and incorporating lessons learned from all stakeholders | a. Utility plans to conduct an evaluation or debrief process after a wildfire<br>b. Utility plans to conduct a customer survey and utilize partners to disseminate requests for stakeholder engagement<br>c. Utility plans to engage in public listening sessions, debriefs with partners, and others<br>d. Utility plans to share findings with partners about what can be improved<br>e. Feedback and recommendations on potential improvements are planned to be made public<br>f. Utility plans to conduct proactive outreach to local agencies and organizations to solicit additional feedback on what can be improved<br>g. Utility plans to have a clear plan for post-event listening and incorporating lessons learned from all stakeholders |

| | Capability 47: Processes for continuous improvement after wildfire and PSPS | |
|---|---|---|
| 0 | h. Utility does not track the implementation of recommendations and report upon their impact<br><br>i. Utility has a process to conduct reviews after wildfires in other territories of other utilities and states to identify and address areas of improvement | h. Utility does not plan to track the implementation of recommendations and report upon their impact<br><br>i. Utility plans to have a process to conduct reviews after wildfires in other territories of other utilities and states to identify and address areas of improvement |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.10 J. Stakeholder cooperation and community engagement

1.2.10.1 Capability 48: Cooperation and best practice sharing with other utilities

| Capability 48: Cooperation and best practice sharing with other utilities | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020 2023 Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Utility actively works to identify best practices from other global utilities through a clearly defined operational process<br><br>b. Utility successfully adopts and implements best practices identified from other utilities<br><br>c. Utility seeks to share best practices and lessons learned in a consistent format<br><br>d. Utility shares best practices and lessons via a consistent and predictable set of venues / media<br><br>e. Utility participates in annual benchmarking exercises with other utilities to find other areas for improvement<br><br>f. Utility has not implemented a defined process for testing lessons learned from other utilities to ensure local applicability | a. Utility plans to actively work to identify best practices from other global utilities through a clearly defined operational process<br><br>b. Utility plans to successfully adopt and implement best practices identified from other utilities<br><br>c. Utility plans to seek to share best practices and lessons learned in a consistent format<br><br>d. Utility plans to share best practices and lessons via a consistent and predictable set of venues / media<br><br>e. Utility plans to participate in annual benchmarking exercises with other utilities to find other areas for improvement<br><br>f. Utility does not plan to implement a defined process for testing lessons learned from other utilities to ensure local applicability |
| | **Criteria missing to reach a maturity level of 1 or more:** | **Criteria missing to reach a maturity level of 1 or more:** |

| Capability 48: Cooperation and best practice sharing with other utilities | | |
|---|---|---|
| | • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.10.2 Capability 49: Engagement with communities on utility wildfire mitigation initiatives

| Capability 49: Engagement with communities on utility wildfire mitigation initiatives | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020   2023   Both | a. Utility has a clear and actionable plan to develop or maintain a collaborative relationship with local communities<br>b. There are communities in HFTD areas where meaningful resistance is expected in response to efforts to mitigate fire risk (e.g., vegetation clearance)<br>c. More than 5% of landowners are non-compliant with utility initiatives (e.g., vegetation management)<br>d. Less than 1% of landowners complain about utility initiatives (e.g., vegetation management)<br>e. Utility has a demonstratively cooperative relationship with communities containing >90% of the population in HFTD areas (e.g., by being recognized by other agencies as having a cooperative relationship with those communities in HFTD areas)<br>f. Utility has records of landowners throughout communities containing >90% of the population in HFTD areas reaching out to notify of risks, dangers, or issues in the past year | a. Utility plans to have a clear and actionable plan to develop or maintain a collaborative relationship with local communities<br>b. SCE plans to have communities in HFTD areas where meaningful resistance is expected in response to efforts to mitigate fire risk (e.g., vegetation clearance)<br>c. SCE plans to more than 5% of landowners non-compliant with utility initiatives (e.g., vegetation management)<br>d. SCE plans to have less than 1% of landowners complain about utility initiatives (e.g., vegetation management)<br>e. Utility plans to have a demonstratively cooperative relationship with communities containing >90% of the population in HFTD areas (e.g., by being recognized by other agencies as having a cooperative relationship with those communities in HFTD areas)<br>f. Utility plans to have records of landowners throughout communities containing >90% of the population in HFTD areas reaching out to notify of risks, dangers, or issues in the past year |

The left column shows maturity levels 4, 3, 2, 1, 0 with level 1 highlighted.

| Capability 49: Engagement with communities on utility wildfire mitigation initiatives | |
|---|---|
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

### 1.2.10.3 Capability 50: Engagement with LEP and AFN populations

| Capability 50: Engagement with LEP and AFN populations | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 **Bold responses have planned growth between 2020 and 2023** |
| 2020 / 2023 / Both | | |
| 4 | a. Utility provides a plan to partner with organizations representing Limited English Proficiency (LEP) and Access & Functional Needs (AFN) communities | a. Utility plans to provide a plan to partner with organizations representing Limited English Proficiency (LEP) and Access & Functional Needs (AFN) communities |
| 3 | b. Utility can outline how partnerships with LEP and AFN communities create pathways for implementing suggested activities to address the needs of these communities | b. Utility plans to be able to outline how partnerships with LEP and AFN communities create pathways for implementing suggested activities to address the needs of these communities |
| 2 | c. Utility can point to clear examples of how relationships with LEP and AFN communities have driven the utility's ability to interact with and prepare these communities for wildfire mitigation activities | c. Utility plans to be able to point to clear examples of how relationships with LEP and AFN communities have driven the utility's ability to interact with and prepare these communities for wildfire mitigation activities |
| 1 | d. Utility does not have a specific annually-updated action plan to further reduce wildfires and PSPS risk to LEP & AFN communities | **d. Utility plans to have a specific annually-updated action plan to further reduce wildfires and PSPS risk to LEP & AFN communities** |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:** <br> • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.10.4    Capability 51: Collaboration with emergency response agencies

| Capability 51: Collaboration with emergency response agencies | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions**<br>*Each letter indicates a survey question, with the relevant response shown below.* | |
| **Legend**<br><br>2020  2023  Both | Current state<br>As of February 2020 | Planned state for 2023<br>"Three years from now" as of February 2020<br><br>**Bold responses have planned growth between 2020 and 2023** |
| 4<br><br>3<br><br>2<br><br>1<br><br>0 | a. Utility cooperates with suppression agencies by notifying them of ignitions<br><br>b. Utility is cooperating with suppression agencies throughout utility service areas<br><br>c. Utility does not accurately predict and communicate the forecasted fire propagation path using available analytics resources and weather data<br><br>d. Utility does not communicate fire paths to the community as requested<br><br>e. Utility works to assist suppression crews logistically where possible | a. Utility plans to cooperate with suppression by notifying them of ignitions<br><br>b. Utility plans to cooperate with suppression agencies throughout utility service areas<br><br>c. Utility does not plan to be able to accurately predict and communicate the forecasted fire propagation path using available analytics resources and weather data<br><br>d. Utility does not plan to be able to communicate fire paths to the community as requested<br><br>e. Utility plans to work to assist suppression crews logistically where possible |
| | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**<br>• N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.2.10.5 Capability 52: Collaboration on wildfire mitigation planning with stakeholders

| Capability 52: Collaboration on wildfire mitigation planning with stakeholders | | |
|---|---|---|
| **Automated maturity levels based on Maturity Rubric** | **Responses to survey questions** *Each letter indicates a survey question, with the relevant response shown below.* | |
| Legend | Current state As of February 2020 | Planned state for 2023 "Three years from now" as of February 2020 |
| 2020   2023   Both | | **Bold responses have planned growth between 2020 and 2023** |
| 4 | a. Utility conducts fuel management along rights of way  b. Utility shares fuel management plans with other stakeholders and works with other stakeholders conducting fuel management concurrently  c. Utility does not cultivate a native vegetative ecosystem across its territory that is consistent with lower fire risk  d. Utility funds local groups (e.g., fire safe councils) to support fuel management | a. Utility plans to conduct fuel management along rights of way  b. Utility plans to share fuel management plans with other stakeholders and to work with other stakeholders conducting fuel management concurrently  c. Utility does not plan to cultivate a native vegetative ecosystem across its territory that is consistent with lower fire risk  d. Utility plans to fund local groups (e.g., fire safe councils) to support fuel management |
| 3 | | |
| 2 | | |
| 1 | | |
| 0 | | |
| | **Criteria missing to reach a maturity level of 1 or more:**  • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric | **Criteria missing to reach a maturity level of 1 or more:**  • N/A – all criteria to reach a 1 are met based on survey responses and maturity rubric |

## 1.3 SCE: Numerical Maturity Summary

Please reference the Guidance Resolution for the Maturity Rubric and for necessary context to interpret the levels shown below. **All levels are based solely on the Maturity Rubric and on SCE's responses to the Utility Wildfire Mitigation Maturity Survey ("Survey").**

"2020" refers to February 2020, and "2023" refers to February 2023. See the Survey for more detail.

| Legend | 2020 Level | 2023 Level | Level for both |
|---|---|---|---|

| Category | Capability I | 2020 | 2023 | Capability II | 2020 | 2023 | Capability III | 2020 | 2023 | Capability IV | 2020 | 2023 | Capability V | 2020 | 2023 | Capability VI | 2020 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A. Risk assessment and mapping** | 1. Climate scenario modeling | 1 | 2 | 2. Ignition risk estimation | 1 | 1 | 3. Estimation of wildfire consequences for communities | 0 | 1 | 4. Estimation of wildfire and PSPS reduction impact | 1 | 2 | 5. Risk maps and simulation algorithms | 1 | 1 | N/A | | |
| **B. Situational awareness and forecasting** | 6. Weather variables collected | 2 | 2 | 7. Weather data resolution | | | 8. Weather forecasting ability | 2 | 2 | 9. External sources used in weather forecasting | 2 | 2 | 10. Wildfire detection processes and capabilities | 1 | 1 | N/A | | |
| **C. Grid design and system hardening** | 11. Approach to prioritizing initiatives across territory | 3 | 4 | 12. Grid design for minimizing ignition risk | 0 | 0 | 13. Grid design for resiliency and minimizing PSPS | | | 14. Risk-based grid hardening and cost efficiency | 1 | 2 | 15. Grid design and asset innovation | | | N/A | | |
| **D. Asset management and inspections** | 16. Asset inventory and condition assessments | 2 | 2 | 17. Asset inspection cycle | 1 | 1 | 18. Asset inspection effectiveness | 1 | 1 | 19. Asset maintenance and repair | 3 | 3 | 20. QA/QC for asset management | 2 | 2 | N/A | | |
| **E. Vegetation management and inspections** | 21. Vegetation inventory for condition assessment | 3 | 3 | 22. Vegetation inspection cycle | 2 | 2 | 23. Vegetation inspection effectiveness | 1 | 1 | 24. Vegetation grow-in mitigation | 1 | 1 | 25. Vegetation fall-in mitigation | 3 | 3 | 26. QA/QC for vegetation management | 2 | 2 |
| **F. Grid operations and protocols** | 27. Protective equipment and device settings | 3 | 3 | 28. Incorporating ignition risk factors in grid control | 2 | 2 | 29. PSPS op. model and consequence mitigation | 1 | 2 | 30. Protocols for PSPS initiation | 2 | 2 | 31. Protocols for PSPS re-energization | 0 | 2 | 32. Ignition prevention and suppression | 2 | 2 |
| **G. Data governance** | 33. Data collection and curation | 0 | 2 | 34. Data transparency and analytics | 0 | 4 | 35. Near-miss tracking | 0 | 4 | 36. Data sharing with research community | 4 | 4 | N/A | | | N/A | | |
| **H. Resource allocation methodology** | 37. Scenario analysis across different risk levels | 1 | 3 | 38. Presentation of relative risk spend efficiency for portfolio of initiatives | 1 | 2 | 39. Process for determining risk spend efficiency of vegetation management initiatives | 1 | 1 | 40. Process for determining risk spend efficiency of system hardening initiatives | 1 | 3 | 41. Portfolio-wide initiative allocation methodology | 0 | 1 | 42. Portfolio-wide innovation in new wildfire initiatives | 1 | 2 |
| **I. Emergency planning and preparedness** | 43. Wildfire plan integrated with overall disaster / emergency plan | 4 | 4 | 44. Plan to restore service after wildfire related outage | 4 | 4 | 45. Emergency community engagement during and after wildfire | 1 | 4 | 46. Protocols in place to learn from wildfire events | 4 | 4 | 47. Process for continuous improvement after wildfire and PSPS | 2 | 2 | N/A | | |
| **J. Stakeholder cooperation and community engagement** | 48. Cooperation and best practice sharing with other utilities | 3 | 3 | 49. Engagement with communities on utility wildfire mitigation initiatives | 1 | 1 | 50. Engagement with LEP and AFN populations | 3 | 4 | 51. Collaboration with emergency response agencies | 2 | 2 | 52. Collaboration on wildfire mitigation planning with stakeholders | 2 | 2 | N/A | | |

**(End of Appendix C)**

**APPENDIX D**

**Definitions of Mitigation Initiatives from Section 5 of WMP Guidelines**

## 5.3.11 Definitions of initiatives by category

| Category | Initiative | Definition |
|---|---|---|
| **A. Risk mapping and simulation** | A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment | Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates. |
| | Climate-driven risk map and modelling based on various relevant weather scenarios | Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates. |
| | Ignition probability mapping showing the probability of ignition along the electric lines and equipment | Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets). |
| | Initiative mapping and estimation of wildfire and PSPS risk-reduction impact | Development of a tool to estimate the risk reduction efficacy (for both wildfire and PSPS risk) and risk-spend efficiency of various initiatives. |
| | Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment | Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.). |
| **B. Situational awareness and forecasting** | Advanced weather monitoring and weather stations | Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources. |
| | Continuous monitoring sensors | Installation, maintenance, and monitoring of sensors and sensorized equipment used to monitor the condition of electric lines and equipment. |
| | Fault indicators for detecting faults on electric lines and equipment | Installation and maintenance of fault indicators. |
| | Forecast of a fire risk index, fire potential index, or similar | Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation and/or fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making. |
| | Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions | Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions. |
| | Weather forecasting and estimating impacts on electric lines and equipment | Development methodology for forecast of weather conditions relevant to utility operations, forecasting weather conditions and conducting analysis to incorporate into utility decision-making, learning and updates to reduce false positives and false negatives of forecast PSPS conditions. |

| Category | Initiative | Definition |
|---|---|---|
| **C. Grid design and system hardening** | Capacitor maintenance and replacement program | Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment. |
| | Circuit breaker maintenance and installation to de-energize lines upon detecting a fault | Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect electrical circuits from damage caused by overload of electricity or short circuit. |
| | Covered conductor installation | Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8 ), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D. |
| | Covered conductor maintenance | Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D. |
| | Crossarm maintenance, repair, and replacement | Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95. |
| | Distribution pole replacement and reinforcement, including with composite poles | Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events. |
| | Expulsion fuse replacement | Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment. |

| Category | Initiative | Definition |
|---|---|---|
| | Grid topology improvements to mitigate or reduce PSPS events | Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation. |
| | Installation of system automation equipment | Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so). |
| | Maintenance, repair, and replacement of connectors, including hotline clamps | Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps. |
| | Mitigation of impact on customers and other residents affected during PSPS event | Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level). |
| | Other corrective action | Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers. |
| | Pole loading infrastructure hardening and replacement program based on pole loading assessment program | Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program. |
| | Transformers maintenance and replacement | Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment. |
| | Transmission tower maintenance and replacement | Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV). |
| | Undergrounding of electric lines and/or equipment | Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located underground and in accordance with GO 128). |
| | Updates to grid topology to minimize risk of ignition in HFTDs | Changes in the plan, installation, construction, removal, and/or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in HFTDs. |

| Category | Initiative | Definition |
|---|---|---|
| **D. Asset management and inspections** | Detailed inspections of distribution electric lines and equipment | In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded. |
| | Detailed inspections of transmission electric lines and equipment | Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded. |
| | Improvement of inspections | Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors. |
| | Infrared inspections of distribution electric lines and equipment | Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment. |
| | Infrared inspections of transmission electric lines and equipment | Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment. |
| | Intrusive pole inspections | In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading. |
| | LiDAR inspections of distribution electric lines and equipment | Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances). |
| | LiDAR inspections of transmission electric lines and equipment | Inspections of overhead electric distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances). |
| | Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations | Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept. |
| | Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations | Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept., |
| | Patrol inspections of distribution electric lines and equipment | In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business. |

| Category | Initiative | Definition |
|---|---|---|
| | Patrol inspections of transmission electric lines and equipment | Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business. |
| | Pole loading assessment program to determine safety factor | Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021. |
| | Quality assurance / quality control of inspections | Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes. |
| | Substation inspections | In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping. |
| E. Vegetation management and inspection | Additional efforts to manage community and environmental impacts | Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices |
| | Detailed inspections of vegetation around distribution electric lines and equipment | Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded. |
| | Detailed inspections of vegetation around transmission electric lines and equipment | Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded. |
| | Emergency response vegetation management due to red flag warning or other urgent conditions | Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence. |
| | Fuel management and reduction of "slash" from vegetation management activities | Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees. |
| | Improvement of inspections | Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors. |
| | LiDAR inspections of vegetation around distribution electric lines and equipment | Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances). |
| | LiDAR inspections of vegetation around transmission electric lines and equipment | Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances). |

| Category | Initiative | Definition |
|---|---|---|
| | Other discretionary inspections of vegetation around distribution electric lines and equipment | Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept. |
| | Other discretionary inspections of vegetation around transmission electric lines and equipment | Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept. |
| | Patrol inspections of vegetation around distribution electric lines and equipment | Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business. |
| | Patrol inspections of vegetation around transmission electric lines and equipment | Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business. |
| | Quality assurance / quality control of vegetation inspections | Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes. |
| | Recruiting and training of vegetation management personnel | Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility's wildfire mitigation plan, in addition to rules and regulations for safety. |
| | Remediation of at-risk species | Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement. |
| | Removal and remediation of trees with strike potential to electric lines and equipment | Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur. |
| | Substation inspection | Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. |
| | Substation vegetation management | Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment. |
| | Vegetation inventory system | Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk. |
| | Vegetation management to achieve clearances around electric lines and equipment | Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs. |

| Category | Initiative | Definition |
|---|---|---|
| **F. Grid operations and protocols** | Automatic recloser operations | Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence. |
| | Crew-accompanying ignition prevention and suppression resources and services | Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work |
| | Personnel work procedures and training in conditions of elevated fire risk | Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed. |
| | Protocols for PSPS re-energization | Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards. |
| | PSPS events and mitigation of PSPS impacts | Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents. |
| | Stationed and on-call ignition prevention and suppression resources and services | Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance. |
| **G. Data governance** | Centralized repository for data | Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources. |
| | Collaborative research on utility ignition and/or wildfire | Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable. |
| | Documentation and disclosure of wildfire-related data and algorithms | Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing. |
| | Tracking and analysis of near miss data | Tools and procedures to monitor, record, and conduct analysis of data on near miss events. |
| **H. Resource allocation methodology** | Allocation methodology development and application | Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making. |
| | Risk reduction scenario development and analysis | Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation initiative implementation; analysis and application to utility decision-making. |
| | Risk spend efficiency analysis | Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/ or MARS methodologies. |

| Category | Initiative | Definition |
|---|---|---|
| **I. Emergency planning and preparedness** | Adequate and trained workforce for service restoration | Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation. |
| | Community outreach, public awareness, and communications efforts | Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular. |
| | Customer support in emergencies | Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc. |
| | Disaster and emergency preparedness plan | Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities. |
| | Preparedness and planning for service restoration | Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers. |
| | Protocols in place to learn from wildfire events | Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events. |
| **J. Stakeholder cooperation and community engagement** | Community engagement | Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular. |
| | Cooperation and best practice sharing with agencies outside CA | Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires. |
| | Cooperation with suppression agencies | Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff. |
| | Forest service and fuel reduction cooperation and joint roadmap | Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities). |

**(End of Appendix D)**

**APPENDIX E**

**Public Utilities Code Section 8386**

**8386.**

(a) Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment.

(b) Each electrical corporation shall annually prepare and submit a wildfire mitigation plan to the Wildfire Safety Division for review and approval. In calendar year 2020, and thereafter, the plan shall cover at least a three-year period. The division shall establish a schedule for the submission of subsequent comprehensive wildfire mitigation plans, which may allow for the staggering of compliance periods for each electrical corporation. In its discretion, the division may allow the annual submissions to be updates to the last approved comprehensive wildfire mitigation plan; provided, that each electrical corporation shall submit a comprehensive wildfire mitigation plan at least once every three years.

(c) The wildfire mitigation plan shall include all of the following:

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

(2) The objectives of the plan.

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

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

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

(6) Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety. As part of these protocols, each electrical corporation shall include protocols related to mitigating the public safety impacts of disabling reclosers and deenergizing portions of the electrical distribution system that consider the impacts on all of the following:

(A) Critical first responders.

(B) Health and communication infrastructure.

(C) Customers who receive medical baseline allowances pursuant to subdivision (c) of Section 739. The electrical corporation may deploy backup electrical resources or provide financial assistance for backup electrical resources to a customer receiving a medical baseline allowance for a customer who meets all of the following requirements:

(i) The customer relies on life-support equipment that operates on electricity to sustain life.

(ii) The customer demonstrates financial need, including through enrollment in the California Alternate Rates for Energy program created pursuant to Section 739.1.

(iii) The customer is not eligible for backup electrical resources provided through medical services, medical insurance, or community resources.

(D) Subparagraph (C) shall not be construed as preventing an electrical corporation from deploying backup electrical resources or providing financial assistance for backup electrical resources under any other authority.

(7) Appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines, including procedures for those customers receiving a medical baseline allowance as described in paragraph (6). The procedures shall direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event.

(8) Plans for vegetation management.

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

(10) Protocols for the deenergization of the electrical corporation's transmission infrastructure, for instances when the deenergization may impact customers who, or entities that, are dependent upon the infrastructure.

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

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

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

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

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

(14) A description of where and how the electrical corporation considered undergrounding electrical distribution lines within those areas of its service territory identified to have the highest wildfire risk in a commission fire threat map.

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

(16) Identification of any geographic area in the electrical corporation's service territory that is a higher wildfire threat than is currently identified in a commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment.

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

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

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

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

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

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

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

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

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

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

(22) Any other information that the Wildfire Safety Division may require.

(d) The Wildfire Safety Division shall post all wildfire mitigation plans and annual updates on the commission's internet website for no less than two months before the division's decision regarding approval of the plan. The division shall accept comments on each plan from the public, other local and state agencies, and interested parties, and verify that the plan complies with all applicable rules, regulations, and standards, as appropriate.

*(Amended by Stats. 2019, Ch. 410, Sec. 2.3. (SB 560) Effective January 1, 2020.)*

**(End of Appendix E)**

**APPENDIX F**

**Glossary of Terms**

# Glossary of Terms

| Term | Definition |
|------|------------|
| AB | Assembly Bill |
| AFN | Access and Functional Needs |
| ALJ | Administrative Law Judge |
| BVES | Bear Valley Electric Service |
| CAISO | California Independent System Operator |
| Cal Advocates | Public Advocate's Office |
| CAL FIRE | California Department of Forestry and Fire Protection |
| CEJA | California Environmental Justice Alliance |
| CNRA | California Natural Resources Agency |
| D. | Decision |
| DFA | Distribution Fault Attribution |
| EBMUD | East Bay Municipal Utility District |
| EFD | Early Fault Detection |
| EPIC | Electric Program Investment Charge |
| EPUC | Energy Producers and Users Coalition |
| EVM | Enhanced Vegetation Management |
| FERC | Federal Energy Regulatory Commission |
| FGDC | Federal Geographic Data Committee |
| FIRIS | Fire Integrated Real Time Intelligence System |
| FMEA | Failure Modes and Effects Analysis |
| FPI | Fire Potential Index |
| GIS | Geographic Information Systems |
| GO | General Order |
| GPI | Green Power Institute |
| GRC | General Rate Case |
| HFRA | High Fire Risk Area |
| HFTD | High Fire Threat District |
| Horizon West | Horizon West Transmission |
| HWT | Horizon West Transmission |
| I. | Investigation |
| ICS | Incident Command System |

| Term | Definition |
|------|------------|
| ICS | Incident Command Structure |
| IOU | Investor Owned Utility |
| ISA | International Society of Arboriculture |
| ITO | Independent Transmission Operator |
| IVM | Integrated Vegetation Management Plan |
| IVR | Interactive Voice Response |
| JIS | Joint Information System |
| kV | Kilovolt |
| Liberty | Liberty Utilities / CalPeco Electric |
| LiDAR | Light Detection and Ranging |
| LTE | Long-Term Evolution |
| Maturity Model | Utility Wildfire Mitigation Maturity Model |
| MAVF | Multi-Attribute Value Function |
| MGRA | Mussey Grade Road Alliance |
| MMAA | Mountain Mutual Aid Association |
| NERC | North American Electric Reliability Corporation |
| NFDRS | National Fire Danger Rating System |
| OCFA | Orange County Fire Authority |
| OEIS | Office of Energy Infrastructure Safety |
| OP | Ordering Paragraph |
| OPW | Outage Producing Winds |
| PG&E | Pacific Gas and Electric Company |
| PLP | Pole Loading Assessment Program |
| PMO (PacifiCorp) | Project Management Office |
| PMO (SCE) | Public Safety Program Management Office |
| PMU | Phasor Measurement Unit |
| POC | Protect Our Communities Foundation |
| PRC | Public Resources Code |
| PSPS | Public Safety Power Shutoff |
| QA | Quality Assurance |
| QC | Quality Control |
| R. | Rulemaking |

# Glossary of Terms

| Term | Definition |
| --- | --- |
| RAMP | Risk Assessment and Management Phase |
| RAR | Remote Automatic Reclosers |
| RBDM | Risk-Based Decision Making |
| RCP | Remedial Compliance Plan |
| RCRC | Rural Counties of California Representatives |
| REFCL | Rapid Earth Fault Current Limiter |
| RFW | Red Flag Warning |
| RSE | Risk Spend Efficiency |
| SB | Senate Bill |
| SCADA | Supervisory Control and Data Acquisition |
| SCE | Southern California Edison Company |
| SDG&E | San Diego Gas & Electric Company |
| S-MAP | Safety Model Assessment Proceeding |
| SMJU | Small and Multijurisdictional Utility |
| SUI | Wildland-Urban Interface |
| SWATI | Santa Ana Wildfire Threat Index |
| TAT | Tree Assessment Tool |
| TBC | Trans Bay Cable |
| TURN | The Utility Reform Network |
| USFS | United States Forest Service |
| WMP | Wildfire Mitigation Plan |
| WRRM | Wildfire Risk Reduction Model |
| WSAB | Wildfire Safety Advisory Board |
| WSD | Wildfire Safety Division |
| WSIP | Wildfire Safety Inspection Program |

**(End of Appendix F)**