State of California – A Natural Resources Agency
Gavin Newsom, Governor

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Caroline Thomas Jacobs, Director

November 2, 2022

To: 2022 Wildfire Mitigation Plans docket (#2022-WMPs)
Subject: Decision on Liberty's 2022 Wildfire Mitigation Plan Update

Dear Wildfire Mitigation Plan Stakeholders,

Enclosed is the Office of Energy Infrastructure Safety's (Energy Safety's) Final Decision on Liberty Utilities' (Liberty's) 2022 Wildfire Mitigation Plan (WMP) Update.

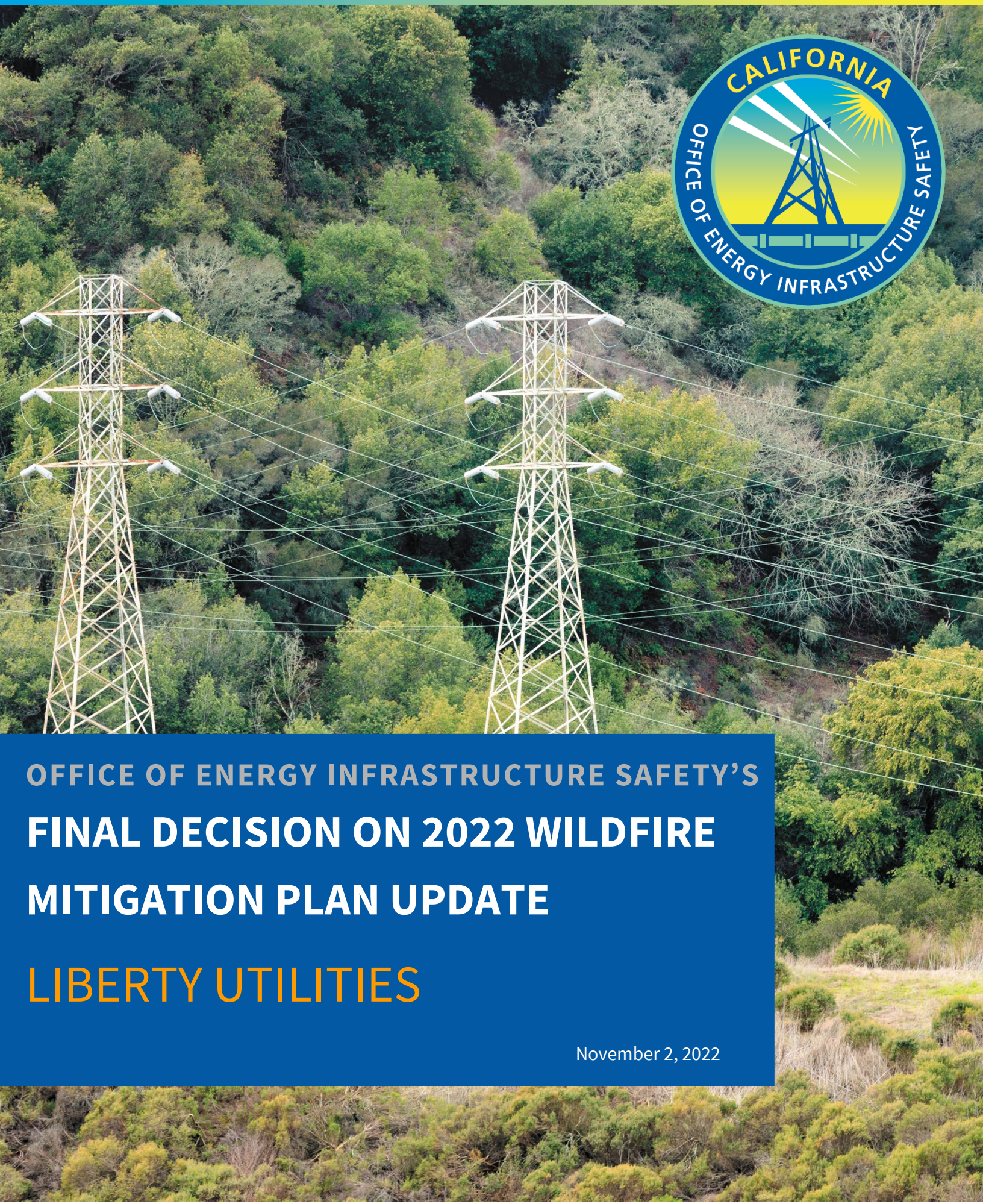
On September 27, 2022, Energy Safety published a draft of this Decision on its website and served it to Energy Safety's Wildfire Mitigation Plans service list for public review and comment.

Comments on the Draft Decision were due on October 17, 2022, and reply comments were due on October 24, 2022. Energy Safety did not receive comments on the Draft Decision and made no substantive revisions to the Decision.

This Decision documents Energy Safety's approval of Liberty's 2022 WMP Update.

Sincerely,

Melissa Semcer
Deputy Director | Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety



OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

FINAL DECISION ON 2022 WILDFIRE MITIGATION PLAN UPDATE

LIBERTY UTILITIES

November 2, 2022

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Executive Summary

The Office of Energy Infrastructure Safety (Energy Safety) was formed in July 2021 to ensure electrical utilities take effective actions to reduce utility-related wildfire risk. Energy Safety strives to deliver near-term results while promoting a long-term utility vision to reduce wildfire and build cultures of safety.

The California Legislature enacted several measures requiring electrical corporations to reduce risk of utility-caused catastrophic wildfires. Key legislative measures include Assembly Bills 1054 and 111, Public Utilities Code Sections 326(b) and 8389, Senate Bills 901 and 1028, and Government Code Section 15475 (see Section 1.1, "Legal Authority").

Pursuant to Public Utilities Code Section 8386.3(a), this Decision serves as Energy Safety's assessment and approval of Liberty Utilities' Wildfire Mitigation Plan 2022 Update (2022 Update).

Energy Safety's Decision incorporates comments from the public and other stakeholders.

This Executive Summary includes a high-level summary of Energy Safety's assessment of Liberty Utilities' maturity model, progress, and areas in the current plan Energy Safety determined warrant continued improvement. Energy Safety's comprehensive evaluation is included as Section 4, and a detailed list of all areas for continued improvement and required progress can be found in Section 7.

Maturity Model Evaluation

Energy Safety introduced a maturity model (the Utility Wildfire Mitigation Maturity Model) in 2020, providing a method to assess utility wildfire risk reduction capabilities and examine the relative maturity of individual wildfire mitigation programs. In February 2020, the utilities completed a survey that established a baseline for maturity as well as their anticipated progress over the three-year plan period. In 2021 and 2022, the utilities again completed the survey, enabling Energy Safety to monitor progress and ascertain potential improvements to maturity based on self-reported progress to date.

Energy Safety makes the following key findings regarding Liberty Utilities' maturity progress in 2022 and over the three-year plan cycle. Detailed explanations of utility maturity are contained in each section of the evaluation.

- Liberty steadily increased maturity for most categories in 2022, including: Vegetation Management, Grid Operations and Operating Protocols, Resource Allocation Methodology, Emergency Planning and Preparedness, and Stakeholder Cooperation and Community Engagement.
- In categories where Liberty was stagnant in maturity from 2021 to 2022, it projects increases in maturity by 2023.

Areas of Significant Progress

Liberty Utilities has made significant progress over the past year and/or has matured in its mitigation strategies for future years in the following areas:

- Liberty has advanced its risk models to develop fire risk maps that rank areas from low to very high wildfire risk.
- Liberty has adopted a quality assurance and quality control process for asset inspections that will be implemented in 2022.
- Liberty practices integrated vegetation management to promote sustainable and compatible plant communities within its right-of-way.
- Liberty piloted offering wood removal service to customers during routine operations and found that it greatly increased the number of tree removals allowed by landowners.
- Liberty has created wildfire risk models and Risk Spend Efficiency calculations following methodologies established at the California Public Utilities Commission.
- Liberty has implemented lessons learned from two potential Public Safety Power Shutoff events.

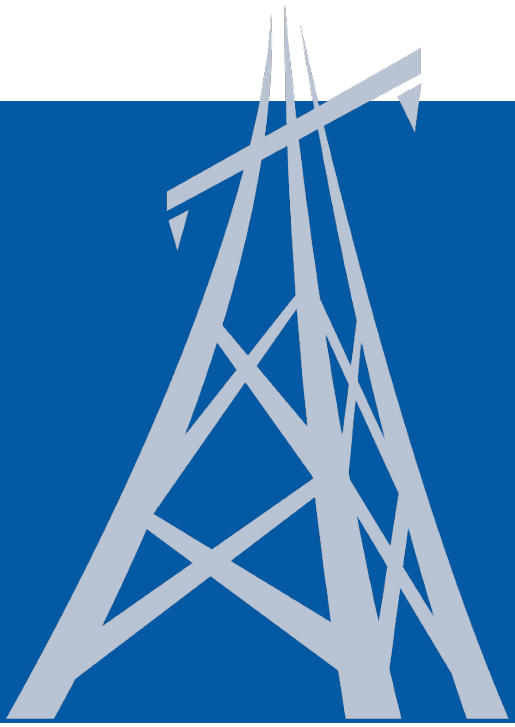
Areas for Continued Improvement

Energy Safety evaluated 2022 Updates with a particular focus on how each utility is driving down the risk of utility-related ignitions. The evaluation included assessing the utility's progress implementing wildfire mitigation initiatives, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety identified areas where the utility should continue to improve its wildfire mitigation capabilities in future plans.

Section 4 contains Energy Safety's detailed assessment and resulting areas for continued improvement. A complete list of all Liberty Utilities' areas for continued improvement is included in Section 7.

Selected themes from Liberty Utilities' areas for continued improvement are:

- Liberty must reduce the number of risk events that it categorizes as "unknown" or "other."
- Liberty must address unmet goals and targets from 2021.
- Liberty must commit to short term Public Safety Power Shutoff reduction targets.
- Liberty must participate in scoping meetings and any follow-on activities to these meetings related to covered conductor, vegetation management best practices, and climate change modeling.



1. Introduction and Background

Liberty Utilities (Liberty) submitted a comprehensive Wildfire Mitigation Plan (WMP or Plan) in 2020 covering a three-year term from 2020 through the end of 2022 (the current WMP cycle). Liberty submits annual updates to that Plan for Office of Energy Infrastructure Safety (Energy Safety) approval or denial. This Decision represents Energy Safety's assessment of Liberty's 2022 WMP Update (2022 Update), which Liberty submitted on May 6, 2022, in response to Energy Safety's Final 2022 WMP Update Guidelines[1] (Guidelines).

Energy Safety approves Liberty's 2022 Update.

1.1 Legal Authority

In 2018, following the devastating wildfires in 2016 and 2017, the California Legislature passed several bills increasing regulatory supervision of the electrical corporations' efforts to reduce utility-related wildfires. Assembly Bill (AB) 1054 (Statutes of [Stats.] 2019, Chapter [Ch.] 79) created Energy Safety (initially formed as the Wildfire Safety Division [WSD] at the California Public Utilities Commission [CPUC]) and tasked it with reviewing annual WMPs submitted by electrical corporations.

The main regulatory vehicle for Energy Safety to evaluate electrical corporations' wildfire risk reduction efforts is the WMP, which was first introduced in Senate Bill (SB) 1028 (Stats. 2016, Ch. 598) and further defined in subsequent legislation. Investor-owned electrical corporations[2] are required to submit WMPs assessing their level of wildfire risk and providing plans for wildfire risk reduction. The CPUC evaluated the utilities' first WMPs under the SB 901 (Stats. 2018, Ch. 626) framework in 2019.[3]

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[1] Final 2022 Wildfire Mitigation Plan Update Guidelines (accessed January 26, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true

[2] In this document "utility" should be understood to mean "electrical corporation."

[3] See CPUC Rulemaking 18-10-007.

On July 1, 2021, all functions of the CPUC's WSD were transferred to Energy Safety.[4] Energy Safety "is the successor to […] and is vested with, all of the duties, powers, and responsibilities of the Wildfire Safety Division,"[5] including, but not limited to, jurisdiction for evaluating and approving or denying utilities' WMPs and evaluating compliance with the WMPs. Energy Safety must ensure utility wildfire mitigation efforts sufficiently address utility wildfire risk. To support its efforts, Energy Safety developed a long-term strategic roadmap, Reducing Utility-Related Wildfire Risk (2020).[6] This strategic roadmap underpins Energy Safety's evaluation of the WMPs.

1.1.1 Cost Recovery

Statute requires electrical corporations to seek cost recovery and prove all expenditures are just and reasonable at a future time in their General Rate Cases (GRCs) or an appropriate application.[7] Nothing in this Decision should be construed as approval of WMP-related costs.[8]

1.2 Multi-Year Plan Process

In February 2020, the utilities[9] submitted their three-year 2020-2022 WMPs. In 2020, Energy Safety conducted its evaluation and either approved, conditionally approved, or denied the Plans. In the case of conditional approval, Energy Safety identified areas for further improvement in the Plans, assigning these areas different severity levels, and required the utilities to address issues through various mechanisms depending on the designation of severity, Class A, B, or C.

In 2021, the utilities submitted updates to their 2020 WMPs. Energy Safety evaluated the utilities' WMP Updates and either approved or denied the Plans. If Energy Safety identified a critical issue in a utility's Plan, Energy Safety issued a Revision Notice requiring the utility to

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[4] Pub. Util. Code § 326(b).

[5] Gov. Code § 15475.

[6] Energy Safety's strategic roadmap Reducing Utility-Related Wildfire Risk (2020) (accessed January 26, 2022): https://energysafety.ca.gov/who-we-are/strategic-roadmap/.

[7] Pub. Util. Code § 8386.4(b).

[8] Energy Safety's approval does not relieve the electrical corporation of any and all otherwise applicable permitting, ratemaking, or other legal and regulatory obligations.

[9] Utilities that submitted a WMP in 2020: Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), Liberty Utilities, Trans Bay Cable, LLC, and Horizon West Transmission, LLC.

remedy the issue prior to completion of Energy Safety's evaluation. Upon receipt of the utility's response to the Revision Notice, Energy Safety determined if the response was sufficient to warrant approval of the WMP or insufficient such that denial of the WMP was warranted. Energy Safety did not issue a Revision Notice to Liberty for its 2021 WMP Update.

Plan year 2022 is the final year in the first three-year plan cycle. Therefore, Energy Safety's evaluation of Liberty's 2022 Update focuses heavily on the progress the utility made over the three-year plan cycle and whether the utility matured in its understanding of its own wildfire ignition risks and appropriate mitigations to decrease those risks.

1.3 2022 Evaluation Process

Energy Safety issued WMP Update Guidelines (Guidelines) on December 15, 2021. The Guidelines streamline the reporting and evaluation and incorporate the requirements of SB 533 (Stats. 2021, Ch. 244). Pursuant to the adopted Guidelines, Liberty submitted its 2022 Update on May 6, 2022.

Energy Safety begins evaluating WMPs and Updates by reviewing the submittal for completeness. Energy Safety determines whether the submittal addresses the statutory requirements contained in Public Utilities Code Section 8386(c) and the Guidelines. Energy Safety does not conduct a substantive evaluation at that time. If the WMP or Update is not complete, Energy Safety may reject the plan and require the utility to resubmit.

Once Energy Safety determines the WMP or Update is complete, Energy Safety begins its assessment using the criteria listed in Section 1.3.2. The prior year's WMPs or Updates are included in the review to gauge progress and trends.

At any time during the evaluation, Energy Safety may issue a Revision Notice for reasons listed in Section 1.3.3. The utility must respond to the Revision Notice and revise and resubmit the relevant sections of its WMP or Update.

1.3.1 Rejection for Incompleteness

Pursuant to the Guidelines, "Energy Safety will first evaluate each electrical corporation's 2022 WMP Update as submitted for completeness based on the statutory requirements and

adherence to the 2022 Guidelines," and "Energy Safety will reject without further review any WMP that does not satisfy initial completeness checks."[10]

Liberty's 2022 Update, submitted to Energy Safety on May 6, 2022, did not satisfy the completeness requirements. Consequently, Energy Safety issued a Rejection for Incompleteness and Order to Resubmit to Liberty on June 15, 2022.[11] Liberty timely resubmitted its 2022 Update[12] on July 15, 2022.

1.3.2 Energy Safety Evaluation Criteria

Energy Safety evaluated 2022 Updates according to the following factors:

- *Completeness:* The utility comprehensively responds to the statutory requirements contained in Public Utilities Code section 8386(c) and Energy Safety's Guidelines.
- *Technical and programmatic feasibility and effectiveness:* The proposed initiatives are technically feasible and effective in addressing the risks that exist in the utility's service territory. The proposed initiatives are programmatically feasible for the specific utility given its maturity and progress to date.
- *Resource use efficiency:* The proposed initiatives are an efficient use of utility resources and focus on achieving the greatest risk reduction at the lowest cost.
- *Demonstrated year-over-year progress:* The utility demonstrates sufficient progress on objectives and program targets reported in its 2021 Update.
- *Forward-looking growth:* The utility demonstrates a clear action plan to continue reducing utility-related ignitions and the scale, scope, and frequency of Public Safety Power Shutoff (PSPS) events.[13] In addition, the utility focuses sufficiently on long-term strategies to build the overall maturity of its wildfire mitigation capabilities while

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[10] Final 2022 Wildfire Mitigation Plan Update Guidelines, Attachment 5, p.4 (accessed August 30, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[11] Rejection for Incompleteness and Order to Resubmit, Liberty Utilities 2022 Wildfire Mitigation Plan Update (accessed August 30, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52538&shareable=true.

[12] All references to Liberty's 2022 Update throughout this Decision refer to Liberty's resubmission dated June 15, 2022.

[13] A Public Safety Power Shutoff (PSPS) event, also called a de-energization event, is when a utility proactively and temporarily cuts power to electric lines that may fail in certain weather conditions, in specific areas, to reduce electric facility-caused fire risk.

reducing reliance on shorter-term strategies such as PSPS and augmented vegetation management.

- *Progress metrics:* The utility tracks the degree to which its wildfire mitigation activity has changed the conditions of its wildfire risk exposure in terms of drivers of ignition probability.
- *Outcome metrics:* The utility uses outcome metrics to measure its performance and outcomes in its service territory in terms of both leading and lagging indicators of wildfire risk, PSPS risk, and other direct and indirect consequences of wildfire and PSPS, including the potential unintended consequences of wildfire mitigation work.
- *Program targets:* The utility uses targets to track its progress toward specific objectives for its wildfire mitigation activities.[14] Program targets track the utility's pace of activity completion as laid out in the WMP but do not track the efficacy of its activities. The primary use of these program targets is to track utility progress with its WMP.

To assess Liberty's 2022 Update, Energy Safety relied on:

- Liberty's 2022 Update and resubmitted 2022 Update
- Input from the California Department of Forestry and Fire Protection (CAL FIRE)
- Public and Stakeholder Comments
- Liberty's response to the Utility Wildfire Mitigation Maturity Survey (Maturity Survey)
- Liberty's data submissions
- Liberty's responses to data requests

Energy Safety's assessment of Liberty's 2022 Update is summarized in Section 4.

1.3.3 Revision Notices

Public Utilities Code section 8386.3(a) states, "Before approval, the division may require modifications of the plan." Energy Safety effectuates this provision by issuing a Revision Notice. The purpose of a Revision Notice is to hold utilities accountable for:

[14] Objectives are unique to each utility and reflect the 1-, 3-, and 10-year projections of progress toward the WMP goal.

- Submitting a sufficiently detailed 2022 Update
- Addressing issues or improvement requests from the previous year
- Providing adequate data and information to justify proposed mitigation strategies.

Examples of when Energy Safety may choose to issue a Revision Notice include, but are not limited to, the following:

- The utility failed to implement the remedies detailed in the prior year's Decision[15]
- The utility did not provide sufficient information for evaluation
- The utility made a significant shift in its wildfire mitigation strategy without sufficient substantiation
- The utility's submission does not meet evaluation criteria listed in Section 1.3.2.
- An element of the WMP that is critical to life-safety or property is unsatisfactory

Energy Safety did not issue a Revision Notice to Liberty for its 2022 Update.

1.3.4 Final Decision

Upon completion of its review, Energy Safety determines whether each utility's 2022 Update will be:

- Approved (approval may include a requirement that the utility demonstrate continued growth in its 2023 WMP), or
- Denied (the utility does not have an approved 2022 Update and must reapply for approval in 2023).

Energy Safety's approval of a WMP or WMP Update does not mean that the utility has reached the highest levels of maturity or has reduced its ignition risk to zero. Rather, approval means the utility has satisfied the evaluation criteria and substantiated its mitigation strategy such that implementation of the plan is appropriate. When Energy Safety approves a WMP or WMP Update, it does so with an eye toward continued improvement. Therefore, in this Decision, Energy Safety lists areas where the utility must continue to mature in its capabilities, known as areas for continued improvement.

[15] Also called an Action Statement for 2020 and 2021.

2. Energy Safety Decision on Liberty's 2022 Update

Pursuant to Public Utilities Code Section 8386.3(a), this Decision is the totality of Energy Safety's review of Liberty's 2022 Update. Liberty's 2022 Update is approved.

3. Public and Stakeholder Comments

Energy Safety invited stakeholders, including members of the public, to provide comments on the utilities' 2022 Updates. WMP comments were due on June 20, 2022, and reply comments were due on June 27, 2022. The Rejection for Incompleteness and Order to Resubmit extended the comment date to August 15, 2022, and reply comment date to August 22, 2022. The following organizations submitted comments:

- California Department of Fish and Wildlife (CDFW) comments on June 17, 2022
- The Public Advocate's Office (Cal Advocates) comments on June 20, 2022
- Green Power Institute (GPI) comments on June 20, 2022
- Rural County Representatives of California (RCRC) comments on August 15, 2022

Comments received on the 2022 Updates can be viewed in the 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log.[16]

Energy Safety evaluated these comments and concurred with and in some instances incorporated the following stakeholder input on Liberty's 2022 Update, as reflected in this Decision:

- Liberty must explain how it will finish incomplete work from 2021 (Cal Advocates, GPI, and RCRC)
- Liberty must demonstrate that its 2022 targets are achievable (Cal Advocates and RCRC)
- Liberty must explain how it prioritizes initiatives to provide the greatest amount of risk reduction (Cal Advocates and GPI)
- Liberty must be required to implement asset inspection quality assurance and quality control (QA/QC) in a timely manner (Cal Advocates and GPI)
- Liberty must accelerate its expulsion fuse replacements (GPI)

[16] 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log (accessed April 14, 2022): https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2022-WMPs.

- Liberty must explain how it considers alternate pole materials or protections in high-risk areas (GPI)
- Liberty did not adequately account for ingress and egress routes in its risk modeling and planning (GPI)
- Liberty must explain its Rule 20 undergrounding work in further detail (GPI)
- Liberty must conduct table-top exercises and keep local governments up-to-date in preparation for PSPS events (RCRC)

4. Energy Safety's Assessment of Liberty's 2022 Update

The following sections present Energy Safety's comprehensive evaluation of Liberty's 2022 Update, including Energy Safety's assessment of progress over the past year and throughout the current WMP cycle. Energy Safety looks at Liberty's past and current WMP and Update submissions to assess year-over-year trends and track Energy Safety's past requirements as well as the utility's own projections. In addition to comparing Liberty's initiatives from year to year, Energy Safety also assesses any new programs, plans, or technologies Liberty is proposing in its 2022 Update. The sections below assess past progress, encourage growth through new initiatives or approaches, and identify areas for continued improvement following up on 2021 requirements.

Energy Safety found Liberty's initial 2022 Update incomplete and issued a Rejection for Incompleteness and Order to Resubmit on June 15, 2022.[17] Liberty resubmitted its 2022 Update on July 15, 2022. Additionally, Liberty submitted a supplement to its 2022 Update on August 25, 2022.[18] Energy Safety reviewed Liberty's resubmitted 2022 Update and found it to be complete.[19] Energy Safety then proceeded to do a substantive evaluation of Liberty's resubmitted 2022 Update as set forth in the subsequent sections.

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[17] Energy Safety Rejection Notice (accessed August 5, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52538&shareable=true.

[18] Cover letter to Liberty's August 25, 2022, supplement (accessed August 30, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52978&shareable=true; Liberty's August 25, 2022, supplement (accessed August 30, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52977&shareable=true.

[19] Liberty's resubmitted 2022 Update (accessed August 5, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52686&shareable=true.

4.1 Introductory Sections of the WMP

The introductory sections of the Guidelines[20] require the utility to report basic information regarding persons responsible for executing the plan and adherence to statutory requirements. Section 1 requires contact information (telephone and email) for the executive with overall responsibility and the specific program owners. In addition, Section 1 requires inclusion of the name and relevant background and credentials for all experts consulted in preparation of the 2022 Update. Contact information and names may be submitted in a redacted file.

Section 2 requires the utility to specify the location of the information required by Public Utilities Code section 8386(c). Each utility must affirm that the WMP Update addresses each statutory requirement AND cite the section and page number(s) where each statutory requirement is addressed.

Liberty provides the required information in Section 1 and 2 of its 2022 Update, including all information required by Public Utilities Code section 8386(c).

4.2 Actuals and Planned Spending for Mitigation Plan

The actuals and planned spending section of the Guidelines[21] requires utilities to report a summary of WMP expenditures, actual and planned, for the current WMP cycle. This summary must include an estimated annual increase in costs to the ratepayer due to utility-related ignitions and wildfire mitigation activities. The Guidelines require that ratepayer impact calculations be clearly shown to demonstrate how the utility derived each value.[22]

Liberty provides all required information regarding expenditures.

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[20] Final 2022 Wildfire Mitigation Plan Update Guidelines, Attachment 2.1 and 2.2 pp. 25-35 (accessed February 15, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[21] Final 2022 Wildfire Mitigation Plan Update Guidelines, Attachment 2.3 pp. 37-40 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[22] Nothing in the request for such information should be construed as approval of any such expenditure, which is left to the CPUC pursuant to Public Utilities Code section 8386.4(b).

Energy Safety monitors expenditure data for accuracy and consistency. See Table 4.2-1 below for a comparison of the WMP actual and planned expenditures of the three small and multi-jurisdictional utilities (SMJUs).

Table 4.2-1: Actual and Planned WMP Expenditures – SMJUs (2020-2022) ($ Thousands)

Utility	2020 Actual	2021 Actual	2022 Planned	Total WMP Cycle as Reported in 2022
BVES	$17,208	$21,332	$20,439	$58,980
Liberty	$33,331	$33,567	$55,127	$122,025
PacifiCorp	$18,520	$42,149	$91,900	$152,570

Liberty failed to meet its planned spending goals in 2020 and 2021 by a cumulative total of $15,624,000. Actual spending in 2021 was less than planned in eight categories. Liberty increased its planned spending in the Grid Design and System Hardening category from 2021 to 2022 by approximately 250 percent, however, actual spending in 2021 fell short by over $13 million.[23] Spending shortfalls in the Grid Design and System Hardening category appear to be driven by supply chain issues and wildfires. As Liberty noted in Section 7.3.3.6 , its pole replacement program fell short of its target goals in 2021 "because the Tamarack and Caldor fires impacted line construction resources, and supply chain issues impacted the timing of material availability."[24]

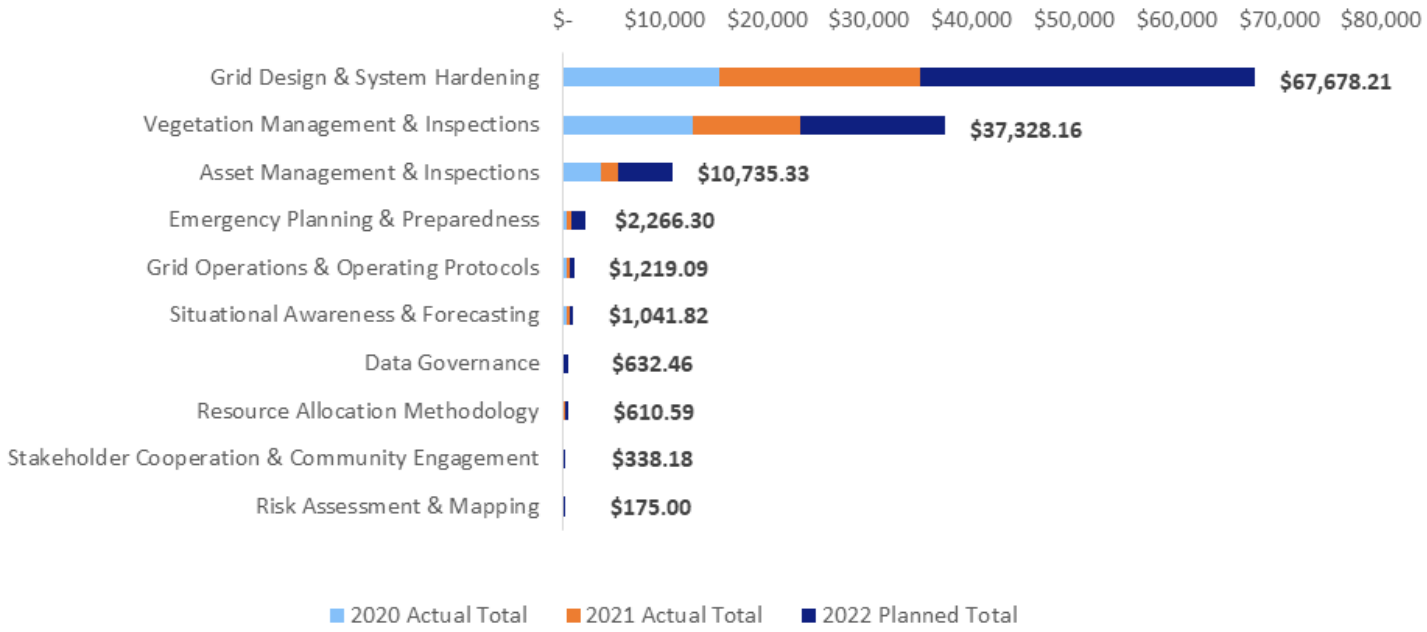
Liberty's WMP expenditures are largest in the program categories of Grid Design and System Hardening, Vegetation Management and Asset Management and Inspections. All other program spending totaled together was modest in comparison.

See Figure 4.2-1 below for a comparison between actual spending in 2020, actual spending in 2021, and planned spending in 2022 across mitigation categories.

[23] Liberty's 2022 Update, Table 3.1-2, p. 23.

[24] Liberty's 2022 Update, p. 114.

Figure 4.2-1: Liberty Actual and Planned WMP Spending by Category ($ Thousands)



4.3 Lessons Learned and Risk Trends

The lessons learned and risk trends section of the Guidelines[25] requires utilities to report how their plans have evolved since 2021 based on lessons learned, current risk trends, and research conducted. This section also requires utilities to report on potential future learnings through proposed and ongoing research.

The utility must describe how it assesses wildfire risk in terms of ignition probability and estimated wildfire consequence using, at a minimum, CPUC-adopted risk assessment requirements (for large electrical corporations) from the General Rate Case (GRC) Risk-Based Decision-Making Framework Proceeding (formerly the Safety Model and Assessment Proceeding [S-MAP]) and the Risk Assessment Mitigation Phase (RAMP) Proceeding. The utility may additionally include other assessments of wildfire risk. The utility must:

- Describe how it monitors and accounts for the contribution of weather and fuel to ignition probability and wildfire consequence.
- Identify any areas where the CPUC's HFTD should be modified.

[25] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.4 pp. 41-50 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Identify any areas classified by the utility as "high fire threat" that differ from the CPUC's HFTD and explain why these areas are so classified.
- Rank trends anticipated to have the greatest impact on ignition probability and wildfire consequence.

Liberty provides all required information on lessons learned, current risk trends, and research conducted.

Liberty describes major themes and lessons learned across the 10 WMP program categories.[26]

Approximately 92 percent of Liberty's service territory lies within HFTD Ties 2 and 3,[27] and its entire service territory could readily be described as an urban-rural or wildland-urban interface. These facts impact Liberty's ranked assessment of the macro trends impacting ignition probabilities and wildfire consequences. Liberty identifies climate change as the first ranked macro trend impacting ignition probabilities and wildfire consequences over the next 10 years. The second ranking trend is changes in fuel density and moisture, which it notes is largely due to past fire suppression and exclusion resulting in a shift from more common low intensity fires that benefit the landscape to intense periodic fires with negative impacts. The third is the increased utility growth/development-related infrastructure in the HFTD.[28]

Liberty identifies failing assets as a principal risk. Over the past four years, 30 percent of Liberty's forced outages (246 of 822) were from failing assets in-service.[29] Notable asset concerns include:

- Expulsion fuses. Liberty replaced 867 in 2021 and plans to replace 1500 over the next 6 years.[30]
- Aging pole assets. Liberty has a high number of assets that are failing in service and causing outages.[31]

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[26] Liberty's 2022 Update, Revision 1, Table 4.1 pp. 26-29.

[27] Liberty's 2022 Update, Revision 1, p. 34.

[28] Liberty's 2022 Update, Revision 1, Table 4.2.1-1, pp. 36-37.

[29] Liberty's 2022 Update, Revision 1, p. 39.

[30] Liberty's 2022 Update, Revision 1, pp. 39-40.

[31] Liberty's 2022 Update, Revision 1, pp. 41-46

As a result, Liberty's prospective research efforts are focused on automated mitigation systems. Liberty is implementing research projects for distributed fault anticipation (DFA) and high-impedance fault detection (HIFD) technology in 2022.[32]

4.4 Inputs to the Plan and Directional Vision for the WMP

The inputs and directional vision section of the Guidelines[33] requires the utility to rank and discuss trends it anticipates may have the greatest impact on ignition probability and wildfire consequence within the utility's service territory over the next 10 years. First, utilities must set forth objectives over the following timeframes: before the upcoming wildfire season, before the next annual update, within the next 3 years, and within the next 10 years. Second, utilities must report the current and planned qualifications of their workforce to meet these objectives.

4.4.1 Goal, Objectives, and Program Targets

The goal of the WMP is to ensure the utilities are sufficiently planning to reduce the number of ignitions caused by utility actions or equipment and minimize the societal consequences (with specific consideration of the impact on access and functional needs [AFN] populations and marginalized communities) of both wildfires and PSPS events.

This subsection of the Guidelines[34] requires utilities to provide their objectives, which are unique to each utility and reflect their 1, 3, and 10-year projections of progress toward the abovementioned goal. The Guidelines also require utilities to report their unique program targets, which are quantifiable measurements of activities identified in WMPs and Updates to show the utility's progress toward reaching its objectives.

Liberty provided the required information.

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[32] Liberty's 2022 Update, Revision 1, p. 54.

[33] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5 pp. 52-57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[34] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.1-2.5.3 pp. 53-54 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Liberty has 65 different qualitative and quantitative goals across 10 program categories with target completion by the submission of its 2023 Update.[35] These goals are largely in areas outside their three main spending categories,[36] with 17 of the 65 goals in those three main spending categories. Historically, Liberty's spending outside of the big three categories (Grid Design and System Hardening, Asset Management and Inspections, and Vegetation Management) has been minimal. Total actual sending for 2020-21 in those seven categories was $3,195 thousand. The planned spending for 2022 in those categories is $3,088 thousand nearly equal to the previous two years actual spending. It is expected that Liberty would have more goals in those seven categories given the previous years' low spending and this year's increased level of planned spending. Liberty also provides both qualitative and qualitative 3-year and 10-year goals across 10 program categories.[37]

4.4.2 Workforce Planning

This subsection of the Guidelines[38] requires utilities to report their worker qualifications and training practices regarding utility-related ignitions and PSPS mitigation for workers in mitigation-related roles including:

- Vegetation inspections
- Vegetation management projects
- Asset inspections
- Grid hardening
- Risk event inspection

Liberty provides all required information regarding worker qualifications and training practices within each listed role.

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[35] Liberty's 2022 Update, Revision 1, Table 7.1-1, pp. 95-97.

[36] See Figure 4.2-1 of this Decision.

[37] Liberty's 2022 Update, Revision 1, Table 5.2-1, pp. 77-80.

[38] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.4 pp. 56-57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

4.5 Metrics and Underlying Data

The metrics and underlying data section of the Guidelines[39] requires utilities to report metrics and program targets as follows:

- *Progress metrics* that track how much utility wildfire mitigation activity has changed the conditions of a utility's wildfire risk exposure in terms of drivers of ignition probability.
- *Outcome metrics* that measure the performance of a utility and its service territory in terms of both leading and lagging indicators of wildfire risk, PSPS risk, and other direct and indirect consequences of wildfire and PSPS, including the potential unintended consequences of wildfire mitigation work.
- *Program targets* that track the utility's pace of completing proposed wildfire mitigation activities to show progress toward a utility's specific objectives. Program targets do not track the efficacy of wildfire mitigation activities. The primary use of these program targets in 2022 is to assess the progress the utility made over the three-year plan cycle and whether the utility matured in its understanding of its own wildfire ignition risks and appropriate mitigations to decrease those risks.

This section also requires utilities to provide several GIS files detailing spatial information about their service territory and performance, including recent weather patterns, location of recent ignitions, area and duration of PSPS events, location of lines and assets, geographic and population characteristics, and location of planned initiatives.

See Section 4.6.7, "Data Governance," for a detailed review of the utility's progress and areas for continued improvement in this topic area.

The figures below provide information on how the three SMJUs compare over the period 2015-2021 in actual numbers and 2022-2023 in projected numbers in terms of reported ignitions (Figure 4.5-1), risk events (Figure 4.5-2), Red Flag Warning circuit mile days per year (Figure 4.5-3), and asset inspection findings normalized by circuit miles inspected (Figure 4.5-4).

[39] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.6 pp. 58-69 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.5-1: Ignitions per 10,000 Overhead Circuit Miles – SMJUs (2015-2021 Actual, 2022-2023 Projected)

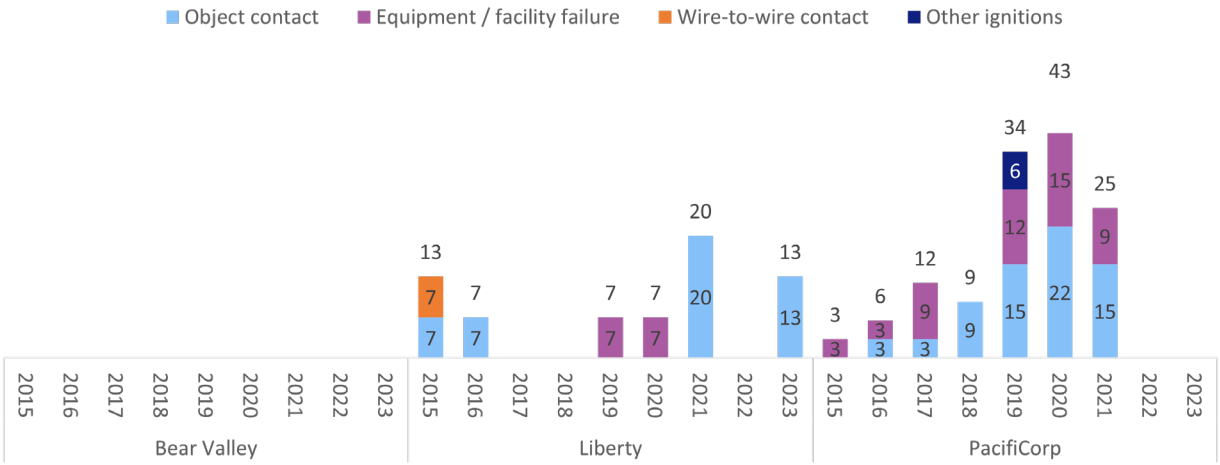


Figure 4.5-2: Risk Events per Overhead Circuit Mile – SMJUs (2015-2021 Actual)

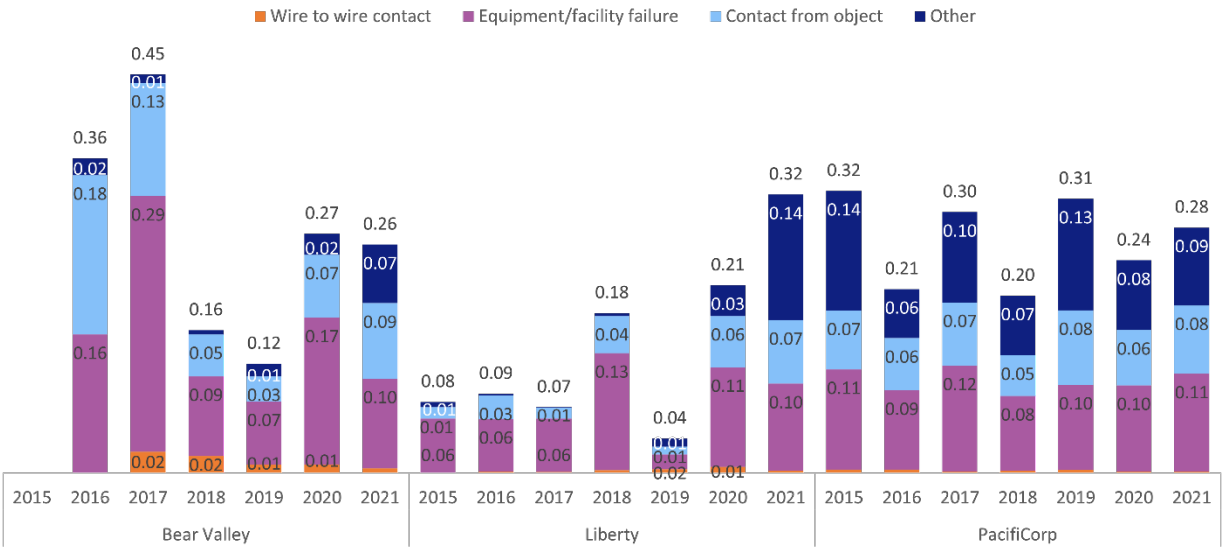


Figure 4.5-3: Red Flag Warning Overhead Circuit Mile Days per Year – SMJUs (2015-2021 Actual)

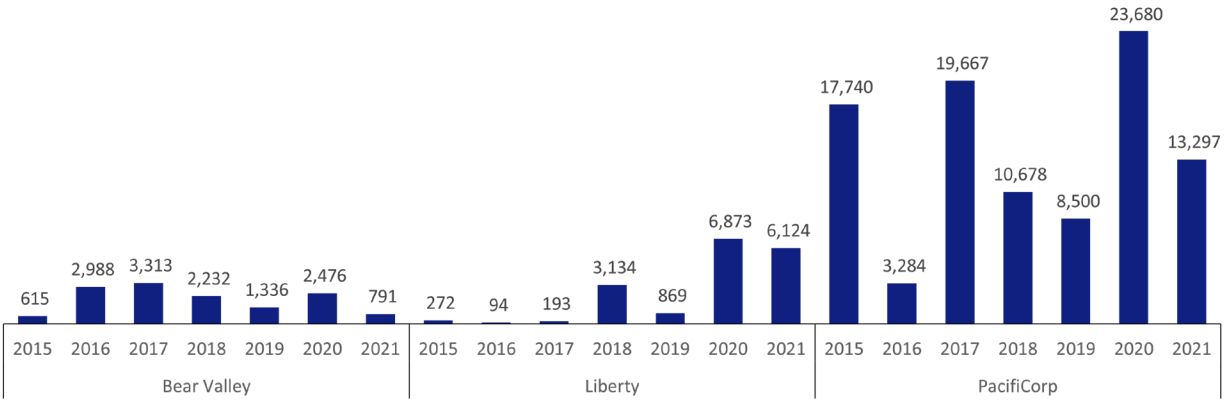
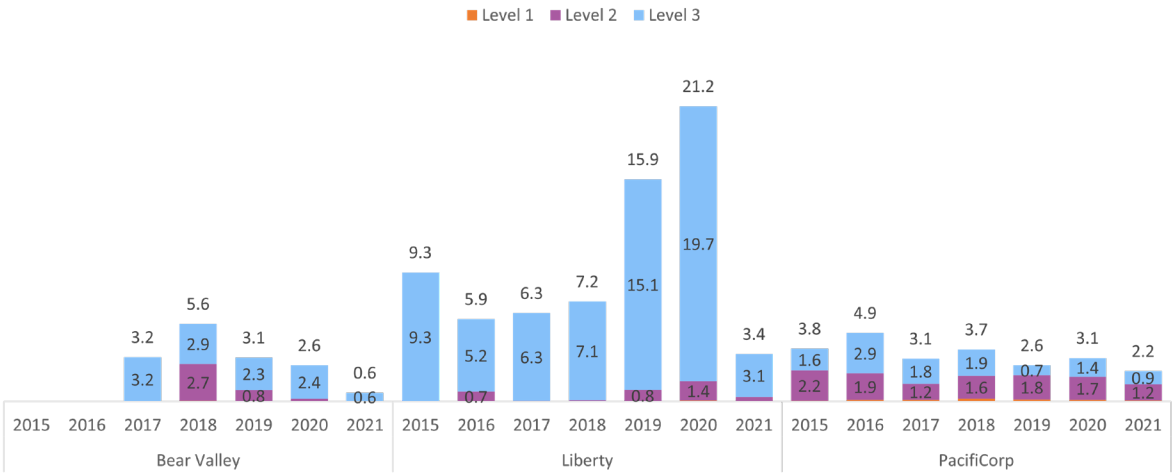


Figure 4.5-4: Asset Inspection Findings Normalized by Circuit Miles Inspected – SMJUs (2015-2021 Actual)



4.6 Mitigation Initiatives and Maturity Evaluation

The mitigation initiatives and maturity evaluation section of the Guidelines[40] requires the utility to describe in its WMP Update each mitigation initiative it will undertake to reduce the risk of catastrophic wildfire. The Guidelines require the utility to self-report its current wildfire risk mitigation capabilities and plans for improvement in those capabilities.[41, 42] The utility's self-reported capability level is referred to in this Decision as "maturity" and measured by Energy Safety's Utility Wildfire Mitigation Maturity Model (Maturity Model). Maturity levels range from zero to four, with four being the most mature. The utility reports on its maturity levels and mitigation initiatives using the same 10 categories, allowing Energy Safety to evaluate a utility's reported and projected maturity in wildfire mitigation in the context of its corresponding current and planned initiatives. The 10 maturity and mitigation initiative categories are listed below, with further details in Appendix E:

- Risk assessment and mapping
- Situational awareness and forecasting
- Grid design and system hardening
- Asset management and inspections
- Vegetation management and inspections
- Grid operations and operating protocols

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[40] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7 pp. 70-77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[41] The 2020 WMP Guidelines introduced the Utility Wildfire Mitigation Maturity Assessment as one of the four "key elements of the 2020 WMP submission and review process" (accessed April 29, 2022): https://energysafety.ca.gov/wp-content/uploads/docs/misc/docket/322133494.pdf.
The 2022 WMP Guidelines further defines the assessment process in Attachment 4: 2022 Maturity Model (accessed April 29, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true. From that document (p. 3): "Energy Safety requires each utility to complete an annual Maturity Survey to report on its current capabilities and plans for improvement in those capabilities."

[42] Utilities that submitted a WMP were required to complete a survey (the Maturity Survey) in which they answered specific questions that assessed their existing and future wildfire mitigation practices across 52 capabilities at the time of submission and at the end of the three-year plan horizon. The 52 capabilities are mapped to the same 10 categories identified for mitigation initiatives. The most recent survey for each utility, including SDG&E, can be found on the Energy Safety website here: https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2022-wmp/ (accessed February 15, 2022).

- Data governance
- Resource allocation methodology
- Emergency planning and preparedness
- Stakeholder cooperation and community engagement

Below, Energy Safety evaluates Liberty's initiatives across the 10 categories in terms of the utility's Maturity Survey responses. Energy Safety discusses the utility's maturity progress for each category within the relevant wildfire mitigation initiative section

4.6.1 Risk Assessment and Mapping

The risk assessment and mapping section of the Guidelines[43] requires the utility to discuss the risk assessment and mapping initiatives implemented to minimize the risk of utility-related ignitions. Utilities must describe initiatives related to equipment maps and modeling of overall wildfire risk, ignition probability, wildfire consequence, risk reduction impact, match-drop simulations,[44] and climate/weather-driven risks.

The parameters of risk assessment (discussed here) and resource allocation (discussed later in Section 4.6.8) to reduce wildfire risk derive from the CPUC's Risk-Based Decision-Making Framework (formerly S-MAP) and RAMP proceedings.[45]

The utility's risk modeling should ultimately inform the utility of the highest risk areas in order to inform its decision-making processes, along with the risk-spend efficiency (RSE) analyses discussed in Section 4.6.8.

4.6.1.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, Liberty remained stagnant from 2020 to 2022 in the area of risk assessment and mapping with a maturity level of 0.8, but has many

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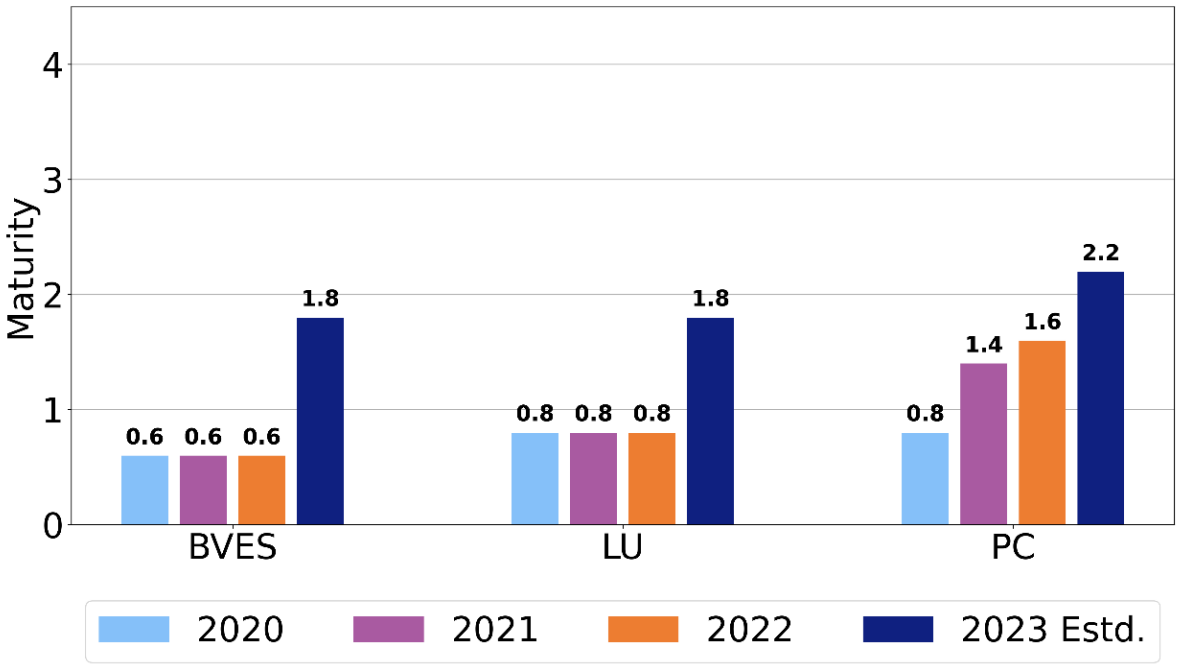
[43] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[44] Simulations of the potential wildfire consequences of ignitions that occur along electric lines and equipment effectively showing the potential consequences if an ignition or "match was dropped" at a specific point in a utility's territory.

[45] The risk-based decision-making framework was adopted in the CPUC's Decision 18-12-014 and refined in Decision 21-11-009. An open CPUC proceeding R. 20-07-013 is addressing further developments to the risk-based decision-making framework. See the docket for this proceeding here: https://apps.cpuc.ca.gov/apex/f?p=401:56:0::NO:RP,57,RIR:P5_PROCEEDING_SELECT:R2007013 (accessed February 16, 2022).

improvements planned to increase its maturity to 1.8 by January 1, 2023, as shown in Figure 4.6.1-1 below.

Figure 4.6.1-1: Cross-Utility Maturity for Risk Assessment and Mapping – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty projects progress in maturity for the following by 2023:

- Liberty plans to increase the granularity of many of its modeling components (such as its climate scenario modeling and ignition risk calculation tool) from circuit-level to span-level.[46]
- Liberty plans to increase the automation of many of its modeling components from partially automated (less than 50%) to mostly automated (greater than 50%).[47]
- Liberty plans to categorize communities as either low or high risk as part of estimating wildfire consequences for communities.[48]

[46] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.I.c, A.II.c, A.III.e, and A.IV.c.

[47] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.I.d, A.II.b, A.III.d, A.IV.b, and A.V.b.

[48] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.III.a.

- Liberty plans to include estimates of risk reduction potential for initiatives with a quantitative confidence interval, instead of only on an interval scale.[49]
- Liberty plans to include risk reduction impact estimates of combinations of deployed initiatives, including where there are two or more initiatives deployed in the same location.[50]
- Liberty plans to update its risk mapping algorithms based on detected deviations from the risk model, as opposed to having no defined process for updating its algorithms.[51]
- Liberty plans to move from a manual to a semi-automated process for comparing outputs of the risk model to detected ignitions.[52]

The following areas are limiting Liberty's progress on maturity for risk assessment and mapping:

- Liberty only accounts for weather as part of its climate scenario modeling; Liberty does not account for hardware, vegetation, and future changes in climate.[53]
- Liberty's climate scenarios are not updated based on real-time learning during weather events.[54]
- Liberty does not include the probability of flying debris nor specific failure modes as part of its ignition risk calculations.[55]
- Liberty's ignition risk assessment tool is not confirmed using real-time learning and is instead only supported by historical data and experts.[56]

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[49] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.IV.a.

[50] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.IV.e.

[51] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.IV.a.

[52] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.V.c and A.V.d.

[53] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.I.a, A.I.e, and A.I.f.

[54] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.I.b.

[55] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.II.a.

[56] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.II.d.

- Liberty's wildfire risk assessments have a low confidence (between 60 and 80 percent), or no quantified confidence interval.[57]
- Liberty does not include monetary damages, impact on air quality, nor impact on greenhouse gas reduction goals when calculating consequence of ignition risk.[58]
- Liberty does not confirm its ignition risk impact assessment tool outputs using real-time learning such as machine learning, instead only using historical data and independent assessments by experts.[59]

4.6.1.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

Further Development of Consequence Modeling

From 2020 to 2021, Liberty worked to further advance its risk models, including its ignition risk model and consequence model, to develop fire risk maps that rank areas from low to very high wildfire risk. Liberty's fire risk study accounted for outage rates, overhead line density, humidity, fuel bed moisture levels, and temperature to determine ignition rates, and then layered historic weather data, fuel and topography to evaluate wildfire consequence based on structures, timber lost and acres burned. This represents Liberty's baseline assessment in 2022 for determining circuit risk, which then feeds into Liberty's planning and prioritization of initiatives. In 2022 and 2023, Liberty plans on continuing to update its wildfire risk models by expanding its dataset to include statewide outages and ignitions.

Analysis and Understanding of Risk Trends

Liberty analyzed ignition risk trends over the past four years, including determining lessons learned relating to risks. Through this analysis, Liberty found that 31 percent of forced outages were due to assets failing in-service, although Liberty does not break the analysis down at a more granular level to determine any equipment-specific trends. Liberty has been replacing expulsion fuses as a result of this analysis to reduce ignition risk, as discussed further in Section 4.6.3. Liberty also performed similar analysis on its outage data and concluded that many of the outages were caused by vegetation, such as tree fell, tree limb,

[57] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.II.e.

[58] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.III.b.

[59] Liberty's Utility Wildfire Mitigation Maturity Survey, response to A.III.f.

and wind/flying debris. Liberty reports that its enhanced vegetation management mitigations are key to reducing these outage types. Liberty also found that vegetation-related risks were more likely to occur in the winter due to heavy snowfall; therefore, further analysis on actual wildfire risk needs to be performed.

Integration of Future Climate Projections

In the 2021 Action Statement,[60] Energy Safety identified that Liberty did not have any climate-driven risk mapping, including impacts of climate change on risk moving forward.[61] In the 2021 Progress Report,[62] Liberty indicated that it intended to include 2050 climate projections within its next iteration of modeling.[63] When listing data elements used for the consequence modeling portion of its wildfire risk model, Liberty now includes these climate projections, indicating that the block from 2048 to 2053 was selected for the analysis.

4.6.1.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

Accounting for Climate Change in Modeling

While Liberty included improvements to its future climate projections within its 2022 Update, Liberty must include more dynamic analysis of climate change impacts on risk and account for long-term risks as part of its initiative selection process. Liberty identifies climate change as the highest-ranking macro trend impacting ignitions and wildfire consequence over the next ten years, indicating that changes in fuel moisture and tree mortality correlate with increased fire severity. However, Liberty does not directly discuss how it intends to account for climate change within its modeling to predict which areas will be most impacted and how. Liberty must work with other utilities to evaluate best practices for climate change moving forward.

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[60] Revised Final Action Statement on Liberty's 2021 WMP, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51673&shareable=true (accessed October 26, 2022).

[61] 2021 Action Statement, key area for improvement LU-21-01.

[62] Liberty's November 1, 2021, WMP Progress Report, https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51853&shareable=true (accessed October 26, 2022).

[63] Liberty's November 1, 2021, WMP Progress Report, p. 2.

Further Integration of Community Vulnerability

While Liberty considers vulnerable customers as part of its PSPS programs and customer resiliency program, Liberty does not indicate how community vulnerability is integrated into its risk modeling. Factors such as income disparity, disability, and age diversity population ratios are vital in understanding communal impacts of wildfire risk. More socially vulnerable areas could face more devastating impacts with fewer resources available for recovery. Liberty must evaluate and incorporate such factors as part of its wildfire consequence risk modeling and collaborate with other utilities to determine best practices.

Wildfire Consequence Modeling Improvements

Current risk models are limited in their evaluation of wildfire spread based on timing limitations as well as suppression effects. For timing, it is important to evaluate spread over long periods of time to capture the potential risk of an ignition leading to a catastrophic fire. For suppression, spread models may overestimate the size of spread as effects of suppression are not accounted for, which may limit and reduce spread. In order to obtain more accurate results of consequence risk, Liberty must evaluate how to account for these within its existing risk models.

As part of Energy Safety's 2022 WMP final decisions, Energy Safety requires the three large Investor-owned utilities (IOUs)[64] to evaluate spread timing and suppression effects for consequence spread modeling.[65] Given Liberty's limited resources, Liberty is not required to participate in this evaluation, but must review the findings and implement relevant measures identified by the three large IOUs into its consequence modeling, where appropriate.

In its 2023 WMP, Liberty must explain which measures it selected for implementation and report on progress.

Increase In "Other" and "Unknown" Risk Events

Liberty reports an increase in risk events between 2020 to 2021 from "other" and "unknown" causes, as seen in Table 4.6.1-1 below. The largest change is associated with the distribution outage category, with 74 risk events, which includes outages and wires down, categorized as

[64] Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric.

[65] 2022 WMP Areas of Continued Improvement SDG&E-22-05, SDG&E-22-06, and SCE-22-05.

"other" in 2021, compared to 52 risk events in 2020 and 99 categorized as "unknown" in 2021 compared to 0 in 2020. Liberty has had 41 outages categorized as unknown in Q1 2022, as seen in Table 4.6.1-1 below. When asked about the causes for the risk event that fell into these two categories, Liberty stated that many of the causes for risk events categorized as "other" fell under weather-related causes, and both "other" and "unknown" risk events occurred during winter storms.[66] In order to provide a more meaningful categorization of risk events, Liberty must identify the causes of all risk events categorized as "other" and create new categories where appropriate. Liberty must report all risk events caused by weather separately and not include these within the "other" category. Liberty must also evaluate the causes of risk events categorized as "unknown" in order to reduce the number of risk events included within this category. This will help to ensure trends in risk events are being accurately reported.

Table 4.6.1-1: 2015-2021 Liberty Unknown or Other Risk Events[67]

Risk Event	2015	2016	2017	2018	2019	2020	2021	2022 YTD
Unknown - Wires Down	9	3	1	5	0	0	6	1
Unknown - Outages	0	0	0	0	0	0	99	41
Other - Wires Down	0	1	0	0	2	0	8	1
Other - Outages	59	23	28	42	22	109	150	3

[66] Data Request OEIS-LU-22-002, Question 07.

[67] Liberty's 2022 Update, Table 7.1.

Further Evaluation of Risk Trends Needed

While Liberty performed more in-depth analysis on its wildfire risk trends, as discussed in Section 4.6.1.2 above, Liberty must continue to develop its analysis on risk events and ignitions and make specific changes relating to lessons learned to reduce risks. For instance, when evaluating asset failures, instead of using replacements of expulsion fuses as a catch-all for reducing ignitions, Liberty should be determining how to adjust its asset management program to reduce trends from specific asset failures. Liberty must strive to correct programmatic issues and specific problems caught during root cause analyses.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

4.6.2 Situational Awareness and Forecasting

A strong weather monitoring and situational awareness system is an essential ignition risk reduction strategy: it mobilizes a utility's response to potentially dangerous fire weather conditions and informs its decisions on PSPS implementation, grid design, and system hardening. It is also one of the least expensive risk reduction strategies.

The situational awareness and forecasting section of the Guidelines[68] requires the utility to discuss its use of cameras, weather stations, weather forecasting and modeling tools, grid monitoring sensors, fault indicators, and equipment monitoring. Situational awareness requires the utility to be aware of actual ignitions in real time and to understand the likelihood of utility ignitions based on grid and asset conditions, wind, fuel conditions, temperature, and other factors.

The Guidelines refer to key situational awareness measures, including:

- Installation of advanced weather monitoring and weather stations that collect data on weather conditions to develop weather forecasts and predict where ignition and wildfire spread are likely
- Installation of high-definition cameras throughout a utility's service territory, with the ability to control the camera's direction and magnification remotely

[68] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Use of continuous-monitoring sensors that can provide near-real-time information on grid conditions
- Use of a fire risk or fire potential index that takes numerous data points in given weather conditions and predicts the likelihood of wildfire
- Use of personnel to physically monitor areas of electric lines and equipment in elevated fire risk conditions

4.6.2.1 Maturity Assessment

For the situational awareness and forecasting category, Liberty has remained at the same maturity level from 2021 to 2022 and is below its projected end of cycle level. According to its 2022 Maturity Survey responses, Liberty has a maturity level of 0.8, which is lower than its peer utilities. Liberty did not meet its maturity level projections for capability 6, (weather variables collected) and capability 10 (wildfire detection processes and capabilities) based on the following Maturity Survey responses reporting its current status:

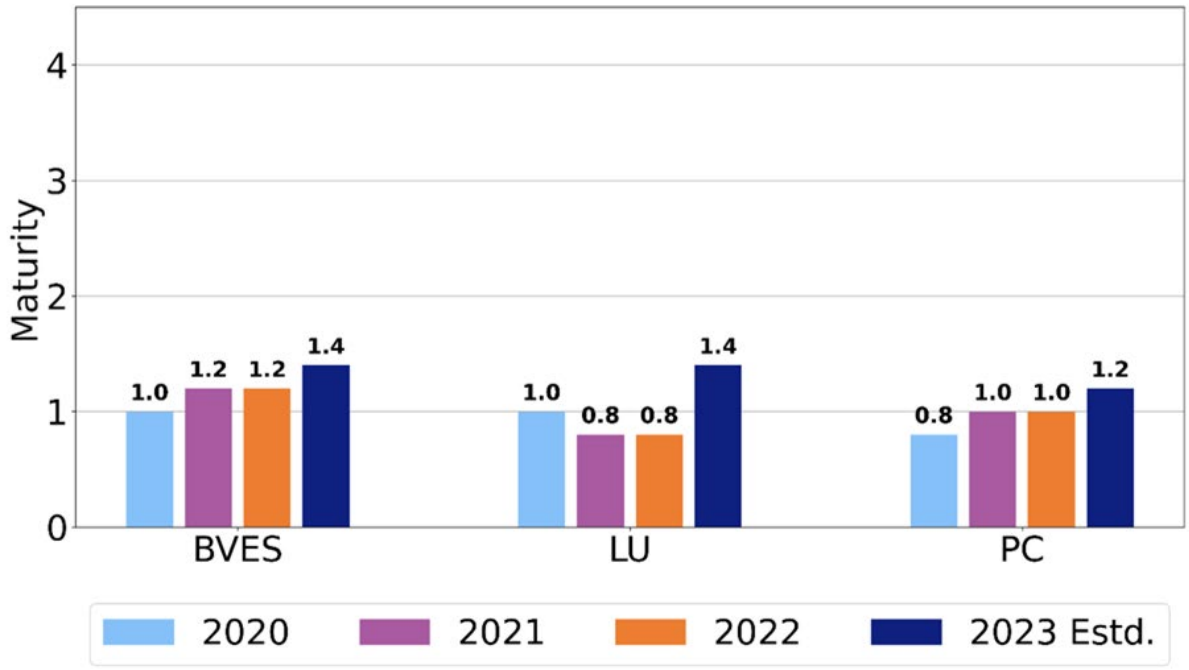
- Liberty has no calibration process for validating its weather measurements when collecting weather variables.[69]
- Liberty has no consistent set of equipment or defined procedures for detecting ignitions along the grid.[70]

By January 1, 2023, Liberty projects an increase to its maturity level by adopting High Definition (HD) cameras for fire detection and improving the validation process of its weather variables. Its projection will put Liberty at the same maturity level as Bear Valley Electric Service (BVES) and at a slightly higher level than PacifiCorp (Figure 4.6.2-1).

[69] Liberty's Utility Wildfire Mitigation Survey, response to B.I.b

[70] Liberty 's Utility Wildfire Mitigation Survey, response to B.V.a, B.V.b

Figure 4.6.2-1: Cross-Utility Maturity Levels for Situational Awareness- SMJUs (2020-2022 Actual, 2023 Estimated)



4.6.2.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

- Liberty developed a Fire Potential Index (FPI) for its service territory based on the methodologies of the three large IOU's and includes factors such as fuel moisture (both dead and live), green up, Fosberg Fire Weather Index (FFWI)[71], and Burning Index (BI).[72] Liberty provides a seven-day forecast of its FPI's for 11 geographic zones and has developed a web-based tool for monitoring FPI values by zones.
- Liberty began a remote communication fault indicator pilot program on two circuits in HFTD Tier 3 that experience a high frequency of faults. Liberty expects this will lead to improved detection, location, and response of faults that can lead to potential ignitions.

[71] An index used for evaluating the potential influence of weather on a wildland fire based on temperature, relative humidity, and wind speed.

[72] An estimate of the potential difficulty of fire containment as it relates to the flame length at the head of the fire.

- Liberty has a total of 29 weather stations installed in its service territory and plans to install 10 additional weather stations in 2022. Liberty expects this will improve its situational awareness, provide more accurate weather data for predicting wildfire risk, and improve its FPI.

4.6.2.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

In its 2021 Update, Liberty planned to complete several initiatives by its 2022 Update. However, according to Liberty's 2022 Update, these initiatives were delayed by supply chain issues, fire activity, and contract terms.[73] As a result, Liberty rescheduled completion of these activities to2022. In its 2023 WMP, Liberty must provide updates on its progress in the following areas:

- Equipment operationalized and procedures developed for detecting ignitions along the grid
- Distribution fault anticipation (DFA) technology installations, including any evaluation of the technology since deployment
- Deployment of its high-impedance fault detection (HIFD) project and any evaluation conducted on its effectiveness
- Adoption of eight high definition (HD) cameras for situational awareness and fire detection

In Liberty's 2021 Update, Liberty stated that it planned to install a total 10 weather stations and 1 additional weather station in 2022 bringing the total number of weather stations to 40 across its service territory. According to its 2022 Update, Liberty did not install any weather stations due to supply chain issues. Liberty now plans to install 10 weather stations in 2022 bringing the total number of weather stations in its service territory to 39. Liberty reports that this is adequate weather station coverage.[74] In its 2023 WMP, Liberty must report on its 2022 weather station installation progress and discuss its assessment of weather station density, including how it determined the adequate total number of weather stations for its service territory.

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[73] Data Request OEIS-LU-22-002, Question 18.

[74] Data Request OEIS-LU-22-001, Question 01.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

4.6.3 Grid Design and System Hardening

The grid design and system hardening section of the Guidelines[75] examines how the utility is designing its system to reduce ignition risk and what it is doing to strengthen its distribution, transmission, and substation infrastructure to prevent utility-related ignitions resulting in catastrophic wildfires. This section also requires discussion of routine and non-routine maintenance programs, including whether the utility replaces or upgrades infrastructure proactively rather than running facilities to failure. Programs in this category, which are often the most expensive aspects of a WMP, include initiatives such as the installation of covered conductors to replace bare overhead wires, undergrounding of distribution or transmission lines, and pole replacement programs. The utility is required, at a minimum, to discuss grid design and system hardening in each of the following areas:

- Capacitor maintenance and replacement
- Circuit breaker maintenance and installation to de-energize lines upon detecting a fault
- Covered conductor installation
- Covered conductor maintenance
- Crossarm maintenance, repair, and replacement
- Distribution pole replacement and reinforcement, including with composite poles
- Expulsion fuse replacement
- Grid topology improvements to mitigate or reduce PSPS events
- Installation of system automation equipment
- Maintenance, repair, and replacement of connectors, including hotline clamps
- Mitigation of impact on customers and other residents affected during PSPS events
- Other corrective action

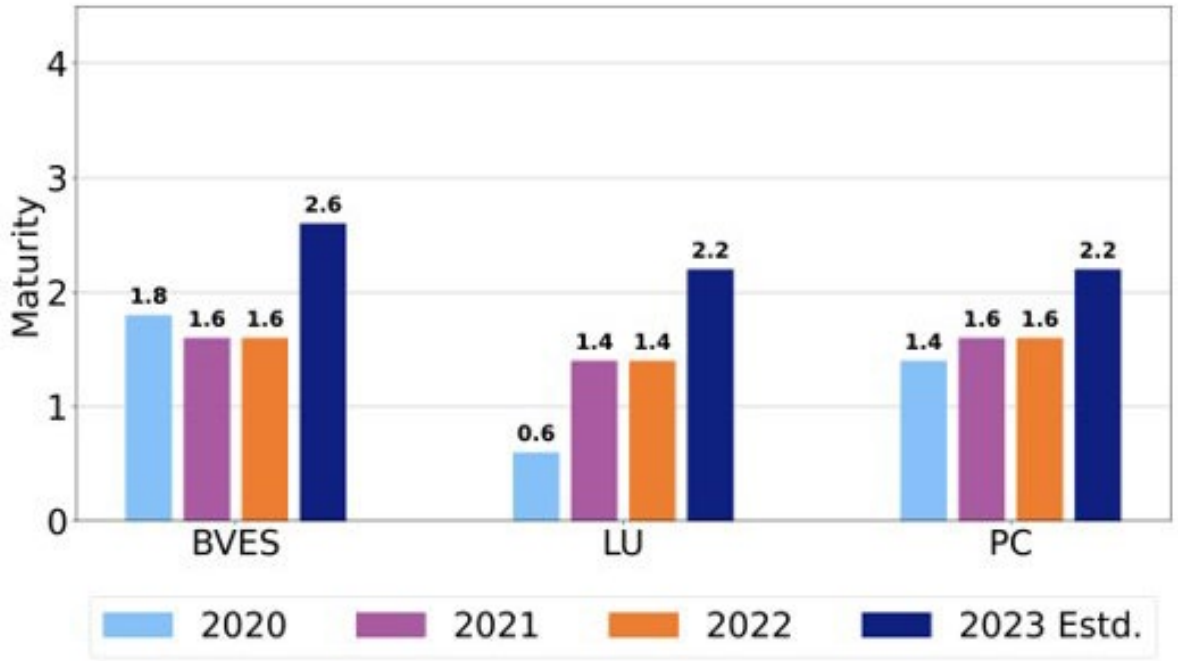
[75] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp. 74-75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Pole loading infrastructure hardening and replacement program based on pole loading assessment program
- Transformer maintenance and replacement
- Transmission tower maintenance and replacement
- Undergrounding of electric lines and equipment
- Updates to grid topology to minimize risk of ignition in the HFTD
- Other areas if an initiative cannot feasibly be classified within those listed above

4.6.3.1 Maturity Assessment

Liberty's maturity for grid design and system hardening remained stagnant from 2021 to 2022. Maturity is projected to increase between 2022 and 2023, as seen in Figure 4.6.3-1 below.

Figure 4.6.3-1: Cross-Utility Grid Hardening and System Design Maturity – SMJUs (2020-2022 Actual, 2023 Estimated)



Selected areas of progress Liberty projects by 2023 include:

- Liberty plans on exceeding grid topology design requirements and loading standards within HFTD areas, as defined by General Order (GO) 95[76]
- Liberty plans to increase granularity of risk-spend efficiency estimates for hardening initiatives[77]
- Liberty plans to collaborate further with partners on the results of pilot and commercial deployments[78]

Some areas that are limiting Liberty's further progress in maturity include:

- Liberty is not fully accounting for consequence risk and PSPS risk for initiative planning and risk reduction[79]
- Liberty's system is lacking redundancy and includes many single points of failure[80]
- Liberty does not independently audit, test, or field-verify new initiatives[81]

4.6.3.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

Microgrids and Resiliency Design

In 2021, Liberty employed a third-party to evaluate possible resiliency designs, including the use of energy storage and microgrids.[82] Pending CPUC approval, Liberty plans to begin implementing resiliency programs in 2022, including microgrids at Kings Beach and Angora Ridge.

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[76] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.II.a.

[77] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.IV.b.

[78] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.V.b.

[79] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.I.a.

[80] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to C.III.a and C.III.b.

[81] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to C.IV.d and C.V.a.

[82] Liberty's 2022 Update, Appendix B.

Between these two projects, Liberty plans to deliver an estimated 55 MWh of energy storage and 12 MW of generation support via existing diesel generators, which is expected to improve the resiliency of its grid.[83]

Assessment of Undergrounding as an Alternative

As required in the 2021 WMP Action Statement, Liberty stated that it performed further analysis for undergrounding projects and concluded that compared to covered conductor, undergrounding is not a cost-effective option in most cases.[84] However, Liberty included data showing 1.39 miles of undergrounding in 2021 and 2022 relating to Rule 20A.[85] Rule 20A undergrounding is determined by local nominations related to aesthetic or traffic reasons, not wildfire risk.[86]

When asked to clarify Liberty's undergrounding projects moving forward, Liberty stated that it is currently planning a 0.4-mile project for construction in 2023.[87] Liberty stated that this project aims to harden key circuits to create a resiliency corridor and reduce wildfire ignition.[88]

Other Corrective Actions

In the 2021 WMP Action Statement, Energy Safety directed Liberty to develop additional programs or targets for tree attachments, animal guards, CAL FIRE exempt hardware, and open/grey wire. Liberty included more details in all these areas.[89]

For tree attachments, Liberty completed an assessment of HFTD Tier 3 attachments and found 316. Liberty will first target removals from trees that appear to be dead or dying. For

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[83] Liberty's 2022 Update, p. 114.

[84] Liberty's 2022 Update, Appendix, p. 214.

[85] Data Request OEIS-LU-22-002, Question 10.

[86] Rule 20A defines policies and procedures followed by electric utilities to convert overhead power lines and other equipment to underground facilities, with a particular focus on aesthetics. CPUC Undergrounding Programs Descriptions: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/electric-reliability/undergrounding-program-description (accessed September 15, 2022).

[87] Data Request OEIS-LU-22-002, Question 10.

[88] Data Request OEIS-LU-22-002, Question 10.

[89] Liberty's 2022 Update, Table 7.1-1, p. 96.

animal guards, Liberty began prioritizing installation based on substation history of animal or debris contact outages. For CAL FIRE exempt hardware, Liberty is only using exempt hardware on new facilities and completes replacements based on identification during asset inspections. For open/grey wire, Liberty is identifying areas with such wire and conducting pole calculations to determine if conductor replacement is needed.

4.6.3.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

Covered Conductor Effectiveness Lessons Learned

The joint covered conductor effectiveness study[90] clarified the differences in covered conductor installation across utilities. However, Liberty did not commit to applying any lessons learned. Many sections of the joint study state that the utilities will continue to do studies, collect documentation, or conduct discussion, rather than committing them to make changes. Many of the "next steps" described in the study also do not include concrete commitments (e.g., utilities are "continuing these efforts in 2022 and providing an update in their 2023-2025 WMPs"[91]). Liberty must apply lessons learned to its assessments of covered conductor and show that it is progressing as a result of its joint efforts with the other utilities.

Covered Conductor Maintenance

Liberty does not have a separate maintenance program or training program for covered conductor inspections. It relies instead on the completion of a detailed inspection by the manufacturer after installation.[92] In terms of ongoing maintenance, Liberty is currently evaluating inclusion of covered conductor-specific items within its detailed inspection forms;[93] however, it has not yet modified these practices to directly address covered conductor. The joint covered conductor study described in Liberty's 2022 Update[94] found that several covered-conductor-specific failure modes exist that require operators to consider

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[90] The joint covered conductor effectiveness study resulted from a directive in Liberty's 2021 WMP Action Statement.

[91] Liberty's 2022 Update, Attachment D, Joint IOU Response to Action Statement-Covered Conductor, p. 58.

[92] Data Request OEIS-LU-22-002, Question 09.

[93] Data Request OEIS-LU-22-002, Question 09.

[94] Liberty's 2022 Update, Attachment D, Joint IOU Response to Action Statement-Covered Conductor, pp. 7-8.

additional personnel training, augmented installation practices, and adoption of new mitigation strategies (e.g., additional lightning arrestors, conductor washing programs, etc.).

It is imperative that Liberty evaluate its existing covered conductor maintenance program to ensure that failure modes specific to covered conductor are being properly evaluated and new equipment specific to covered conductor is being maintained to extend the equipment's expected lifetime and maintain its health.

Grid Hardening Target Shortfalls

Liberty fell behind on many grid hardening targets in 2021, as seen in Table 4.6.3-1 below. Liberty states that this is largely due to supply chain issues, leading to impacts on material procurement and availability.[95] In its 2023 WMP, Liberty must provide its plan for addressing its unmet 2021 grid hardening targets.

Table 4.6.3-1: Liberty's Grid Hardening 2021 Program Targets and 2021 Actuals

Program	2021 Target	2021 Performance
Covered Conductor	9.1 mi	3.75 mi
Dist. Pole Replacement	400	211
Expulsion Fuse Replacement	1500	867
Tree Attachments	60	37
Reclosers Installed	3	2

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

[95] Liberty's 2022 Update, p. 115.

4.6.4 Asset Management and Inspections

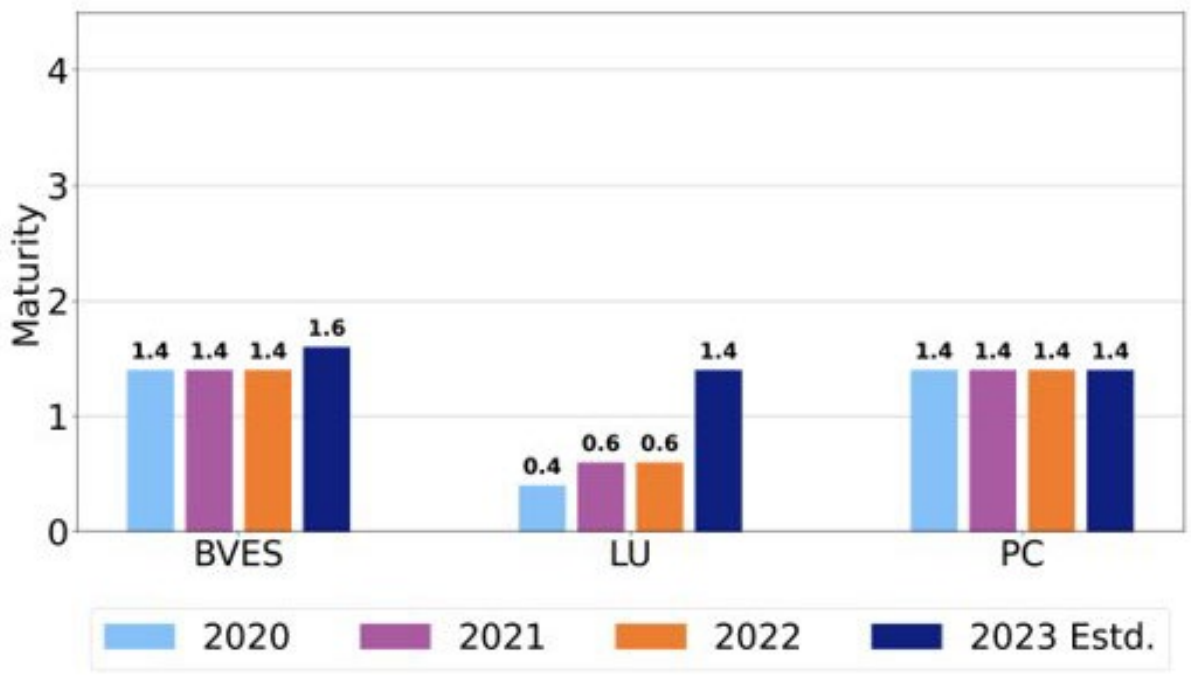
The asset management and inspections section of the Guidelines[96] requires the utility to discuss power line and infrastructure inspections for distribution and transmission assets within the HFTD, including infrared, light detection and ranging (LiDAR), substation, patrol, and detailed inspections designed to minimize the risk of its facilities or equipment causing wildfires. The utility must describe its protocols relating to maintenance of any electric lines or equipment that could, directly or indirectly, relate to wildfire ignition. The utility must also describe how it ensures inspections are done properly through a program of quality control.

4.6.4.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, Liberty's maturity level for asset management and inspections remained stagnant from 2021 to 2022, with little increase in maturity from 2020. However, Liberty projects a significant increase by 2023, as seen in Figure 4.6.4-1 below.

[96] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6.4-1: Cross-Utility Asset Management and Inspections Maturity – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty projects it will increase maturity by 2023 in the following areas:

- Liberty is planning to implement a system and approach for detecting and responding to malfunctions for equipment within the HFTD[97]
- Liberty is planning to increase the granularity of its equipment inventory from the span to asset level[98]
- Liberty is planning on implementing risk mapping into some considerations for inspection inputs[99]
- Liberty is planning on using wildfire risk to inform its service intervals as well as maintenance and repair procedures[100]

[97] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.I.c.

[98] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.I.d.

[99] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.c and D.IV.a

[100] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.IV.b and D.IV.c.

Liberty's maturity did not change between 2021 to 2022 due to lack of progress in the following areas:

- Liberty only updates the condition assessment within its equipment inventory database on an annual basis[101]
- Liberty is only meeting minimum regulatory requirements for its asset inspections, including frequency and inputs[102]
- Liberty's inspection scheduling is only based on static maps, as opposed to being informed by predictive modeling or continuous monitoring[103]
- Liberty does not have a QA/QC process for contractors, and its QA/QC program is still not fully implemented in general[104]

4.6.4.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

QA/QC Program Development

As required in the 2021 WMP Action Statement, Liberty developed its formal QA/QC process for asset inspections. This process was officially adopted in March 2022 with implementation beginning in Q3 2022, after Liberty completes its detailed inspections. Liberty included an attachment detailing its asset inspection QA/QC program,[105] which includes quarterly reviews, inspection forms, examples, and direction on how to assign finding levels. Liberty's program randomly selects 0.5 percent of inspections for QA/QC audits.

As an interim process, Liberty internally re-inspected around six percent of assets from the total system survey completed in 2020. Liberty did not re-inspect any pole intrusion inspections, as Liberty only identified 11 poles needing replacement as a result.[106]

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[101] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.I.b.

[102] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.a, D.II.d, D.II.g, D.III.a, D.III.b,

[103] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.b, D.II.e, D.II.f, D.II.h, and D.II.i.

[104] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.V.a, D.V.b, D.V.c, D.V.d, and D.V.e.

[105] Liberty's 2022 Update, Attachment F.

[106] Data Request OEIS-LU-22-02, Question 15.

Addressing Level 3 Findings

Liberty completed a system-wide survey in 2020, which identified an increase in Level 3 findings, as seen in Table 4.6.4-1 below.[107] According to its 2022 Update, Liberty addressed 565 Level 3 findings in 2021, with 7,459 remaining open from 2020.[108] In 2021, Liberty decreased its backlog by closing out more Level 3 findings (565) than were opened (426), as seen in Table 4.6.4-1 below. As required by Energy Safety in its 2021 WMP Action Statement, Liberty developed and is implementing a plan to complete the remaining Level 3 remediations opened in 2020 by the end of 2025.

Table 4.6.4-1: Liberty's 2015-2021 Number of Level 3 Findings Opened - Distribution[109]

2015	2016	2017	2018	2019	2020	2021	2022[110]
148	728	2,375	523	776	10,086	426	444

4.6.4.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

Need to Report Progress on QA/QC Implementation for Asset Inspections

While Liberty has developed a formal QA/QC program for its asset inspections since its 2021 Update, Liberty must demonstrate continued development of this program and report on the results obtained from implementation in 2022. This must include lessons learned both in terms of the findings from the QA/QC program but also any modifications made to the QA/QC program itself. This is to ensure that Liberty continually improves its QA/QC program for asset inspections.

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[107] Level 3 as defined by GO 95 Rule 18 to be of acceptable safety and/or reliability risk.

[108] Data Request OEIS-LU-22-002, Question 13.

[109] Liberty's 2022 Update, Attachment A, Table 1.

[110] Only accounts for Q1 findings.

Only Meeting Minimum Requirements

In general, Liberty is still primarily relying on GO 165 requirements to guide its asset management and inspections. Liberty inspected all its facilities in 2020 and explains use of HFTD tier designation and consequence model output to inform prioritization of inspections and remediation work.[111] However, according to its 2022 Update, Liberty reverted back to a five-year schedule for GO 165 inspections, instead of increasing frequency based on known wildfire risk.

Currently, the only additional inspections Liberty is planning on implementing are infrared inspections. While Liberty is planning a pilot program in 2023 to assess the viability of using infrared for inspections, Liberty must begin implementing more measures to augment its current inspection program to better address and reduce wildfire risk.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

4.6.5 Vegetation Management and Inspections

The vegetation management and inspections section of the Guidelines[112] requires utilities to discuss vegetation management inspections. The discussion must include inspections that go beyond existing regulation, as well as remote sensing inspections, and patrol inspections of vegetation around distribution and transmission lines and equipment. Utilities must also discuss quality control of those inspections and limitations on the availability of workers. In addition, they must discuss collaborative efforts with local land managers, including efforts to maximize benefit from fuel treatment activities and fire break creation as well as the collaborative development of methods for identifying "at-risk" vegetation, determining trim clearances beyond minimum regulations, and identifying and mitigating impacts from tree trimming and removal (e.g., erosion, flooding).

4.6.5.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, Liberty has an average maturity level of 1.3 in vegetation management and inspections, an increase from an average level of 0.8 in

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[111] Liberty's 2021 WMP Progress Report, p. 17.

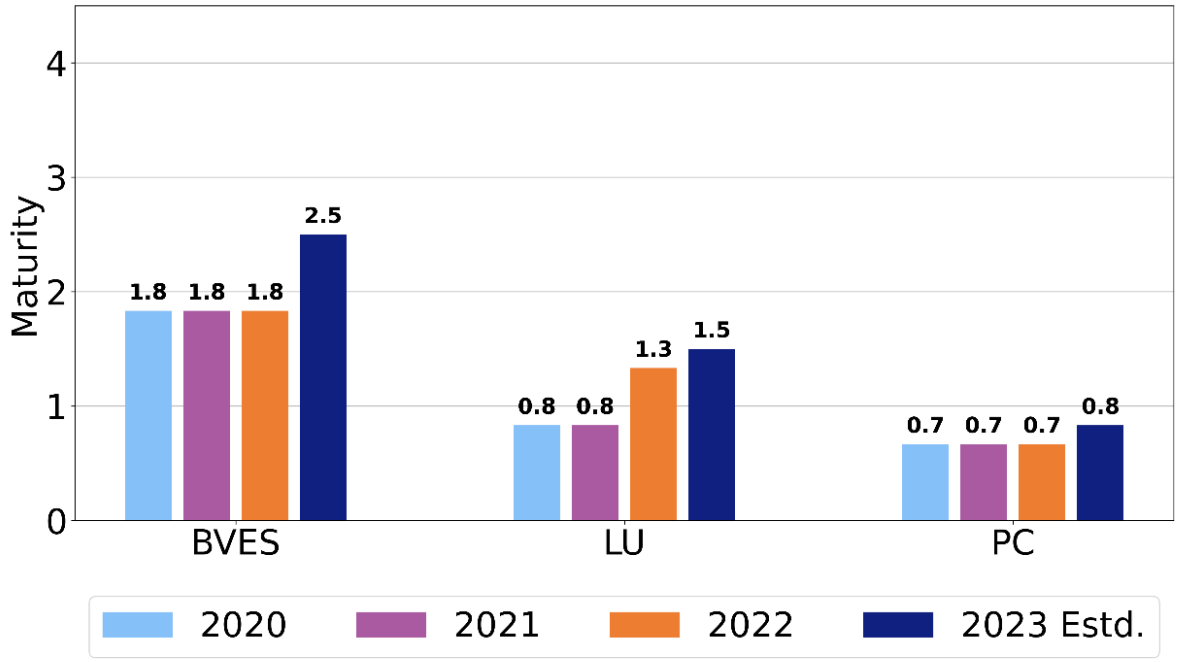
[112] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp. 75-76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

2020 and 2021 (Figure 4.6.5-1). Liberty achieved this higher level by having inspections independently verified by third party experts,[113] scheduling inspections using static maps of predominated vegetation species,[114] and "regularly" using quality assurance and quality control (QA/QC) information to identify deficiencies in performance.[115]

Liberty's maturity level is limited by two questions to which it responded in the negative:

- Does the utility remove vegetation waste *along* its right of way across the entire grid?[116]
- Does the utility remove vegetation waste *outside* its right of way across the entire grid?[117]

Figure 4.6.5-1: Cross-Utility Maturity Levels for Vegetation Management and Inspections – SMJUs (2020-2022 Actual, 2023 Estimated)



[113] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.I.c.

[114] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.II.b.

[115] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.VI.c.

[116] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.IV.f.

[117] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.V.d.

4.6.5.2 Liberty Progress

Liberty's progress thus far in the current WMP cycle is described below.

Industry Maturity Model Assessment

In addition to completing Energy Safety's Maturity Survey, in 2022 Liberty plans to conduct its own program assessment using the Utility Arborist Association's Vegetation Management Maturity Model.[118] This model was "designed by the Utility Arborist Association and the University of Illinois Chicago Energy Resources Center to benchmark utility vegetation management ("UVM") operations, identify areas to enhance practices, and drive change in UVM programming towards more sustainable and environmentally conscious management practices."[119]

Integrated Vegetation Management and Current Science

Liberty practices integrated vegetation management using American National Standard A300 (Part 7) with a goal of "promot[ing] sustainable plant communities that are compatible with the use of the land as a utility right-of-way."[120] Liberty also incorporates relevant research to select and apply vegetation control methods "with the goal of establishing and maintaining early-successional, biodiverse vegetation communities capable of withstanding encroachment by incompatible species that threaten electrical reliability and contribute to fuel loading."[121]

With these goals, along with completing the Utility Arborist Association's Vegetation Management Maturity Model and many other efforts mentioned throughout WMP Section 7.3.5.1 "Additional efforts to manage community and environmental impacts," Liberty is moving towards balancing vegetation related risk-reduction and forest health and resiliency.

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[118] The Utility Arborist Association's Vegetation Management Maturity Model can be accessed at https://www.gotouaa.org/wp-content/uploads/2019/07/VM3-Version-1.pdf.

[119] Liberty 2022 Update, p. 130, footnote 21.

[120] Liberty 2022 Update, p. 125.

[121] Liberty 2022 Update, p. 12

Fuels Reduction and Tree Replacement

Liberty provides a comparison of its previous and current methodologies for slash and wood management.[122] In late 2020 Liberty began offering wood removal services to small parcel owners.[123] In 2021 Liberty began using specialized equipment to remove slash from large parcels and/or areas more than 100 feet from access roads. In 2021, Liberty piloted offering wood removal service to customers during routine operations; it found that offering the service "more than doubl[ed] the number of tree removals permissioned" allowing for greater clearances and reducing future maintenance in the pilot area.[124]

Additionally, in 2021, Liberty performed an analysis to establish priorities for fuel reduction projects using criteria that includes: LIDAR, agency cooperation,[125] Liberty fire risk polygons, and last detailed routine maintenance. Using this prioritization, Liberty's 2021 fuel reduction projects covered 43 line miles, treated 288 acres, removed 12,008 trees and 2,119 tons of biomass, and had cooperation from 581 landowners.[126]

In conjunction with its removal of vegetation and fuels, Liberty is developing a tree replacement program, offering customers trees from a local nursery that are "appropriate for installing adjacent to utility corridors. . . are adapted to the region, size appropriate at maturity, and to the extent possible, fire-wise species that may contribute to wildfire mitigation if an incident were to occur."[127]

Inadequate Justification of VM Inspection Frequency / Use of LiDAR

In its Action Statement on Liberty's 2021 WMP Update, Energy Safety noted that "Liberty does not provide a clear or consistent explanation of its VM inspection frequency."[128] As a result,

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[122] Liberty's 2022 Update, Table 7.3.5.-6, p. 134.

[123] Data Request OEIS-LU-22-004, Question 01.

[124] Liberty's 2022 Update, Table 7.3.5.-6, p. 138.

[125] In this instance, "agency cooperation" refers to an informal process at Liberty in which it attempts to perform vegetation management work in cooperation with agencies (i.e., state, federal, and non-governmental organizations) where wildfire mitigation projects overlap or may otherwise be associated with each other (per Data Request OEIS-LU-22-004, Question 02).

[126] Liberty 2022 Update, Tables 7.3.5-3, p. 136.

[127] Liberty 2022 Update, p. 130.

[128] Action Statement on Liberty Utilities' 2021 Wildfire Mitigation Plan Update, p. 41.

Energy Safety required Liberty to clearly detail its vegetation management inspection frequency by inspection type and HFTD tier and fully and completely justify its three-year detailed inspection cycle for all circuits.[129]

In its Progress Report submitted on November 1, 2021, Liberty clarified that its detailed inspections, conducted on a three-year cycle, are primarily used to identify hazard trees.[130] Generally, the scope of Liberty's "detailed inspections" differs from other utilities that use "detailed inspections" as the primary way to identify clearance issues. Liberty instead uses LiDAR as its "principal inspection tool [that] [it] uses to comply with applicable clearance regulations."[131]

Liberty performs aerial LiDAR inspection of its entire territory each year. The LiDAR inspection identifies vegetation within Liberty's Maintenance Action Threshold ("MAT") zone, which Liberty defines as six feet for 14.4kV and 60kV lines and 15 feet from 120kV lines. The MAT allows Liberty to trim vegetation that may soon become non-complaint with PRC 4292 and GO 95, Rule 35. Liberty provides two tables in its 2022 Update with data derived from LiDAR illustrating that the number of trees "withing the maintenance clearance zone" and "approaching the minimum clearance zone" has decreased from 2020 to 2021.[132]

Liberty's reliance on LiDAR to maintain compliant clearance distances is unique among electrical corporations in California; Energy Safety expects Liberty to share lessons learned with its peer utilities if and as they explore implementing similar programs.

4.6.5.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

Through analysis of all utilities' current and past WMP submissions, Energy Safety has identified the need for a scoping meeting to discuss how utilities could best learn vegetation management best management practices from each other. This scoping meeting may result in additional meetings, workshops, or the formation of a working group. Energy Safety believes this scoping meeting will lead to efforts to help clarify the current differences

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[129] Action Statement on Liberty Utilities' 2021 Wildfire Mitigation Plan Update, p. 41.

[130] Liberty Utilities' Progress Report (Nov. 1, 2021), p. 21.

[131] Liberty Utilities' Progress Report (Nov. 1, 2021), p. 19.

[132] Liberty 2022 Update, Tables 7.3.5-5 and 7.3.5-6, p. 143.

between electrical corporations' vegetation management programs and allow for collaboration among the electrical corporations, stakeholders, and academic experts. Liberty must participate and collaborate with its peers and Energy Safety in this scoping meeting.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

4.6.6 Grid Operations and Operating Protocols, Including PSPS

The grid operations and operating protocols section of the Guidelines[133] requires discussion of ways the utility operates its system to reduce wildfire risk. For example, disabling the reclosing function of automatic reclosers[134] during periods of high fire danger (e.g., Red Flag Warning conditions) can reduce utility ignition potential by minimizing the energy released and the duration of the release when there is a fault. This section also requires discussion of work procedures in conditions of elevated fire risk and protocols to reduce the frequency and scope of de-energization, including PSPS events (e.g., through sectionalization). Further, this section requires the utility to report whether it has stationed and/or on-call ignition prevention and suppression resources and services.

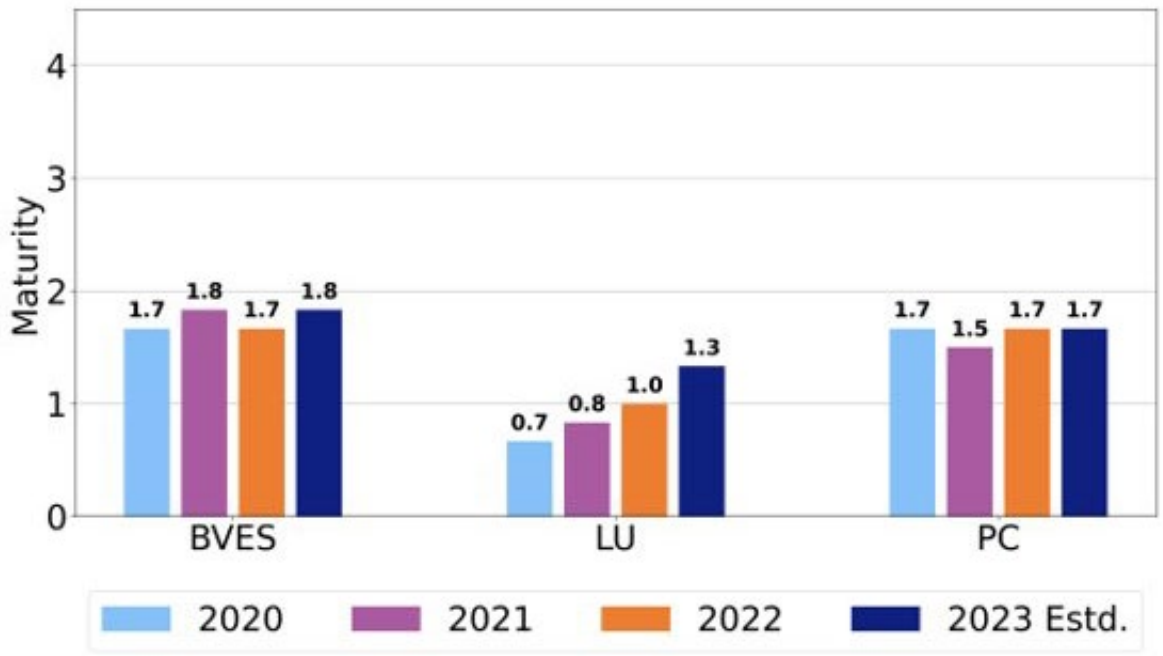
4.6.6.1 Maturity Assessment

Liberty's grid operations and operating protocols maturity has steadily increased from 2020 to 2022, as shown in Figure 4.6.6-1.

[133] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3, p. 76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[134] A recloser is a switching device that is designed to detect and interrupt momentary fault conditions. The device can reclose automatically and reopen if a fault condition is still detected. However, if a recloser closes a circuit that poses the risk of ignition, wildfire may be the result. For that reason, reclosers are disabled in certain high fire risk conditions. During overcurrent situations, circuit breakers trip a switch that shuts off power to the electrical line.

Figure 4.6.6-1: Cross-Utility Maturity for Grid Operations and Operating Protocols – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty projects an increase in maturity in the following areas by 2023:

- Liberty plans to adjust its grid elements' sensitivity during high threat weather conditions based on risk mapping.[135]
- Liberty plans to develop a predetermined protocol driven by fire conditions for adjusting the sensitivity of grid elements.[136]
- Liberty plans on maintaining the grid at low enough risk as to not require any PSPS activity, compared to currently having explicit policies for PSPS thresholds as a last resort measure.[137]
- Liberty plans on augmenting its re-energization inspection process with sensors and aerial tools.[138]

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[135] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.I.a.

[136] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.I.c.

[137] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.IV.a.

[138] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.V.a.

Liberty's grid operations maturity is currently limited by the following:

- Liberty's sensitivity adjustments to grid elements are only a partially automated process, as opposed to being fully automated.[139]
- Liberty does not plan on using predictive modeling to make replacement decisions based on grid operation history, despite indicating in its 2021 survey responses that it would do so by January 1, 2023.[140]
- One percent or more customers complain during Liberty's PSPS events.[141]
- The average downtime per customer during Liberty's PSPS events has been more than one hour.[142]
- Liberty does not include detection of damaged conditions of electric equipment as part of its criteria for determining whether to de-energize a circuit.[143]
- Liberty's process for inspecting de-energized sections of the grid is only partially automated (less than 50 percent).[144]
- Liberty does not have any probability estimate of post-PSPS ignitions.[145]

4.6.6.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

- As part of its response to the Caldor Fire, Liberty established mutual aid agreements with PG&E to aid in structure protection by using PG&E Safety and Infrastructure Protection Teams (SIPT).[146]
- Liberty is starting to implement increased sensitivity settings for protective devices. These settings include a fast relay curve protection setting with one-shot and no auto-

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[139] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.I.b.

[140] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.II.c.

[141] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.III.c.

[142] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.III.e.

[143] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.IV.c.

[144] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.V.b.

[145] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.V.d.

[146] Liberty's 2022 Wildfire Mitigation Plan Update, p. 163.

reclosing.[147] Liberty is still in the elementary stages of installing reclosers and adjusting sensitivity settings during high fire threat days. Liberty plans to install at least three reclosers per year going forward and begin evaluating use of fault detection technologies with communications to decrease outage times due to the increased sensitivity settings.[148, 149] Liberty installed four reclosers in 2020 and two reclosers in 2021. Though Liberty is behind its 2021 target of three, Liberty has four reclosers planned for installation in 2022.

- Liberty successfully activated its Emergency Operations Center (EOC) in September 2021 during a high-risk weather event that presented possible PSPS conditions. As part of its EOC, Liberty used fire science and monitored weather data to assess real-time risk and deploy response teams as needed to perform field assessments.

4.6.6.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the grid operations and operating protocols section of its 2022 Update.

4.6.7 Data Governance

The data governance section of the Guidelines[150] requires the utility to report information on its initiatives to create a centralized wildfire-related data repository, conduct collaborative research on utility ignition and wildfire, document and share wildfire-related data and algorithms, and track and analyze near-miss data.

4.6.7.1 Maturity Assessment

Liberty's reported maturity for data governance has not increased from 2020 to 2022 for any of the data governance related capabilities. By 2023, Liberty projects an increase in its maturity in the data collection and curation capability, from 0 to 4, in the data transparency and analytics capability, from 0 to 2, and in the near-miss tracking capability, from 1 to 4.

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[147] Data Request OEIS-LU-22-002, Question 16.

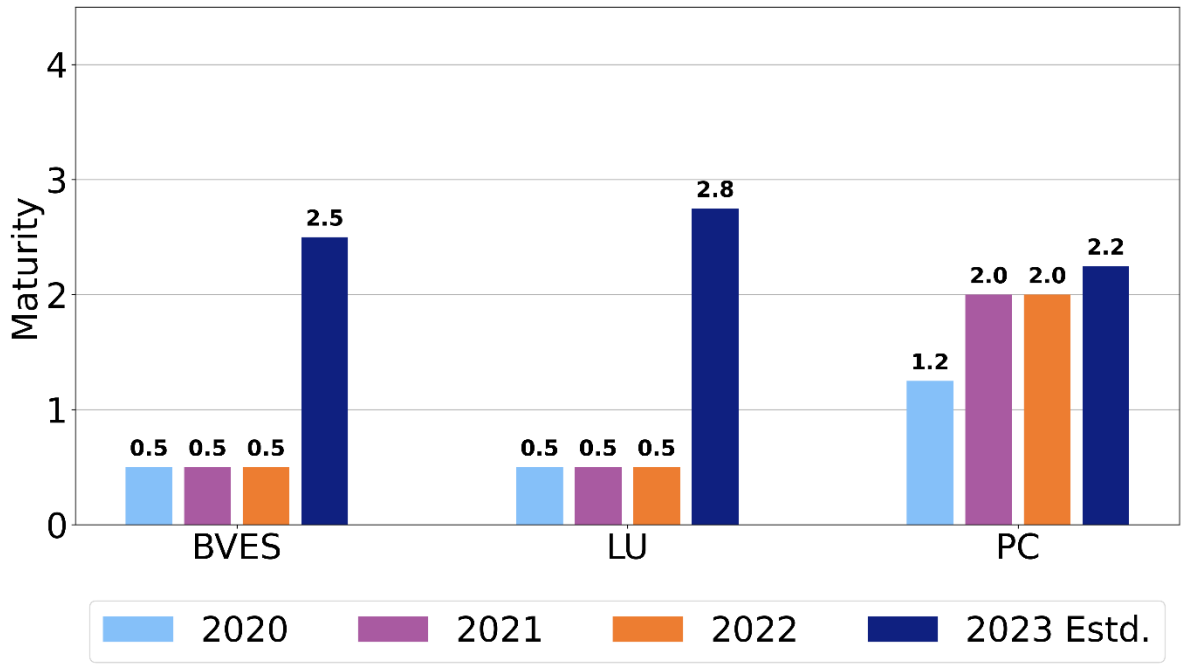
[148] Liberty's 2022 Wildfire Mitigation Plan Update, p. 158.

[149] Data Request OEIS-LU-22-002, Question 16.

[150] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp. 76-77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6.7-1 shows Liberty's maturity in Data Governance compared to BVES and PacifiCorp for 2020, 2021, and 2022, and projected maturity for 2023.

Figure 4.6.7-1: Cross-Utility Maturity Response for Data Governance – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty intends to increase its maturity in the following areas by 2023. It plans to:

- Have a centralized database of situational, operational, and risk data, and plans to be able to use advanced analytics on the centralized database to make operational and investment decisions.[151, 152]
- Share best practices for database management with other utilities.[153]
- Have a single document cataloging all fire-related data and algorithms, analyses, and data processes.[154]

[151] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.I.a.

[152] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.I.b.

[153] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.I.f

[154] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.II.a.

- Be able to simulate wildfire potential based on near-miss data.[155]
- Use near miss data to change grid operation protocols in real time.[156]

4.6.7.2 Liberty Progress

Since its 2021 Update, Liberty reports three of its major software systems relevant to wildfire mitigation data are being upgraded. Liberty also reports it has conducted training on digital data collection and improved its protocols. Liberty plans to deploy a high-impedance fault detection study in 2022.

4.6.7.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the data governance section of its 2022 Update.

4.6.8 Resource Allocation Methodology

The resource allocation methodology section of the Guidelines[157] requires the utility to describe its methodology for prioritizing programs by cost effectiveness. Utilities must discuss their risk reduction scenario analysis and provide a risk-spend efficiency (RSE) analysis for each aspect of the plan.

4.6.8.1 Maturity Assessment

Liberty has increased maturity in its resource allocation methodology over the current WMP cycle: starting from a level of 0 in 2020 to a steady 1.2 in both 2021 and 2022. Compared to BVES and PacifiCorp, which respectively reached maturity levels of 1.5 and 0.7 in 2022, Liberty's maturity level is mid-range among the SMJUs. Figure 4.6.8-1 shows Liberty's maturity in Resource Allocation Methodology compared to BVES and PacifiCorp for 2020, 2021, and 2022, and projected maturity for 2023.

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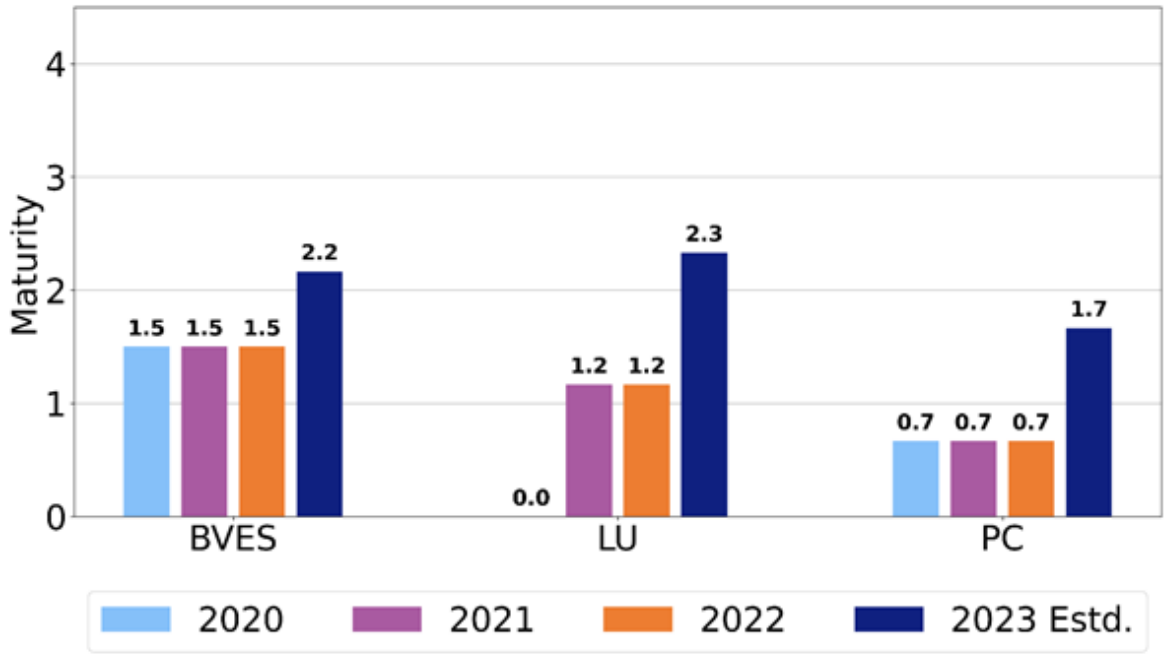
[155] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.III.b.

[156] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to G.III.e.

[157] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6.8-1: Cross-Utility Maturity Response for Resource Allocation Methodology – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty intends to increase its maturity in the following areas by 2023. It plans to:

- Calculate risk reductions as well as projected cost and total risk reduction potential, which Liberty does not project at all for risk scenarios currently.[158]
- Take long-term (6-10 year) risk estimates, such as climate change, into consideration when planning risk reduction initiatives in its risk scenarios.[159]
- Estimate the impact on reliability factors (meaning the reliability of service to customers) within its risk scenarios.[160]
- Include estimates of impact on reliability factors as part of determining investments for each initiative.[161]

[158] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.I.a.

[159] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.I.c.

[160] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.I.d.

[161] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.II.d.

- Increase the level of granularity from circuit-level to span-level for its risk efficiency figures, RSE estimates, and efficacy of new wildfire initiatives.[162]
- Include sensitivities in RSE calculations.[163]
- Use accurate RSE estimates for all initiatives to determine capital allocation within categories. Since its 2021 Update, Liberty has begun considering RSE when allocating capital.[164]
- Verify RSE estimates using historical or experimental pilot data; Liberty does not currently verify RSE estimates.[165]
- Include the total cost of ownership, meaning the expected useful life of an asset (including purchase, operation and maintenance), as part of its development and evaluation of RSEs for new wildfire initiatives.[166]
- Complete reviews of innovative initiatives via audits by independent parties.[167]

Liberty's maturity is limited by the following:

- Liberty is only able to provide risk scenario projections at the span-level, as opposed to asset-level.[168]
- Liberty only includes most vegetation management and grid hardening initiatives within its RSE evaluations, as opposed to all supported by independent or lab testing.[169]
- Liberty does not account for the state of specific asset and location where initiatives will be implemented when calculating RSE values.[170]

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[162] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.II.e, H.III.b, H.IV.b, and H.VI.c.

[163] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.III.a.

[164] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.V.a.

[165] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.V.c.

[166] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.VI.b.

[167] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.VI.d.

[168] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.I.b.

[169] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.III.d and H.IV.d.

[170] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.V.b.

- Liberty does not follow its pilots with in-field testing to measure the reduction of risk for ignitions and near-misses.[171]

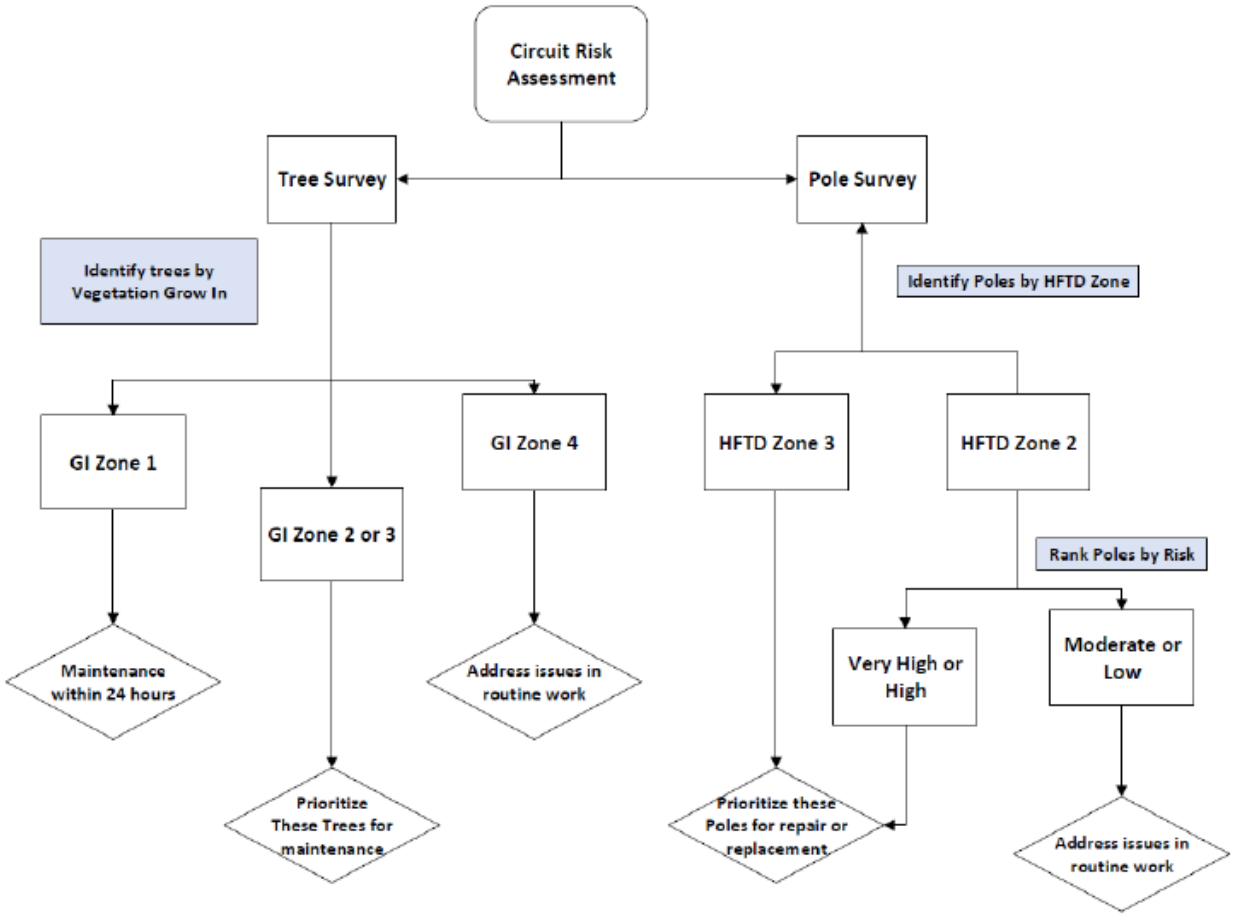
4.6.8.2 Liberty Progress

Liberty prioritizes WMP initiatives, along with corresponding human and financial resources, based on its fire risk map, circuit risk assessment, risk analysis, and other operational and compliance considerations, as seen in Figure 4.6.8-2. RSE calculations are one component in Liberty's overall wildfire mitigation planning and long-term decision making. To date, Liberty has created wildfire risk models and calculated RSEs following the methodology for the CPUC's RAMP/S-MAP proceedings, as filed since the 2021 Update. Liberty is also currently in the process of continuing to update its risk-based decision-making model (RBDM). This update to the RBDM calculations will refine its estimated effectiveness percentages using information from risk modeling working group discussions, resulting in more accurate RSE calculations. Liberty plans to further advance its risk analysis process, risk modeling, and RSE calculations by more actively participating in joint IOU workshops[172] and discussions on RSEs to learn from other utilities.

[171] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.VI.a.

[172] Here the joint IOUs include PG&E, SCE, SDG&E, PacifiCorp, Liberty, and BVES.

Figure 4.6.8-2: Circuit Risk Determination and WMP Work Prioritization Flowchart (Source: Liberty)[173]



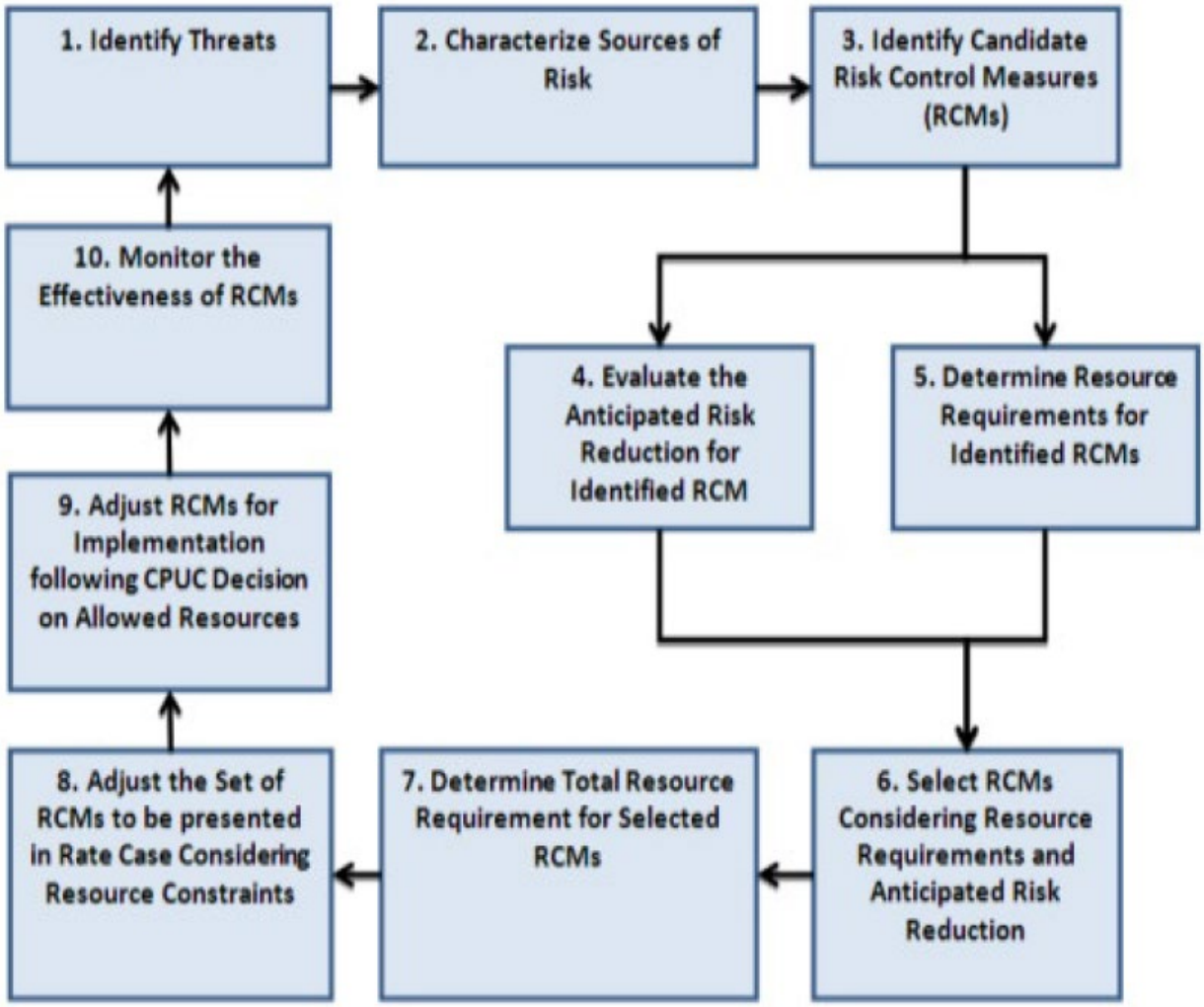
Liberty reports that resource allocation is supported by its work in risk-based decision making, WMP initiative assessment, and data governance.

Risk-Based Decision-Making Methodology

Liberty's Enterprise Risk Management process is an iterative cycle of identifying, assessing, mitigating, and communicating risks to pinpoint the greatest areas of concern. Liberty follows the principles it illustrates in a 10-step risk management process, shown in Figure 4.6.8-3 below.

[173] Liberty's 2022 Update, page 99.

Figure 4.6.8-3: 10-Step Risk-Informed Resource Allocation Process (Source: Liberty)[174]



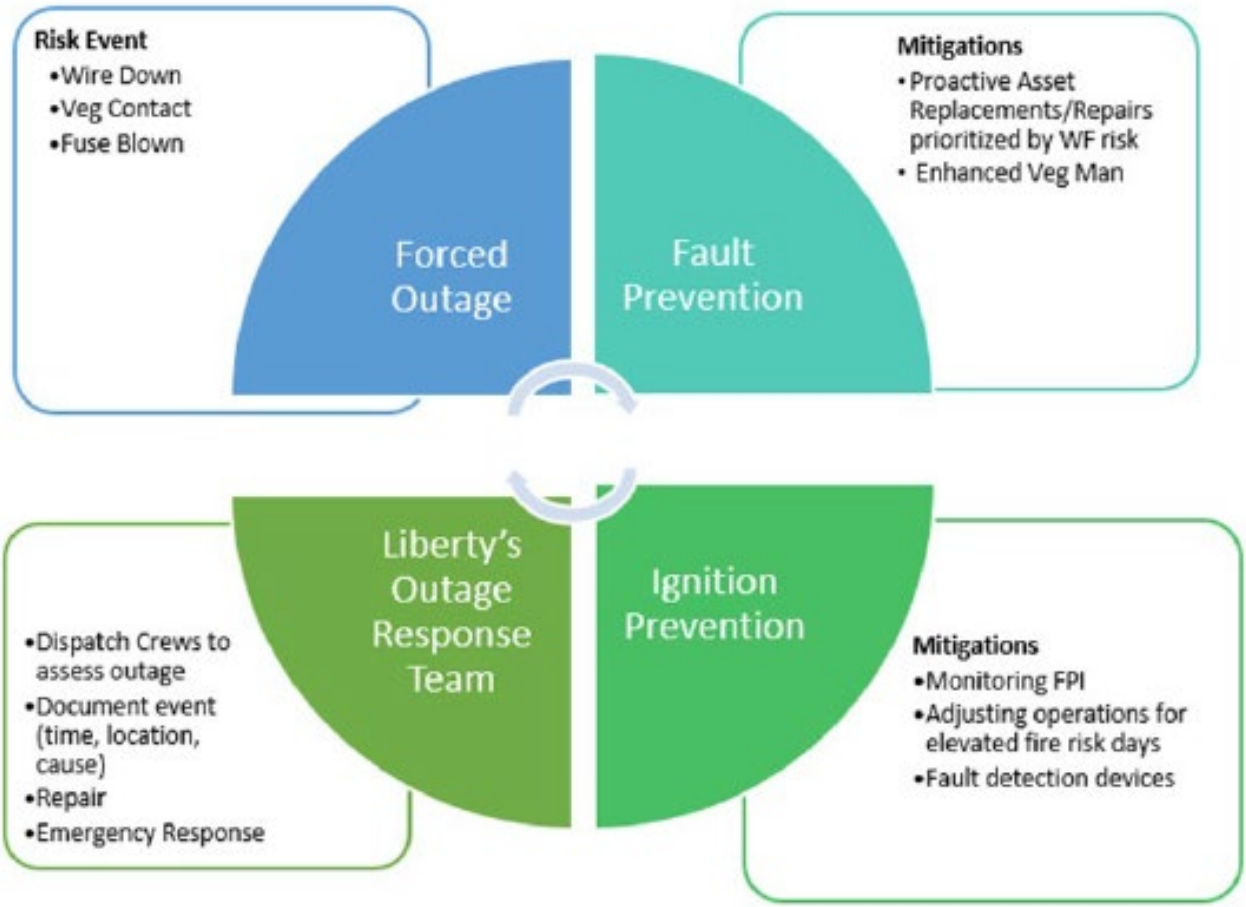
Regarding its wildfire risk assessment, Liberty reports that it first looks to ignition probability risk. Liberty hired a consultant to analyze its ignition probability using historic forced outage data from 2017 to 2021. This is a new enhancement to Liberty's wildfire risk analysis completed since the 2021 Update that feeds into a fire propagation model that estimates wildfire consequences. Liberty reports that it uses this information, in addition to its asset inspection data and vegetation management analysis, to create risk tranches in its service territory and form a profile of wildfire risk by region.

[174] Liberty's 2022 Update, page 31.

Improved WMP Initiative Assessment

Liberty has taken a new approach to assessing overall likelihood that a wildfire will originate from its overhead assets: instead of evaluating risk events equally, Liberty now assesses the probability a line will experience a fault and that the resulting fault will ignite the fuel underneath. Accordingly, Liberty identified and assessed its planned 2022-2032 wildfire mitigation initiatives based on the following: fault prevention, ignition prevention, fire response and impact mitigation, and risk events. These assessment factors and what they entail are illustrated in Figure 4.6.8-4.

Figure 4.6.8-4: Liberty's WMP Initiative Assessment (Source: Liberty)[175]



[175] Liberty's 2022 Update, page 38.

4.6.8.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas.

Improve Clarity of Initiative Selection Process

While greater transparency has been provided for Liberty's circuit risk determination and WMP initiative selection, Liberty has not clearly explained the role and placement of RSE estimates in its decision making. In its 2023 WMP, Liberty must describe in detail and demonstrate where in its flowchart RSE estimates are considered in its initiative selection process.

Liberty's initiative selection flowchart would also be improved by sequentially breaking out each step towards initiative deployment (e.g., evaluation and prioritization of risk, identifying mitigations, evaluating and selecting mitigations, scoping and deploying mitigations). This additional granularity in Liberty's process would provide a greater level of transparency into Liberty's RSE calculations.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

4.6.9 Emergency Planning and Preparedness

The emergency planning and preparedness section of the Guidelines[176] requires the utility to provide a general description of its overall emergency preparedness and response plan, including a discussion of how the plan is consistent with legal requirements for customer support before, during, and after a wildfire. This discussion must cover support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, and repairs. The utility is also required to describe emergency communications before, during, and after a wildfire in languages deemed prevalent in its territory (Decision 19-05-036, supplemented by Decision 20-03-004),[177] and other languages required by the CPUC.

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[176] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

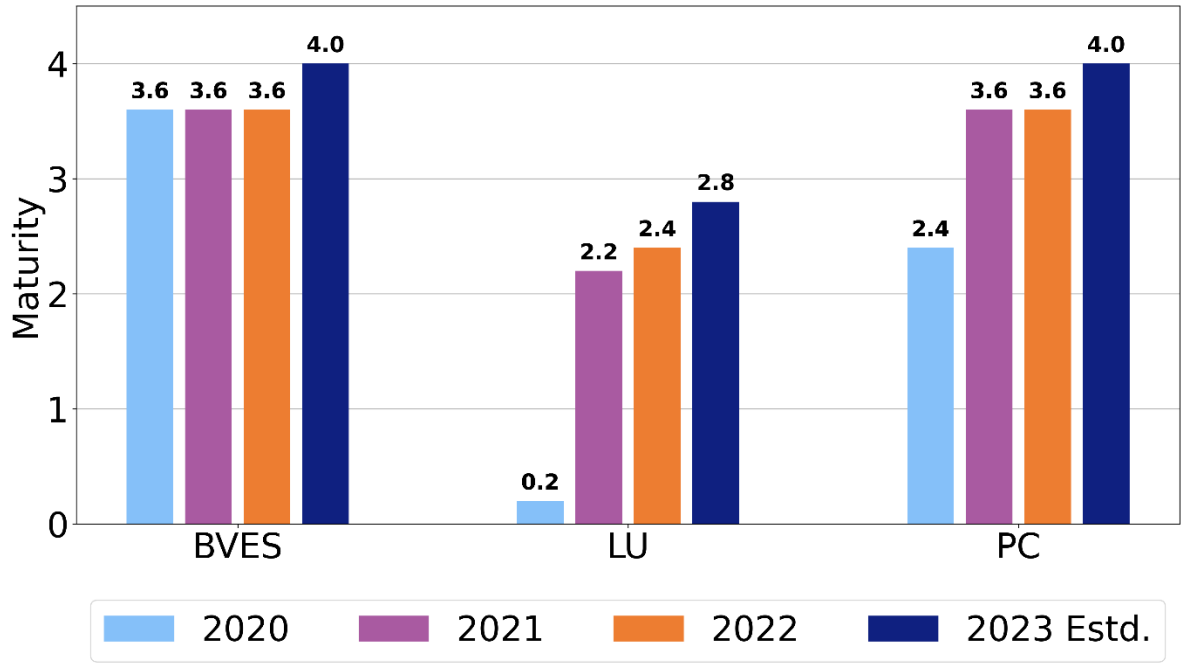
[177] A language is prevalent if it is spoken by 1,000 or more persons in the utility's territory or if it is spoken by 5% or more of the population within a "public safety answering point" in the utility territory. See California Government Code section 53112 for more information.

This section of the Guidelines also requires discussion of the utility's plans for coordination with first responders and other public safety organizations; plans to prepare for and restore service, including workforce mobilization and prepositioning of equipment and employees; and a showing that the utility has an adequately sized and trained workforce to promptly restore service after a major event.

4.6.9.1 Maturity Assessment

Although its maturity in this category is lower than its peers, Liberty's emergency planning and preparedness maturity has increased from 2020 to 2022, with a significant increase from 2020 to 2021 (0.2 to 2.2) and slight increase from 2021 to 2022 (2.2 to 2.4), as seen in Figure 4.6.9-1 below. Liberty projects a further increase in maturity by 2023.

Figure 4.6.9-1: Cross-Utility Maturity for Emergency Planning and Preparedness – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty's emergency planning maturity is currently limited by the following:

- Liberty's service restoration procedures are customized to the circuit, as opposed to span or asset level. Liberty projects that these procedures will be customized to span level by 2023.[178]
- Liberty does not currently have an inventory of high RSE resources available for repairs, although it expects to have this by 2023.[179]
- Although it has matured since 2021, Liberty's estimate of its percent of affected customers who receive complete details of available information during and after wildfire is still at a mid-range maturity level (greater than 98 percent, but yet greater than 99 or 99.9 percent, of affected customers receive complete details of available information).[180]
- Liberty uses partners to disseminate requests for stakeholder engagement related to emergency planning.[181,182]
- Liberty currently does not make public feedback and recommendations on potential improvements after wildfire and PSPS events, nor does it track the implementation of recommendations or report upon their impact. It expects to do each of these by 2023.[183]
- Liberty does not have a process for conducting reviews after wildfires in other utility territories and identifying areas of improvement that are applicable in its own service territory. This is another area that Liberty expects to develop a process for by 2023.[184]

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[178] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.II.c.

[179] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.II.e

[180] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.III.b.

[181] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.b.

[182] Data Request OEIS-LU-22-005, Question 02.

[183] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.e and I.V.h.

[184] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.i.

4.6.9.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

- In 2021, Liberty launched a digital ad campaign to increase public awareness on wildfire mitigation and PSPS preparation. Topics included defensible space, emergency preparedness, Medical Baseline (MBL) program information, general PSPS information and preparation tips, communication of PSPS public workshops, and the importance of updating contact information to enable PSPS and emergency notifications.[185]
- In the third quarter of 2021, Liberty added a bilingual outreach coordinator and a business and community development manager. These new positions support and expand Liberty's community-based organization (CBO) relationship networks and communications channels, increase awareness of PSPS preparations, wildfire mitigation efforts, and customer assistance programs with a focus on access and functional needs (AFN) target audiences.[186, 187]
- Liberty facilitated daily workshops for its public safety partners and customers during an elevated weather event in September of 2021 that posed conditions for a possible PSPS event. Liberty states that it intends to continue this practice in 2022.[188]

4.6.9.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the emergency planning and preparedness section of its 2022 Update.

4.6.10 Stakeholder Cooperation and Community Engagement

The stakeholder cooperation and community engagement section in the Guidelines[189] requires the utility to report on the extent to which it will engage the communities it serves. This engagement includes cooperating and sharing best practices with community members,

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[185] Liberty's 2022 Update, pp. 169-170.

[186] Liberty's 2022 Update, p. 170.

[187] Data Request OEIS-LU-22-005, Question 03.

[188] Liberty's 2022 Update, p. 170.

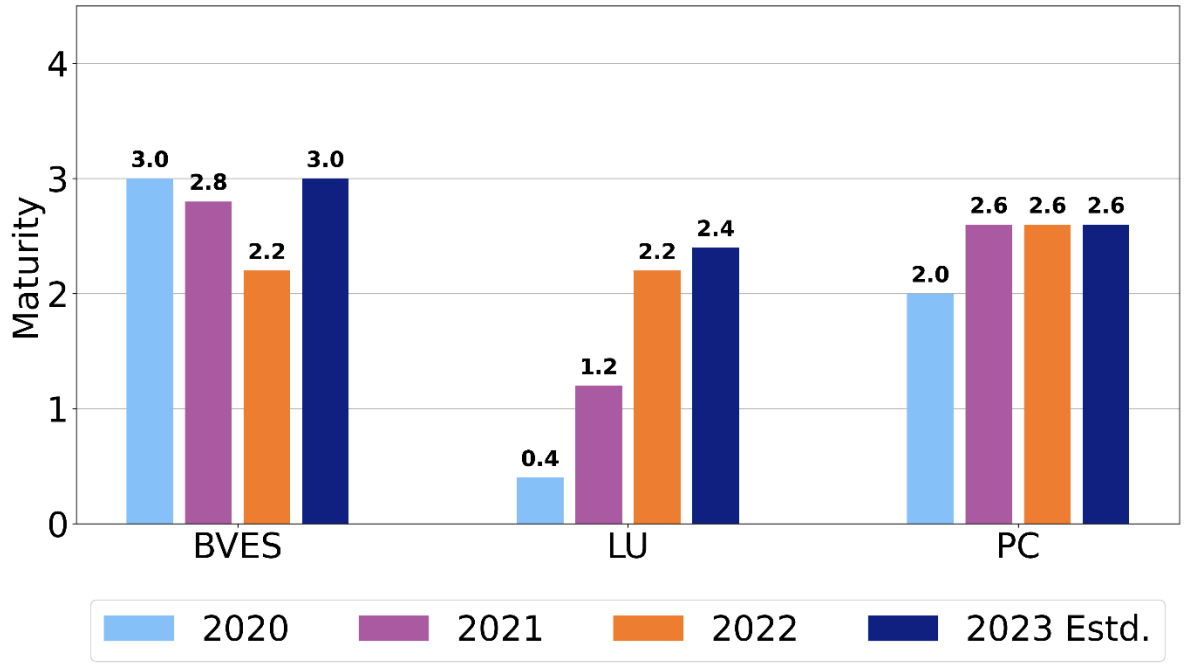
[189] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

agencies outside California, fire suppression agencies, the U.S. Forest Service, and others engaged in vegetation management or fuel reduction.

4.6.10.1 Maturity Assessment

Liberty's stakeholder cooperation and community engagement maturity has steadily increased from 2020 to 2022. Liberty's 2022 maturity in this category is comparable to its peers (at the same level as BVES and slightly lower than that of PacifiCorp), as seen in Figure 4.6.10-1 below. Liberty projects a slight increase in maturity by 2023.

Figure 4.6.10-1: Cross-Utility Maturity for Stakeholder Cooperation and Community Engagement – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty's stakeholder cooperation and community engagement maturity has progressed in the following areas since 2021:

- Liberty has participated in annual benchmarking exercises with other utilities to find areas for improvement.[190]

[190] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.I.e.

- Liberty reports that it can now provide a plan to partner with organizations representing limited English proficiency (LEP) and access and functional needs (AFN) communities.[191]
- Liberty reports that it can now outline how these partnerships create pathways for addressing LEP and AFN community needs.[192]
- Liberty reports that it can now point to clear examples of how these relationships have driven its ability to interact with and prepare LEP and AFN communities for wildfire mitigation activities, including conducting eleven different outreach events targeting those populations in four different locations in their service territory over the period of March through August of 2022[193, 194]
- Liberty also indicates that it has an annually updated action plan to reduce wildfire and PSPS risk to LEP and AFN communities, whereas last year it did not have a specific plan for this purpose.[195]

Liberty's maturity in this category is currently limited by the following:

- Liberty has not yet implemented a defined process for testing lessons learned from other utilities to ensure local applicability but intends to do so by 2023.[196]
- Liberty reports that over five percent of landowners complain about its utility initiatives, the lowest maturity response to the corresponding survey question.[197]
- Liberty reports that it does not currently have a "demonstratively" cooperative relationship with its communities containing greater than 90 percent of the population in HFTD areas.[198] Based on its response to the corresponding survey question, Liberty plans to improve in this area by 2023. Liberty cooperates with

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[191] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.III.a.

[192] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.III.b.

[193] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.III.c.

[194] Data Request OEIS-LU-22-005, Question 05.

[195] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.III.d.

[196] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.I.f.

[197] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.II.d.

[198] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.II.e.

suppression agencies by notifying them of ignitions, but Liberty does not yet work with these agencies to detect ignitions.[199]

- Liberty reports that its analytics resources and weather data do not accurately predict and communicate forecasted fire propagation paths.[200] Liberty also does not communicate these fire paths to the community as requested.[201]
- Liberty shares its fuel management plans with stakeholders and works with them concurrently to conduct fuel management activity; however, Liberty does not yet coordinate state-wide to focus on areas that would have the biggest impact in reducing wildfire risk.[202] Liberty projects it will have a more state-wide focus by 2023.
- Liberty does not cultivate a native vegetative ecosystem across its territory that is consistent with lower fire risk.[203]
- Liberty does not currently fund local groups (e.g., fire safe councils) to support fuel management, but expects it will do so by 2023.[204]

4.6.10.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle:

- In terms of community engagement and outreach in 2021, Liberty made the following progress:
    - Liberty held 18 virtual and/or in-person meetings with CBOs to expand existing or establish new local relationships, better understand community needs, and identify collaboration opportunities.[205]

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[199] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.IV.a.

[200] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.IV.c.

[201] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.IV.d.

[202] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.V.b.

[203] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.V.c.

[204] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.V.d.

[205] Liberty's 2022 Update, p. 179.

- Liberty held four virtual town halls to provide updates and communicate wildfire safety mitigations happening in respective communities and to answer customer questions.[206]
- Liberty attended or participated in over 23 meetings and events with various community leaders and public safety partners to share information on Liberty's wildfire mitigation efforts, PSPS preparedness, and community outreach efforts.[207]

- During the 2021 Tamarack and Caldor Fires, Liberty embedded liaisons in the CAL FIRE and U.S. Forest Service Emergency Operations Centers (EOCs) to assist in providing real-time utility information and coordination with Incident Command System (ICS) staff, including providing input in the EOC Evacuation/Repopulation meetings during each event.[208]

4.6.10.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for Liberty under the stakeholder cooperation and community engagement section of its 2022 Update.

4.7 Public Safety Power Shutoff (PSPS), Including Directional Vision for PSPS

In recent years, utilities have increasingly used Public Safety Power Shutoffs to mitigate wildfire risk. PSPS events introduce substantial risk to the public and impose a significant burden on public services that must activate during these events. Energy Safety supports the use of PSPS only as a last resort and expects the utilities to present clear plans for reducing the scale, scope, and frequency of PSPS events.

In 2021, Energy Safety separated the reporting of PSPS from the reporting of mitigations and progress metrics to reflect the definition of PSPS as a last resort rather than a mitigation option (pursuant to CPUC Guidance Resolution WSD-002 and CPUC PSPS Decisions 19-05-036

[206] Liberty's 2022 Update, p. 179.

[207] Liberty's 2022 Update, p. 179.

[208] Liberty's 2022 Update, pp. 180-181.

and 20-03-004).[209] This section of the Guidelines[210] requires utilities to report their current and projected progress in PSPS mitigation, including lessons learned from the prior year, de-energization and re-energization protocols, PSPS outcome metrics, plans to reduce future PSPS impacts, and community engagement. The Guidelines specifically require utilities to address Public Utilities Code section 8386(c)(8).[211] requirements to identify circuits that have frequently been de-energized and provide measures for how utilities will reduce the need for, and impact of, future de-energization of those circuits.

4.7.1 Maturity Assessment

A PSPS category does not exist in Energy Safety's Maturity Model: PSPS questions are found under capabilities in various maturity categories. The PSPS-related capabilities referenced here are in the maturity categories of situational awareness, grid operations and operating protocols, and emergency planning and preparedness.

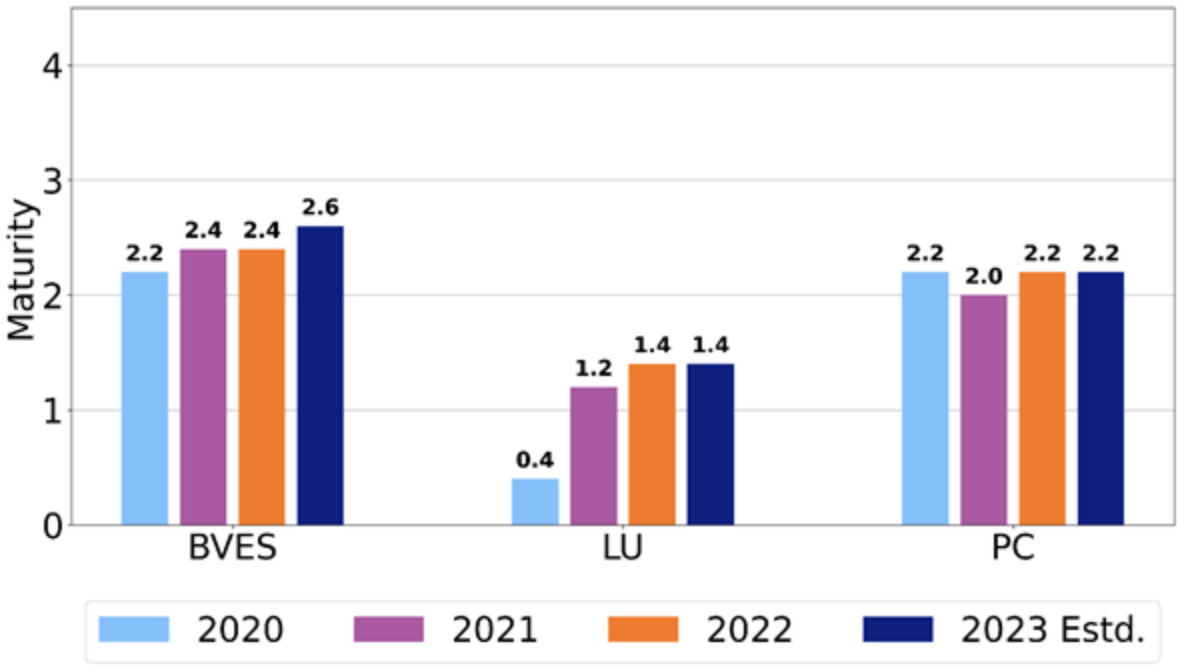
According to its responses on the Maturity Survey, Liberty started the current WMP cycle at a maturity level significantly lower than its peers in several categories and capabilities related to PSPS. In 2020 the utility assessed itself at a maturity level of 0.4 and reached a higher maturity level of 1.2 in its 2021 assessment. Liberty's maturity level rose to 1.4 in 2022 and is projected to remain at 1.4 through 2023. Overall, Liberty has the lowest maturity level in this category compared to BVES and PacifiCorp as shown in Figure 4.7-1.

[209] When calculating RSE for PSPS, electrical corporations generally assume 100 percent wildfire risk mitigation and very low implementation costs because societal costs and impact are not included. When calculated this way, PSPS will always rise to the top as a wildfire mitigation tool, but it will always fail to account for its true costs to customers. Therefore, electrical corporations shall not rely on RSE calculations as a tool to justify the use of PSPS.

[210] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.8 pp. 78-83 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[211] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=8386. (accessed September 6, 2022).

Figure 4.7-1: Maturity Levels for PSPS-Related Capabilities – SMJUs (2020-2022 Actual, 2023 Estimated)



Liberty's maturity level in this category may be limited by the following, as indicated by its responses on the Maturity Survey.

- Liberty reports its ignition risk reduction impact assessment tool is partially automated (less than 50 percent). [212]
- Regarding additional information used to estimate risk reduction impact, as it did in 2021 Liberty reports using the following: existing hardware type and condition including operating history, level and condition of vegetation, and weather. [213]
- The level of redundancy for Liberty's distribution architecture is covering at least 50 percent of customers in the HFTD. [214]

[212] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.IV.b.

[213] Liberty's 2022 Utility Mitigation Maturity Survey, response to A.IV.e.

[214] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.III.b.

- Liberty's sectionalization of its distribution architecture includes switches in HFTD areas to individually isolate circuits, which is below the highest level of maturity. [215]
- PSPS events are communicated to greater than 99 percent of affected customers and greater than 99.9 percent of Medical Baseline customers in advance of PSPS action. [216]
- The circumstances under which Liberty de-energizes circuits does not include "upon detection of damaged electrical equipment." [217]

  The average amount of time it takes to re-energize the grid from a PSPS is within 24 hours of weather subsiding to below Liberty's de-energization threshold. [218]

- Liberty does not currently make public the feedback and recommendations on potential improvements following PSPS events. [219]
- Liberty does not currently track the implementation of recommendations or report on their impact. [220]

Liberty expects to mature in the following areas by 2023:

- Liberty anticipates achieving majority automation (greater than 50 percent) of its ignition risk reduction impact assessment tool by 2023, while full automation would represent the highest maturity. [221]
- Liberty projects incorporating its initiatives already deployed by 2023 to estimate risk reduction impact, which would be the highest maturity for this category. [222]

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[215] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.III.c.

[216] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.III.b.

[217] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.IV.c.

[218] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.V.c.

[219] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.e.

[220] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.h.

[221] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.IV.b.

[222] Liberty's 2022 Utility Mitigation Maturity Survey, response to A.IV.e.

- Liberty anticipates reducing re-energization time to within 18 hours by 2023; highest maturity is indicated by the capacity to re-energize within 8 hours.[223]
- Making feedback public, which Liberty plans to do by 2023, would support transparency and would be the highest maturity for this category.[224]
- Liberty plans to track the implementation of recommendations or report on their impact by 2023, which would be the highest maturity for this category.[225]

4.7.2 Liberty Progress

Liberty has made the following progress thus far in the current WMP cycle.

4.7.2.1 Outcome Metrics

Liberty executed one PSPS event in 2018 but has had no PSPS events resulting in de-energization since 2019. In 2018 and 2021,[226] there were two potential events in which Liberty notified customers and agency partners of the possibility of a PSPS, but Liberty ultimately decided not to de-energize.

Thus far during the current WMP cycle, Liberty has not implemented a PSPS [227] (as shown in Figures 4.7-2, 4.7-3, 4.7-4 below). Overall, for the same time period, Liberty's use of PSPS has not been significantly different from that of BVES and PacifiCorp in terms of event frequency: BVES reports no PSPS events and PacifiCorp reports two.

[223] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.V.c.

[224] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.e.

[225] Liberty's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.h.

[226] Liberty's 2022 Update, p. 176.

[227] Liberty's 2022 Update, "Table 11: Recent use of PSPS and other PSPS metrics."

Figure 4.7-2: Recent Use of PSPS: Frequency of PSPS Events (Total) – SMJUs (2018-2021 Actual, 2022 Projected)

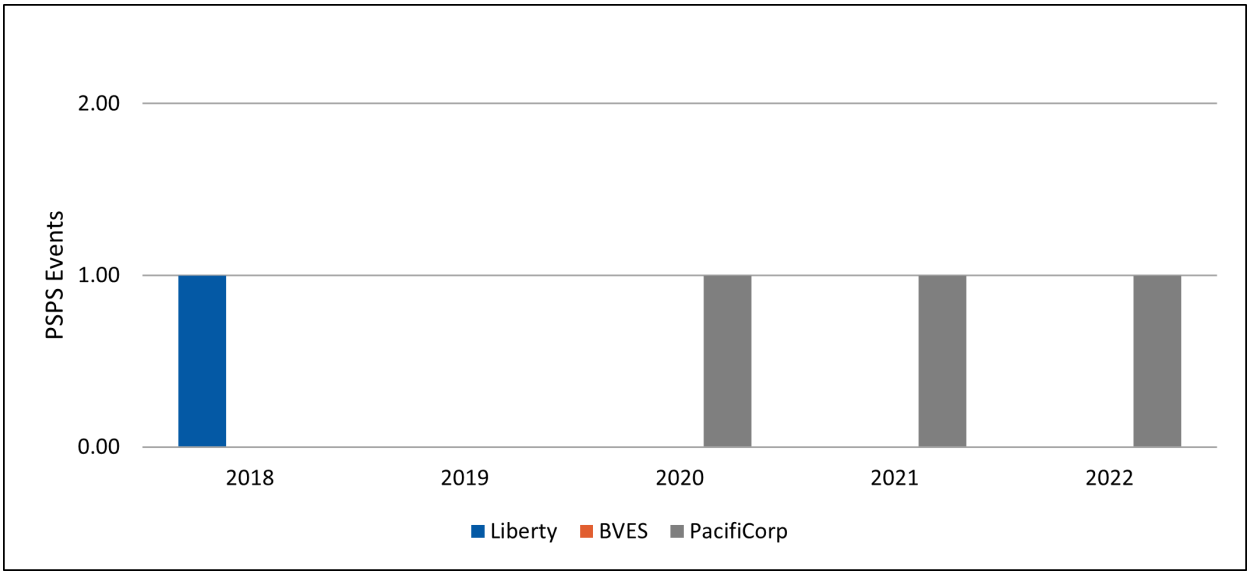


Figure 4.7-3: Recent Use of PSPS Circuits: Scope of PSPS Events (Total) – SMJUs (2018-2021 Actual, 2022 Projected)

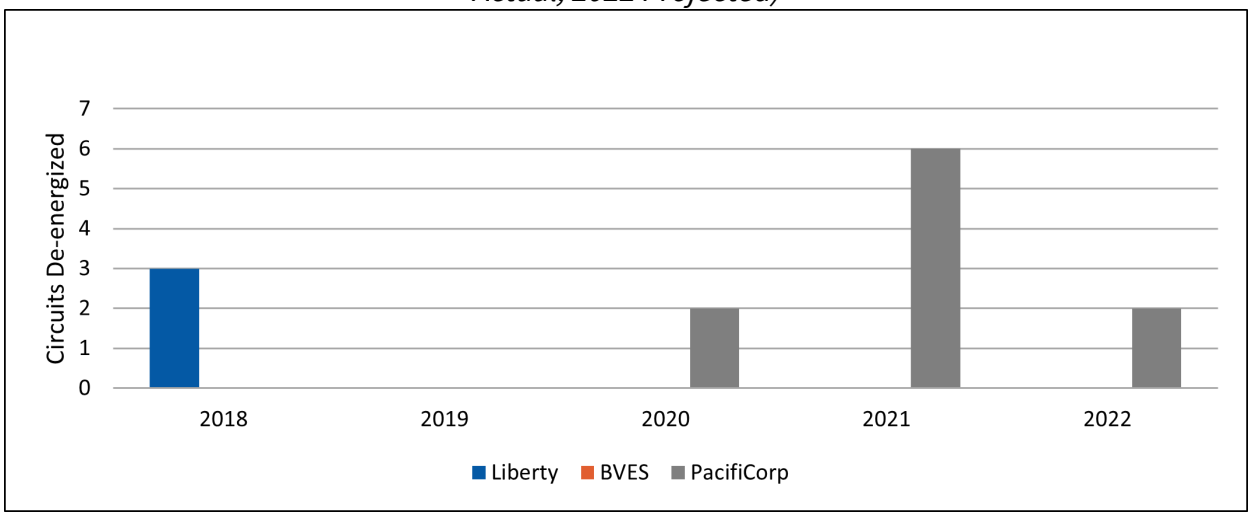
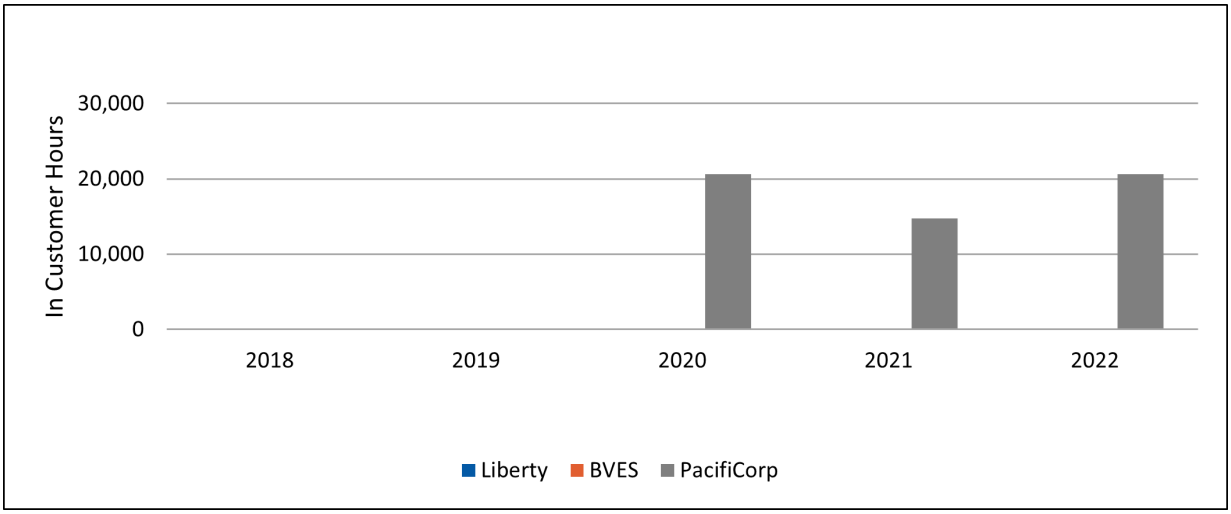


Figure 4.7-4: Recent Use of PSPS, Duration of PSPS Events (Total) – SMJUs (2018-2021 Actual, 2022 Projected)



4.7.2.2 PSPS Preparedness and Methodology

Liberty acknowledges the increase in catastrophic wildfire activity the state is experiencing, and, despite PSPS having been used infrequently in its service territory, Liberty has invested heavily in its PSPS program as a tool of last resort. It has worked to increase its level of preparedness and to minimize potential impacts to customers. Liberty has benefited from and implemented lessons learned to improve its PSPS plan in 2022, including from the two potential PSPS events where the decision was made not to de-energize, as well as training exercises and collaboration with stakeholders experienced with PSPS events. Liberty reports the following key lessons learned:

- Provide more information on specific PSPS events to stakeholders through improvements to the Public Safety Partner portal.
- Make more efficient use of time at incident management team meetings by having sub-meetings to prepare for situational report outs.
- Improve critical facility mapping for incorporation in GIS and the customer information system.
- Make Liberty departments aware of the need for all available staff to assist in Liberty's PSPS response through improved PSPS event communication.
- Make roles and responsibilities clear for incident management team by consolidating PSPS operations and communications playbooks.

Liberty plans to update its PSPS decision-making methodology over the next three years. Its existing model, based on weather characteristics, does not account for WMP initiative implementation that may reduce the probability of ignition. Liberty plans to include its system hardening efforts, situational awareness advancement, and new technology as inputs into its PSPS decision-making.[228] Liberty aims to build resiliency corridors that reduce PSPS impacts and frequency by installing covered conductor and microgrids in high fire risk areas. As these initiatives are implemented in the next few years and ignition risk is reduced, Liberty reports that it will update its PSPS model to reflect improvements in its PSPS thresholds.

4.7.2.3 Protocols for De-Energization and Re-Energization

In its 2022 Update, Liberty describes its PSPS protocols and planning, from monitoring to de-energization and re-energization. It has strategies to provide all field response employees with safety training aligned with their respective roles, including those managing electrical switching in coordination with appropriate controlling parties to enhance employee and public safety.[229]

Liberty has made several updates to its 2022 PSPS Playbook including the following:

- Liberty identified the need for a more robust PSPS Liaison Group, rather than a single Liaison. The updated playbook notes the need for Public Safety and Critical Infrastructure, Regulatory, CBO, and AFN Liaisons. Previously, Liberty had separate playbooks for PSPS communications and operations. Lessons learned indicated that a single playbook would be more efficient and user-friendly for Liberty staff.
- Liberty restructured the PSPS stages, amending the names for two of the PSPS stages and providing a new link to submit California Office of Emergency Services (Cal OES) notification forms online.
- Liberty streamlined aspects of the PSPS process by determining that the entire ICS Incident Management Team (IMT) is not required for the initial weather review and PSPS decision making process.[230]

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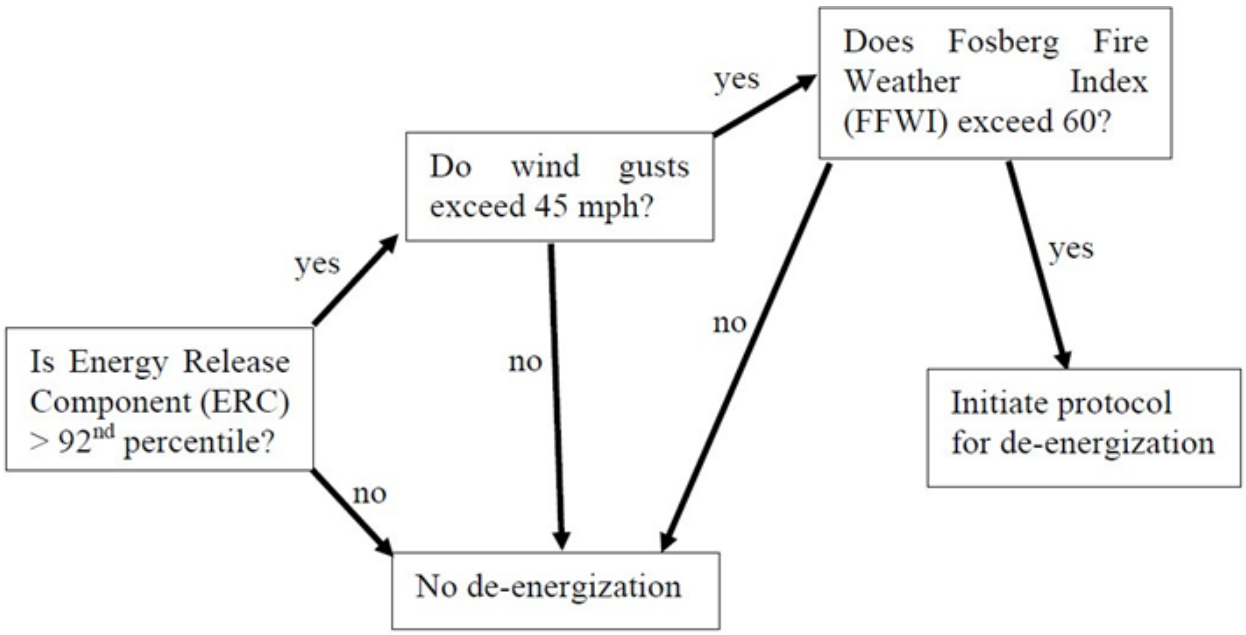
[228] Liberty's 2022 Update, redlined, p. 182-183.

[229] Liberty's 2022 Update, redlined, p. 181.

[230] Data Request OEIS-LU-22-002, Question 03.

Liberty provides two de-energization decision trees for determining whether to initiate and scope a PSPS event. De-energization thresholds are the same in all PSPS zones, except "Topaz" and "Muller 1296 r3," which have been assigned de-energization thresholds higher than the baseline values established earlier due to consistently higher wind speeds in these areas.[231] Figure 4.7-5 shows the decision tree for Topaz and Muller 1296 r3 PSPS zones, and Figure 4.7-6 shows the decision tree for other PSPS zones.

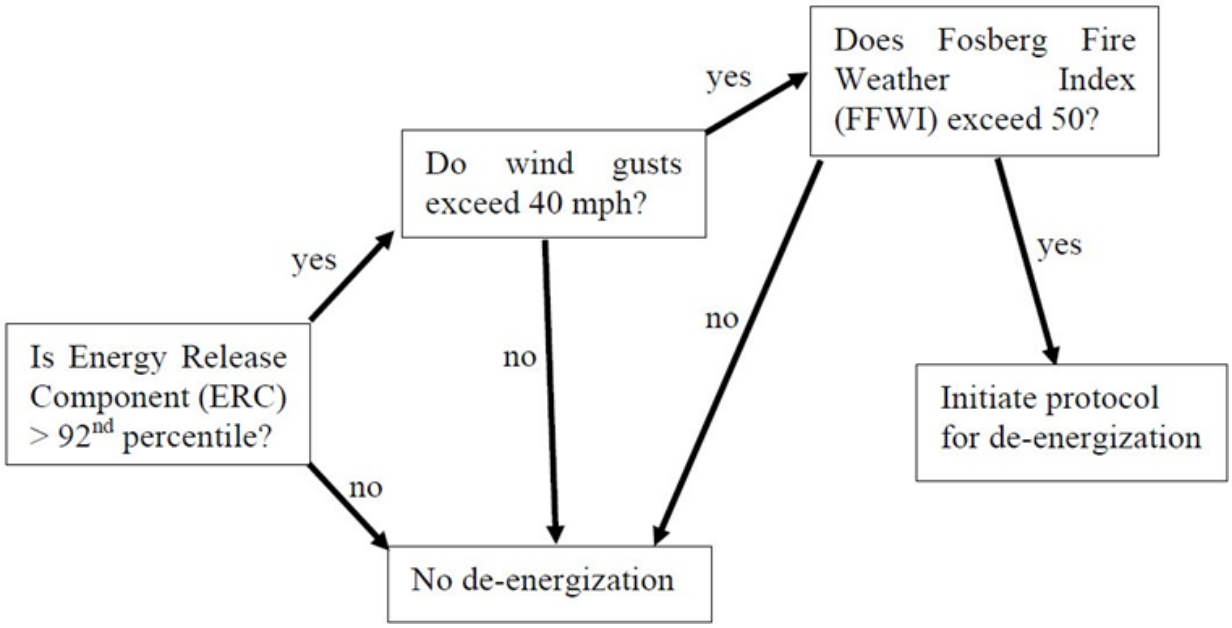
Figure 4.7-5: De-Energization Decision Tree for Topaz and Muller 1296 r3 PSPS Zones (Source: Liberty)[232]



[231] Data Request OEIS-LU-22-002, Questions 02 and 03.

[232] Liberty's 2022 Update, page 183.

Figure 4.7-6: De-Energization Decision Tree for Other PSPS Zones (Source: Liberty)



With regard to forecasting, currently Liberty uses a combination of Energy Release Component (ERC) percentile, wind gust, and Fosberg Fire Weather Index (FFWI) to assess de-energization decisions. The current threshold for most PSPS zones is 40 mph wind gusts and FFWI of 50, with slightly higher thresholds for circuits in windier areas.[233] Factors considered in decision making include data from additional weather stations, forecasting information from the National Weather Service Office in Reno, Nevada, modeling based on collaboration with REAX Engineering, a fire weather scientific consultant, and expertise and knowledge of local fire officials.

With regard to risk assessment, Liberty reports it has focused extensive efforts on evaluating its current PSPS protocols and expanding on those protocols. For example:

- Liberty consulted with a fire and weather scientific consultant to formulate an enhanced version of its fire weather forecasting tool. This now includes an additional parameter known as Burning Index (BI). BI adds an increased layer of information regarding fire potential to its predictive formula.
- Liberty supplemented existing weather stations with BI information on newly installed additional weather stations to provide increased granularity in determining the ability

[233] Liberty's 2022 Update, redlined, p. 178.

to sectionalize based on recloser locations or where to provide increased patrols by field teams.[234]

- By its 2023 WMP, Liberty reports that it will expand its risk modeling work to generate zonal statistics for each circuit to summarize fire model outputs at the circuit level, which would make existing PSPS zones more precise.

4.7.2.4 Community Engagement

Liberty provides mobile generation, communication devices, charging stations and batteries for Medical Baseline customers. It has established a network of Community Resource Centers (CRCs) to assist communities in real time during extreme weather events, which factor in safety needs for AFN, Medical Baseline, and other vulnerable populations.

In 2021, Liberty worked to make potential PSPS events less burdensome for its customers, including, through development of partnerships with CBOs, to help support AFN customers with resources before, during and after PSPS events or wildfires; updating its website to share more PSPS preparedness, awareness, and status information; modifying its internal systems to improve ability to track AFN categories beyond MBL; and developing a self-identification tool available on its website in both English and Spanish.

Liberty indicates that in 2022 it will continue to establish partnerships with CBOs and continue to integrate these groups into PSPS operations. Liberty continues to notify AFN customers before, during, and after a PSPS through nine described methods (e.g., push notifications, website, physical visits). This further supports Liberty's statement that it prioritizes preparation for PSPS, despite rarely if ever implementing one.

4.7.2.5 Frequently De-Energized Circuits

A frequently de-energized circuit is defined as a circuit which has been de-energized pursuant to a de-energization event to mitigate the risk of wildfire three or more times in a calendar year.[235] Liberty has not executed a PSPS event resulting in de-energized circuits since the program was developed in 2019.

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[234] Liberty's 2022 Update, p. 189.

[235] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.4 p. 15 (accessed September 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true:
"Frequently de-energized circuit" has been defined in the Guidelines glossary as "A circuit which has been de-energized pursuant to a deenergization event to mitigate the risk of wildfire three or more times in a calendar year."

4.7.3 Areas for Continued Improvement

In addition to progress made, Liberty must continue to improve in the following areas:

In Sections 8.1 and 8.3, Liberty conceptually describes its plans to reduce PSPS, acknowledges its investment in PSPS as a tactic of last resort, and provides an overview of recent lessons. In Section 8.1, Liberty indicates that as it implements more technology, system hardening, situational awareness, and modeling capabilities, those efforts will reduce impacts and frequency of PSPS events and service interruptions.[236] Liberty has provided some targets for reducing PSPS in fields of Table 11, "Recent use of PSPS and other PSPS metrics," but has not provided ambitious targets in other fields (e.g., zero values). It has also not quantified its near term PSPS reduction goals elsewhere in the 2022 Update. Liberty indicates that in 2022 it will be working to create a PSPS risk model that helps to quantify the risk of de-energizing power lines on customers so that it can weigh risks against the consequences of ignition under extreme wildfire conditions.[237] In its 2023 WMP, Liberty must provide quantifiable risk reduction projections of frequency, scope, and duration of PSPS events during the plan term, including timelines for achieving these reductions. Energy Safety expects that Liberty will be able to fully quantify expected progress-based risk model developments (described in Section 8) through 2022. Liberty can use its modeled results to more comprehensively report expected reductions of, and benefits to impacted customers and circuits.

Energy Safety sets forth specific areas for improvement and associated required progress in Section 7.

[236] Liberty's 2022 Update, pp. 182-183.

[237] Liberty's 2022 Update, p. 183.

5. Next Steps

Liberty is expected to continue to mature over the coming year. However, Liberty must specifically demonstrate the required progress set forth in Section 7.

5.1 Change Orders

If Liberty seeks to modify (reduce, increase, or end) WMP mitigation measures in response to data and results on electrical corporation ignition risk reduction impacts, Liberty must submit a Change Order Request. For information and requirements regarding the change order process, refer to the 2022 Change Order Guidelines.[238]

[238] 2022 Change Order Guidelines (accessed August 25, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52883&shareable=true. Draft Revised 2022 Change Order Guidelines (accessed Oct. 26, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53099&shareable=true.

6. Consultation with the Office of the State Fire Marshal

The Office of the State Fire Marshal is a CAL FIRE program. Public Utilities Code section 8386.3(a) requires Energy Safety to consult with the Office of the State Fire Marshal in reviewing electrical corporations' WMPs and WMP Updates. Energy Safety and CAL FIRE have a memorandum of understanding in place to facilitate this consultation.[239] The Office of the State Fire Marshal participated in all aspects of the evaluation, but this Decision does not purport to speak for the Office of the State Fire Marshal or CAL FIRE.

[239] Required by Public Utilities Code § 8386.5.

7. List of Liberty's Areas for Continued Improvement and Required Progress

Energy Safety evaluated 2022 Updates with a particular focus on how each utility is driving down the risk of utility-related ignitions. The evaluation included assessing the utility's progress implementing wildfire mitigation initiatives, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety identified areas where the utility should continue to improve its wildfire mitigation capabilities in future plans. The complete list of all Liberty's areas for continued improvement follows below.

- **LU-22-01. Collaboration and Research in Best Practices in Relation to Climate Change Impacts and Wildfire Risk and Consequence Modeling.**
    - Description: While Liberty includes some climate projections within its modeling, Liberty does not sufficiently account for climate change in its planning.
    - Required Progress: Prior to the submission of their 2023 WMPs, all electrical corporations (not including independent transmission operators) must participate in an Energy Safety-led scoping meeting to discuss how utilities can best learn from each other, external agencies, and outside experts on the topic of integrating climate change into projections of wildfire risk. They must also participate in any follow-on activities to this meeting. In addition, the climate change and risk modeling scoping meeting will identify future topics to explore regarding climate change modeling and impacts relating to wildfire risk. This scoping meeting may result in additional meetings or workshops or the formation a working group. Energy Safety will provide additional details on the specifics of this scoping meeting in due course.
    - Discussed in Section 4.6.1, "Risk Assessment and Mapping."

- **LU-22-02. Inclusion of Community Vulnerability in Consequence Modeling.**
    - Description: Liberty does not currently include the impacts of wildfire on communities, such as community vulnerability, within consequence modeling.
    - Required Progress: Prior to the submission of their 2023 WMPs, all electrical corporations (not including independent transmission operators) must participate in an Energy Safety-led scoping meeting to discuss how to best learn from each other, external agencies and outside experts. They must also participate in any follow-on activities to this meeting. In addition, the community vulnerability scoping meeting will identify future topics to explore regarding integration of community vulnerability into consequence modeling and impacts relating to wildfire risk. This scoping meeting may result in an additional meetings or workshops or the formation of a working group. Energy Safety will provide additional details on the specifics of this scoping meeting in due course.
    - Discussed in Section 4.6.1, "Risk Assessment and Mapping."

- **LU-22-03. Wildfire Consequence Modeling Improvements.**
    - Description: Liberty's risk model is limited in its evaluation of wildfire spread based on timing limitations as well as suppression effects.
    - Required Progress: As part of the Energy Safety's final decisions on the 2022 Updates of PG&E, SCE, and SDG&E, the large IOUs are required to evaluate spread timing and suppression effects for wildfire consequence modeling. Liberty must leverage these findings and implement the measures identified by the large IOUs into its consequence modeling, where appropriate. In its 2023 WMP, Liberty must explain which measures it selected for implementation and provide a report on its progress.
    - Discussed in Section 4.6.1, "Risk Assessment and Mapping."

- **LU-22-04. Review, Re-categorize and Fully Justify Risk Events that are Defined as "Other" and "Unknown."**
    - Description: Within Tables 7.1 and 7.2 (2022 Update), many of Liberty's risk events are grouped in categories defined as "other" or "unknown."
    - Required Progress: In its 2023 WMP, Liberty must:

    - Identify and review the causes of risk events that fall within the "other" category.
    - Determine where new categories of risk events can be created based on any common causes found, with a goal of reducing the number of risk events that fall under the "other" category.
    - Provide a plan for conducting a root cause analysis of "unknown" events; this should include how Liberty will review the findings of root cause analysis. Based on the findings of root cause analyses; Liberty must reduce the number of risk events falling within the unknown category.
  - Discussed in Section 4.6.1, "Risk Assessment and Mapping."

- **LU-22-05. Further Evaluate Risk Trends to Apply More Specific Lessons Learned.**
  - Description: Liberty's current risk trend analysis is not granular enough when applying lessons learned.
  - Required Progress: In its 2023 WMP, Liberty must:
    - Perform root cause analyses to determine specific causes for ignitions and risk events.
    - Implement changes based on lessons learned both at a cause-specific and programmatic level to reduce wildfire risks moving forward.
    - Include descriptions to how root cause analyses and changes are directly related.
  - Discussed in Section 4.6.1, "Risk Assessment and Mapping."

- **LU-22-06. Update Equipment and Procedures for Detecting Ignitions Along the Grid.**
  - Description: Liberty does not currently have any procedures or well-defined equipment for detecting ignitions along the grid.
  - Required Progress: In its 2023 WMP, Liberty must provide an update on progress and details on the equipment it has operationalized and procedures it has developed for detecting ignitions along the grid.
  - Discussed in Decision Section 4.6.2, "Situational Awareness and Forecasting."

- **LU-22-07. Update Progress Associated with Distribution Fault Anticipation / High-Impedance Fault Detection Research.**
    - Description: Liberty had distribution fault anticipation (DFA) technology and high-impedance fault detection (HIFD) projects that experienced delays in 2021 due to contract terms and fire activity commitments. Liberty is now behind in its progress for these projects and are now planning to complete them in 2022.
    - Required Progress: In its 2023 WMP, Liberty must provide an update on its progress on its DFA technology installation and HIFD projects, including any evaluations that have been done on the effectiveness of the technologies since deployment.
    - Discussed in Decision Section 4.6.2, "Situational Awareness and Forecasting."

- **LU-22-08. Justification of Weather Station Density.**
    - Description: Liberty reports experiencing delays in deploying weather stations in 2021 and reduced the total number of weather stations it plans to install across its service territory by one weather station. Liberty states that this reduced total number of weather stations will be adequate coverage for its territory.
    - Required Progress: In its 2023 WMP, Liberty must discuss its assessment of weather station density and how the total number of weather stations for its service territory was determined, including any weather station to circuit mapping analysis that has been done to determine spatial gaps in weather stations coverage.
    - Discussed in Decision Section 4.6.2, "Situational Awareness and Forecasting."

- **LU-22-09. Apply Joint Lessons Learned Concerning Covered Conductor.**
    - Description: Liberty has not yet provided goals or timelines for implementing lessons learned from the covered conductor effectiveness joint study.
    - Required Progress: In its 2023 WMP, Liberty must:
        - Provide a list of goals with planned dates of implementation for any lessons learned from the covered conductor effectiveness joint study.
        - Provide a table indicating which WMP sections include changes (compared to its 2021 and 2022 Updates) as a result of the covered

conductor effectiveness joint study. This should include, but not be limited to:

- Changes made to covered conductor effectiveness calculations.
- Changes made to initiative selection based on effectiveness and benchmarking across alternatives.
- Inclusion of rapid earth fault current limiter (REFCL), open phase detection (OPD), early fault detection (EFD), and distribution fault anticipation (DFA) as alternatives, including for PSPS considerations.
- Changes made to cost impacts and drivers.
- An update on data sharing across utilities on measured effectiveness of covered conductor in-field and pilot results, including collective evaluation.

  - Discussed in Section 4.6.3, "Grid Design and System Hardening."

- **LU-22-10. Determine Best Practices for Covered Conductor Inspection and Maintenance.**
  - Description: Liberty lacks specific directives for inspection procedures regarding covered conductor inspection and maintenance.
  - Required Progress: All electrical corporations (not including independent transmission operators) must work to share and determine best practices for inspecting and maintaining covered conductor, including either augmenting existing practices or developing new programs. This should be considered as a continuation of the covered conductor effectiveness joint study established by Energy Safety's 2021 WMP Action Statements. The study will continue to be utility-led, with the expectation for Energy Safety to be included as a participant. A report on progress on this continuation of the covered conductor effectiveness joint study will be expected in the 2023 WMPs.
  - Discussed in Section 4.6.3, "Grid Design and System Hardening."

- **LU-22-11. Address Unmet Grid Hardening Targets.**
  - Description: Liberty fell behind on its grid hardening targets in 2021, including covered conductor, pole replacements, and installing sectionalization devices.

- Required Progress: In its 2023 WMP, Liberty must provide its plan for addressing its unmet 2021 grid hardening targets. This plan should include resource allocation (including labor and materials), adjustments made to future targets based on incomplete 2021 targets, and corrections based on lessons learned to prevent future delays.
- Discussed in Section 4.6.3, "Grid Design and System Hardening."

- **LU-22-12. Progress on Formal QA/QC Program for Asset Inspections.**
  - Description: Liberty has not implemented its formal QA/QC program for asset inspections, and therefore has yet to undergo an iteration with associated findings and results.
  - Required Progress: In its 2023 WMP, Liberty must:
    - Provide the results of the QA/QC completed for asset inspections in 2022, including pass rate for each inspection type.
    - Explain any lessons learned based on findings of the asset inspections from the QA/QC process.
    - Describe any changes made to the QA/QC program, if any, based on lessons learned from implementation.
  - Discussed in Section 4.6.4, "Asset Management and Inspections."

- **LU-22-13. Further Integrate Risk-Informed Decision Making into Inspection Scheduling and Planning.**
  - Description: While Liberty states it uses some risk-informed prioritization for inspections based on Tier 2 and Tier 3 designations and consequence modeling, Liberty has not yet implemented risk modeling-informed enhancements in its inspection program.
  - Required Progress: In its 2023 WMP, Liberty must:
    - Provide a timeline detailing when Liberty plans to implement risk modeling-informed enhancements for each of its inspection types.
    - Enhance and augment its existing inspections so that it reflects risk modeling outcomes (i.e., increased frequency, changes in inspection lists).

        - Provide an update on its evaluations for including infrared as part of its asset inspections.
    - Discussed in Section 4.6.4, "Asset Management and Inspections."

- **LU-22-14. Participate in Vegetation Management Best Management Practices Scoping Meeting.**
    - Description: Vegetation management processes and protocols for the reduction of wildfire risk are not uniform across electrical corporations.
    - Required Progress: Prior to the submission of their 2023 WMPs, Liberty and all other electrical corporations (not including independent transmission operators) must participate in an Energy Safety-led scoping meeting to discuss how utilities can best learn from each other and future topics to explore regarding vegetation management best management practices for wildfire risk reduction. Liberty must also participate in any follow-on activities to this meeting. This vegetation management best management practices scoping meeting may result in additional meetings or workshops or the formation of a working group. Energy Safety will provide additional details on the specifics of this scoping meeting later in 2022.
    - Discussed in Decision Section 4.6.5, "Vegetation Management and Inspections."

- **LU-22-15. Improve Transparency of the Initiative Selection Process.**
    - Description: As presented, Liberty's risk determination and initiative selection process lacks full transparency. Specifically, Liberty does not clearly explain or pinpoint where RSE estimates are considered in its decision-making process. In addition, Liberty's decision-making flow chart does not define each step towards initiative deployment.
    - Required Progress: In its 2023 WMP, Liberty must describe in detail and demonstrate where RSE estimates are considered in its WMP initiative selection decision-making flowchart. In addition, Liberty must explain its initiative selection process with greater granularity and further break out its flowchart to show steps taken from evaluation to deployment.

- Discussed in Section 4.6.8, "Resource Allocation Methodology."

- **LU-22-16. Commit to Short-Term PSPS Reduction Targets**
  - Description: Liberty's 2022 Update does not fully describe quantified short-term PSPS reduction commitments and mitigation initiative targets either in Table 11 or in Section 8.
  - Required Progress: In its 2023 WMP, Liberty must provide quantifiable risk reduction projections of frequency, scope, and duration of PSPS events during the plan term, including timelines for achieving these reductions. Energy Safety expects that Liberty will be able to fully quantify expected progress-based risk model developments (described in Section 8) through 2022. Liberty can use its modeled results to more comprehensively report expected reductions of, and benefits to, impacted customers and circuits.
  - Discussed in Section 4.7, "Public Safety Power Shutoff (PSPS), Including Directional Vision for PSPS."

8. Conclusion

Liberty's 2022 Update is approved.

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electrical corporations, including Liberty, must continue to make progress toward reducing utility-related ignition risk. Energy Safety expects Liberty to effectively implement its wildfire mitigation activities to reduce the risk of utility-related ignitions and the potential catastrophic consequences if an ignition occurs, as well as to reduce the scale, scope, and frequency of PSPS events. Liberty must meet the commitments in its 2022 Update and fully comply with the conditions listed in this Decision to ensure it meaningfully reduces of utility-related ignition and PSPS risk within its service territory.

Melissa Semcer
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Office of Energy Infrastructure Safety

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APPENDICES

Appendix A. Status of 2021 WMP Issues

Energy Safety's 2021 Update Action Statement for each utility contained a set of "issues" and associated "remedies." Each issue was categorized into one of three groups:

- *Critical issues* were those for which Energy Safety issued a Revision Notice to the utility with required remedies. The utility submitted a revised Update addressing the critical issues, and Energy Safety re-evaluated the Update with the utility's revisions. Upon that review, issues may have been downgraded to either "key areas for improvement" or "additional issues," or were fully resolved.
- *Key areas for improvement were* areas Energy Safety identified as significant to reducing utility-related wildfire risk. Energy Safety provided remedies that utilities were required to address over the course of the year. Utilities were required to report on progress in these key areas in a progress report submitted to Energy Safety on November 1, 2021.
- *Additional issues* were those Energy Safety identified as areas for continued improvement to increase the maturity of the utility's wildfire mitigation capabilities. Energy Safety provided remedies that utilities were required to address over the course of the year. Utilities were required to report on progress in the 2022 Update.

Issues identified in 2021 either have been resolved or are incorporated in the 2022 areas for continued improvement. The 2021 key areas for improvement are listed in Table A-1. The status column indicates whether each has been fully remedied. If not, the column notes where to find more information in this Decision.

Table A-1. Liberty 2021 Key Issues Status

Issue #	Title	Status
LU-21-01	No climate-driven risk mapping	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
LU-21-02	Lack of consistency in approach to wildfire risk modeling across utilities	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
LU-21-03	Limited evidence to support the effectiveness of covered conductor	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
LU-21-04	Lack of current inspection QA/QC program	Sufficiently addressed thus far; Energy Safety will continue to monitor progress. For discussion of progress and related areas for continued improvement see section 4.6.4 of this Decision.
LU-21-05	Lack of improvement to visual and detailed asset inspections that specifically target assets and asset components with high ignition risk and areas of highest wildfire risk	Liberty did not sufficiently address the required remedy. For more information on how the utility must improve, see areas for continued improvement, section 4.6.4 of this Decision
LU-21-06	Inadequate justification of vegetation management inspection frequency	Liberty sufficiently addressed the required remedy. For more information about Liberty's progress in this area, see section 4.6.5.2 of this Decision.

Issue #	Title	Status
LU-21-07	Equivocating language used to describe risk-based decision-making improvements	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
LU-21-08	Limited discussion on reduction of size, scale, and frequency of PSPS	Liberty has sufficiently addressed the required remedy thus far; Energy Safety will continue to monitor progress as addressed in the areas for continued improvement in section 4.7.3 of this Decision.

Appendix B. Energy Safety Data Request Responses

The following are data requests and their responses from Liberty referenced in the Decision.

Regarding: Table 5-2, Program Targets, Weather Stations

Data Request: OEIS-LU-22-001, Question 02

Request date: July 20, 2022

Request:

a. In Liberty's 2021 WMP Update there was a program target to install 10 weather stations in 2021 and 1 additional weather station in 2022. In the 2022 WMP update, liberty reported 0 weather stations installed in 2021 and 10 weather station installments in 2022.

i. Provide an explanation why Liberty missed its weather station targets in 2021.

ii. Explain why Liberty is only planning on installing 10 in 2022, rather than the original projected target of 11 between 2021 and 2022?

Response date: July 25, 2022

Response:

a.

i. Liberty experienced challenges obtaining the 10 weather stations due to supply chain issues. Notwithstanding the supply chain issues, the impact of the Tamarack and Caldor fire responses would likely not have allowed time to install all targeted weather stations in 2021.

ii. Liberty has identified 10 site locations for additional weather stations and has determined that number to be sufficient for the service territory. Liberty has planned for one additional station in 2023 for any possible new locations that may be needed, or for the replacement of any failed weather stations if necessary

Regarding: De-energization Decision Trees

Data Request: OEIS-LU-22-002, Question 02

Request date: July 29, 2022

Request:
On page 188, Liberty indicates it "employs two de energization decision trees, one for the Topaz and Muller 1296 r3 PSPS zones, and another for all other zones," but does not indicate why. Explain the reason for the different decision trees.

Response date: August 3, 2022

Response:
Refer to Section 6.1 of Attachment: "Data Request OEIS-LU-22-002_Q2."[240]

Regarding: 2022 PSPS Playbook

Data Request: OEIS-LU-22-002, Question 03

Request date: July 29, 2022

Request:
On page 182, Liberty indicates two potential PSPS events as well as training exercises and collaboration with stakeholders familiar with PSPS events, have led to lessons learned in the form of post-event reports, hot washes, and cooperator feedback. Liberty states that the lessons learned have been captured in the PSPS playbook, first developed in 2020, with an updated version in 2022 to incorporate additional lessons learned and process flow for executing a PSPS event.

a. Provide a copy of the 2022 PSPS Playbook.

b. Describe improvement themes and types of updates made tofor the 2022 version.

Response date: August 3, 2022

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[240] Attachment "Data Request OEIS-LU-22-002_Q2" is a document titled "De-energization Thresholds for Prevention of Catastrophic Wildfires".

Response:

a. Refer to Attachment: "Data Request OEIS-LU-22-002_Q3a."[241]

b. Improvement themes and types of updates made in Liberty's 2022 PSPS Playbook include:

- Liberty identified the need for a more robust PSPS Liaison Group. Rather than a single Liaison, the revised playbook notes Liaison roles for:

i. Senior Manager Wildfire Prevention—Public Safety and Critical Infrastructure Liaison

ii. Manager for Regulatory Affairs—Regulatory Liaison

iii. Sr Manager for Customer Solutions—CBO Liaison

iv. Manager Customer Care II—AFN Liaison

- Previously, Liberty had separate playbooks for PSPS communications and operations. Lessons learned indicated that a single playbook would be more efficient and user-friendly for Liberty staff. Liberty's 2022 PSPS playbook combines both previous PSPS playbooks for communications and operation.

- Other recent changes by OES reflected in Liberty's 2022 PSPS Playbook include OES name changes for two of the PSPS stages and the new link to submit OES notification forms online.

- Lessons learned have indicated that the entire ICS Incident Management Team (IMT) is not required for the initial weather review and PSPS decision making process. Liberty's updated PSPS Playbook (page 11) delineates a PSPS Steering Committee with the key decision makers that meet prior to convening the IMT. The PSPS Steering Committee makes PSPS decisions and conducts incident action planning. The full IMT meets subsequently and is briefed on the decisions and the Incident Action Plan. Liberty successfully tested this approach with the 2021 winter storm event and in Liberty's 2022 Table Top exercises.

[241] Attachment "Data Request OEIS-LU-22-002_Q3a" is a document titled "PSPS Communications Playbook" upated June 13, 2022.

Regarding: Risk Event Increases

Data Request: OEIS-LU-22-002, Question 07

Request date: July 29, 2022

Request:
From 2021 to 2021, as shown in Table 7.2, Liberty had an increase in risk events from "Other" and "Unknown." For instance, there were 74 distribution outages for other in 2021, compared to 52 in 2020.

a. What causes are included under the "Other" category? Provide a breakdown by type of cause.

b. Has Liberty performed any investigations or root cause analyses for the increases in "Other" risk events? If so, provide a summary of results from such analysis, including any lessons learned Liberty has applied to prevent future similar risk events from occurring.

c. How does Liberty lower "Other" category events?

d. Why has Liberty seen an in "Unknown" risk events? How is Liberty working to lower instances of "Unknown" events moving forward?

Response date: August 3, 2022

Response:
a. The main causes included in the "Other" category are related to weather events, specifically wind and snow unloading.

b. The increase in occurrences of "Other" risk events in Q4 2021 is due to a winter storm event in December 2021.

c. Liberty's grid hardening initiatives are expected to improve reliability and could lower "Other" category risk events associated with weather events. Additionally, Liberty is working to improve its data schema to enable more granular data collection and will continue to implement training around data input and data QA/QC.

d. Liberty's "Unknown" category captures risk events that cannot be specifically identified in its database. The increase in occurrences of "Unknown" risk events in Q4 2021 is likely due to the winter storm event in December 2021 based on the time of the events. High numbers of "Unknown" outages during emergency situations and hazardous conditions are

typical due to data input issues. To lower instances of "Unknown" events, Liberty is working to improve its data schema to enable more granular data collection and will continue to implement training around data input and data QA/QC. Additionally, Liberty is working toward increasing communication between system control, dispatch and linemen in the field to decrease the number of "Unknown" events.

Regarding: Covered Conductor Maintenance

Data Request: OEIS-LU-22-002, Question 09

Request date: July 29, 2022

Request:
Liberty does not have a separate program for covered conductor maintenance. Has Liberty made any modifications to its existing inspections to specifically address covered conductor (i.e., added covered conductor-specific items to inspection checklists)? If so, provide all supporting material.

Response date: August 3, 2022

Response:
For Liberty's ACS covered conductor projects, the manufacturer, Hendrix, performs a detailed inspection of the entire project once it is completed. The inspection performed by the manufacturer is documented in a report. Refer to: "Attachment Data Request OEIS-LU-22-002_Q9"[242] as an example manufacturer inspection report. Additionally, Liberty is considering additional items specific to covered conductor to include on its detailed inspection forms.

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[242] Attachment "Data request OEIS-LU-22-002_Q9" is a document titled :Liberty Utilities CA-Lake Tahoe Inspection Report".

Regarding: Undergrounding Project

Data Request: OEIS-LU-22-002, Question 10

Request date: July 29, 2022

Request:
During a call with Liberty on July 27, 2022, Liberty discussed an undergrounding project targeting resiliency.

a. Is this project covered within the 2022 WMP? If so, provide the relevant page(s) where it is covered.

b. What is the circuit mileage for this project?

c. How was the location and scope of this project selected?

d. How does this project relate to wildfire and/or PSPS risk?

e. What is the timeline for this project (particularly scoping, completion and energization)?

f. In Table 5.3-1, for undergrounding, Liberty shows 1.03 miles was completed in 2021 and 0.36 are targeted for 2022. Is this in relation to Rule 20A projects, or the project discussed in parts (a) through (e) above?

Response date: August 3, 2022

Response:
a. No.

b. The circuit mileage of the project is 0.4 miles.

c. The location of this project is in South Lake Tahoe adjacent to the Stateline Substation. The 2200 circuit portion of the project is on Montreal Road extending from the substation about 1,100 feet to the northeast ending just north of Heavenly Village Way. The 2300 circuit portion of the project extends about 1,000 feet along the access road southwest of the shopping center from the substation to the point where the existing circuit goes underground close to Lake Tahoe Blvd. Both sections of the project extend underground from the substation to existing underground portions of the circuits.

d. This project hardens key portions of the 2200 and 2300 circuits in locations close to their power source, the Stateline Substation. The project creates a resiliency corridor and mitigates wildfire ignition potential in a way that is more effective than a conventional overhead line replacement or covered conductor project. It also can lead to the ability to leave the underground portions of these circuits energized during a PSPS event.

e. Liberty is currently in the planning stage on this project and will proceed to design work in 2022. Construction is planned for 2023.

f. Undergrounding data previously submitted did not include this project. The 1.03 miles of undergrounding reported for 2021 was due to a Rule 20 project. The 0.36 miles of undergrounding reported for 2022 is due to undergrounding needed on portions of two of Liberty's covered conductor projects not related to Rule 20.

Regarding: Open Work Orders

Data Request: OEIS-LU-22-002, Question 13

Request date: July 29, 2022

Request:
In 2020, Liberty had a high amount of Level 3 findings.

a. How many Level 3 findings did Liberty close in 2021? Provide a breakdown based on date?

b. How many Level 3 findings from 2020 are still open work orders?

c. How many overall open work orders did Liberty have as of July 1, 2022, within HFTD Tiers 2 and 3?

Response date: August 3, 2022

Response:
a. Liberty completed 565 Level 3 findings in 2021. Refer to Attachment "Data Request OEIS-LU-22-002_Q13a."

b. 7,459.

c. 6,865.

Regarding: Protection Device Sensitivity Settings

Data Request: OEIS-LU-22-002, Question 16

Request date: July 29, 2022

Request:
In Liberty's 2022 Wildfire Mitigation Plan, Liberty discusses implementing "fast trip/one-shot" settings during "high fire threat days."

a. Describe what settings are used for "fast trip/one-shot."

b. Describe how Liberty defines "high fire threat days" and what thresholds are used for implementing the settings described in (a).

Response date: August 3, 2022

Response:
a. The settings currently used for fast trip/one-shot are classified as a fast relay curve protective setting. This setting curve is commonly used in the industry for personnel protection while working on energized lines. Fast trips (hot line tag) clear faults quickly, does not allow time for downstream devices to operate, and no auto-reclosing is allowed. In fire mode, Liberty is on one-shot to lockout which allows more time for downstream devices to operate, and no auto-reclosing is allowed.

b. Liberty defines high fire threat days as any Fire Potential Index (FPI) zone with a rating of high or greater for that day. Liberty enables fast trip settings when high winds are in the forecast and conditions are close to PSPS thresholds.

Regarding: Weather Station Supply Chain Challenges

Data Request: OEIS-LU-22-002, Question 18

Request date: July 29, 2022

Request:
In Liberty's OEIS-LU-22-001 data request response to Question #2, Liberty attributes its missed 2021 target for weather station installations to challenges obtaining the 10 weather

stations due to supply chain issues. Provide verification documentation of the supply chain issue that Liberty experienced in 2021.

Response date: August 3, 2022

Response:
Liberty does not have documentation of the supply chain issues that Liberty experienced in 2021 related to weather stations. Liberty's understanding of the supply chain issues came from communications with the vendor.

Regarding: Slash and Wood Treatment Comparison

Data Request: OEIS-LU-22-004, Question 01

Request date: August 16, 2022

Request:
In Section 7.3.5.5 "Fuels Management," Liberty provides Table 7.3.5-6 "Slash and Wood Treatment Comparison." The table compares "previous treatment" to "current treatment." When were the "current treatments" first implemented?

Response date: August 19, 2022

Response:
The first implementation of "current treatment" of slash and wood provided in Table 7.3.5-6 varies by the parcel and ownership type. The table below provides a high level timeline of implementation.

	Parcel and Ownership Type			
	Small privately owned parcel	Small publicly owned parcel	Large privately owned land	Large publicly owned land
Current treatment implementation	September 2020	November 2020	May 2021	October 2021

Regarding: Agency Cooperation for Fuels Management

Data Request: OEIS-LU-22-004, Question 02

Request date: August 16, 2022

Request:
In Section 7.3.5.5 "Fuels Management," Liberty states that it performed an analysis to establish priorities for fuel reduction projects using various criteria. One of those criteria is "agency cooperation." What is meant by "agency cooperation" in this context?

Response date: August 19, 2022

Response:
In addition to efforts taken by Liberty to reduce the risk of catastrophic wildfire, other state, federal, and non-governmental organizations are implementing wildfire mitigation work. Liberty's Vegetation Management Department refers to the various interest groups and land managers as "Agencies." Although there is no formal, documented process by which it occurs, Liberty will attempt to perform vegetation management work in cooperation with Agencies where projects overlap or may otherwise be associated with each other.

Regarding: Maturity Survey – Customer/Stakeholder Engagement

Data Request: OEIS-LU-22-005, Question 02

Request date: August 31, 2022

Request:
In its 2022 Utility WMP Maturity Survey response to question I.V.b, "Does the utility conduct a customer survey and utilize partners to disseminate requests for stakeholder engagement," Liberty provides a response level (ii) "One or the other." Please clarify which of these two methods of engagement Liberty currently uses.

Response date: September 6, 2022

Response:
Liberty understands question I.V.b to related to the Emergency Planning section of the 2022 WMP Maturity Survey and not the Community Engagement section as indicated in Data

Request OEIS-LU-22-005. Liberty utilizes partners to disseminate requests for stakeholder engagement related to emergency planning.

Regarding: CBO Outreach Positions

Data Request: OEIS-LU-22-005, Question 03

Request date: August 31, 2022

Request:
On page 170 of its 2022 Update, Liberty states that it "recently added two positions to expand Community Based Organization relationship networks and communication channels and plans to make further progress throughout 2022, including a bilingual outreach coordinator."

a. Clarify if Liberty has already added/hired a bilingual outreach coordinator.

i. If so, is this one of the "recently added two positions" Liberty mentions?

- If it is not one of the recently added positions, what are the two new positions?
- If it is one of the recently added positions, what is the other one?

b. Clarify "recently" by specifying when each of these positions were added or when they are planned for hire.

c. Explain the roles and responsibilities of each new position.

Response date: September 6, 2022

Response:
a. Yes, Liberty has already added/hired a bilingual Outreach Coordinator.

i. Yes, this is one of the "recently added" positions. The other position is a Business and Community Development Manager position.

b. The positions were hired in Q3 of 2021.

c. Bilingual Outreach Coordinator: Supports outreach efforts throughout community with customers and Community Based Organizations through helping to coordinate Liberty presence at events and volunteer opportunities. Supports community education and spreads awareness on PSPS preparation and wildfire mitigation efforts, customer assistance programs with consideration given to Access and Functional Needs target audiences.

Communicates directly to customers in both English and Spanish to expand access, education and support for customers with limited English proficiency.

Business & Community Development Manager: Supports development and relationship management with local Community Based Organizations throughout service territory. Involved in strategy planning to collect and maintain AFN data, develop and execute AFN support strategy and collaboration with local community partners. Manages key customer relationships and supports outreach strategy development and execution. Helps to plan for and execute Community Resource Center site set up and operations during potential PSPS events, including internal training program development and delivery. Spreads awareness of wildfire mitigation efforts, PSPS preparedness, and customer assistance programs through outreach and presentations throughout service territory.

Regarding: Maturity Survey – LEP and AFN Engagement

Data Request: OEIS-LU-22-005, Question 05

Request date: August 31, 2022

Request:
In its 2022 Utility WMP Maturity Survey response to question J.III.c, Liberty indicates that it can now point to clear examples of how its relationships organizations representing Limited English Proficiency and Access and Functional Needs communities has driven its ability to interact with and prepare those communities for wildfire mitigation initiatives. Provide specific examples.

Response date: September 6, 2022

Response:
Liberty has expanded Community Based Organization relationships since the implementation of the Outreach Coordinator and Business and Community Development Manager positions in Q3 2021. Collaborative outreach events and increased communication with local organizations allow Liberty to reach AFN communities through established and existing community relationships.

Examples of increased communication with CBOs include:

1) PSPS preparedness email sent to all Community Based Organizations prior to PSPS season announcing virtual workshops and preparedness materials to share with their clients.

- Liberty communicated a Spanish language virtual PSPS town hall

2) Direct phone / virtual / in person meetings held with local CBOs to discuss customer assistance programs available, educate staff on PSPS and Wildfire Mitigation, importance of AFN data gathering by Liberty, identify opportunities for collaboration in spreading awareness, and to assess potential volunteer opportunities or collaborative outreach events.

Examples of specific events include:

1) South Lake Tahoe:

- Liberty hosted a PSPS preparedness / customer program presentation in Spanish through collaboration with First 5 Community Hub of El Dorado County to reach Spanish speaking customers attending an event at the local library in South Lake Tahoe. (5/3/2022)

- Liberty hosted an outreach booth at a local market (Mi Pueblo Market) primarily serving customers with limited English proficiency in South Lake Tahoe and saw success in spreading customer assistance program awareness, enrollment, and updating contact information ahead of PSPS season. (3/11/2022)

- Liberty hosted an outreach event at Tahoe Verde mobile home park after they recently converted from MMMHP to individual meters to educate customers about PSPS preparedness, customer notifications, customer assistance programs and answer questions. (8/20/2022)

- Liberty presented to local Soroptimist group about PSPS preparedness, customer notifications, customer assistance programs and to answer questions. Many members of the Soroptimist group are involved in other areas of the community and this opportunity allowed Liberty to further network. (3/30/2022)

- As a result of connections made at the Soroptimist presentation, Liberty collaboratively organized and hosted an outreach event at local Bijou Pines low-income apartment complex to spread awareness of customer assistance programs, PSPS preparedness, customer notifications and answer questions in both English and Spanish. El Dorado County Health and Human Services as well as First 5 Community Hub local representatives were also in attendance. (4/13/2022)

2) North Lake Tahoe:

- After connecting with local Health and Human Services / Social Services contacts, Liberty participated in a local Senior Resource Fair along with a variety of local agencies to

spread awareness about PSPS preparedness, notifications, customer assistance programs, and to answer questions in both English and Spanish. (5/25/2022)

- Liberty participated in an established outreach event (Community Health Fair) hosted by local CBO Sierra Community House. This event allowed Liberty to speak to PSPS preparedness, notifications, customer assistance programs and answer questions in both English and Spanish. (5/12/2022)

3) Loyalton / Portola:

- Liberty collaboratively planned an outreach event with local Family Resource Center in Portola to spread awareness around PSPS preparedness, notifications, customer assistance programs and answer questions. (6/6/2022)

- Liberty organized and hosted an outreach event with local Senior Center in Loyalton to spread awareness around PSPS preparedness, notifications, customer assistance programs and answer questions. (7/22/2022)

- Liberty participated in local TimberFest event in Loyalton to reach customers through an outreach booth at the community event in a location with a high population of elderly residents. (5/17/2022)

4) Coleville / Walker:

- Liberty sought out an opportunity for an outreach event hosted by local Walker General Store. Due to the rural nature of this community, the store location served as an effective way to reach this high population of elderly residents and spread awareness around PSPS preparedness, notifications, customer assistance programs and provided the ability to answer questions. (3/21/2022)

Appendix C. Comments on the Draft Decision

This appendix will contain Energy Safety's summary of stakeholder comments on the draft Decision.

Energy Safety did not receive comments on the Draft Decision and made no substantive revisions to the Decision.

Appendix D. The Ten Maturity and Mitigation Initiative Categories

The following table presents the ten categories of questions on the Maturity Survey, and, where relevant, the version of the category name used in the 2022 WMP Guidelines or Decisions. All mitigation programs and initiatives should fit into one or more of the following categories. Some examples of activities or data products that fit under each category are listed.

Maturity and Mitigation Categories	Examples of Activities
1. Risk mapping and simulation; Per WMP Guidelines/this Decision document: Risk assessment and mapping	Risk and ignition probability mapping; match drop simulations; consequence mapping
2. Situational awareness and forecasting	Weather monitoring; weather station installation; fault indicator technology implementation; fire potential index
3. Grid design and system hardening	Capacitor maintenance and replacement; covered conductor installation and maintenance; expulsion fuse replacement; pole loading infrastructure hardening and replacement
4. Asset management and inspections	Infrared, LiDAR, or drone inspections and routine or detailed patrol inspections of distribution/transmission electric lines and equipment; intrusive pole inspections; pole loading assessments; quality assurance and quality control of inspections
5. Vegetation management and inspections	Fuel management and reduction of "slash"; LiDAR or drone inspections and routine or detailed patrol inspections of vegetation

Maturity and Mitigation Categories	Examples of Activities
	around distribution/transmission electric lines and equipment; inventory, remediation, or removal of hazardous vegetation; quality assurance and quality control of vegetation management inspections
6. Grid operations and protocols; Per this Decision document: Grid operations and operating protocols, including PSPS	Automatic recloser operations; protocols for re-energization after PSPS; mitigation of PSPS impacts; work procedures and training in conditions of elevated fire risk
7. Data governance	Centralized data repository; ignition/wildfire collaborative research; documentation/disclosure of wildfire-related data and algorithms; risk event data tracking and analysis
8. Resource allocation methodology	Method of allocation of resources; method of calculating the risk-spend efficiency of initiatives (not including PSPS, which is not considered a mitigation initiative within WMPs); risk reduction scenario development and analysis
9. Emergency planning and preparedness	Ensuring the utility has an adequate and trained workforce for service restoration; community outreach, public awareness, and communications efforts; customer support during emergencies
10. Stakeholder cooperation and community engagement	Cooperation with suppression agencies; community engagement efforts; sharing best practices and cooperating with agencies

Maturity and Mitigation Categories	Examples of Activities
	outside California; coordinating fuel management with the U.S Forest Service

Appendix E. Definition of Initiatives by Category

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping Initiative Activity	Definition
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 modeling 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.

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping Initiative Activity	Definition
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.).

Category B. Situational Awareness and Forecasting

Category B. Situational Awareness and Forecasting Initiative Activity	Definition
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

Category B. Situational Awareness and Forecasting Initiative Activity	Definition
	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 C. Grid Design and System Hardening

Category C. Grid Design and System Hardening Initiative Activity	Definition
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

Category C. Grid Design and System Hardening Initiative Activity	Definition
	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.

Category C. Grid Design and System Hardening Initiative Activity	Definition
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

Category C. Grid Design and System Hardening Initiative Activity	Definition
	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.
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

Category C. Grid Design and System Hardening Initiative Activity	Definition
	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

Category C. Grid Design and System Hardening Initiative Activity	Definition
	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 the HFTD	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 the HFTD.

Category D. Asset Management and Inspections

Category D. Asset Management and Inspections Initiative Activity	Definition
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.

Category D. Asset Management and Inspections Initiative Activity	Definition
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.

Category D. Asset Management and Inspections Initiative Activity	Definition
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 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).
LiDAR inspections of transmission 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).
Other discretionary inspection of distribution 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.
Other discretionary inspection of transmission electric lines and equipment,	Inspections of overhead electric transmission lines, equipment, and right-of-

Category D. Asset Management and Inspections Initiative Activity	Definition
beyond inspections mandated by rules and regulations	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.
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

Category D. Asset Management and Inspections Initiative Activity	Definition
	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.

Category E. Vegetation Management and Inspections

Category E. Vegetation Management and Inspections Initiative Activity	Definition
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.

Category E. Vegetation Management and Inspections Initiative Activity	Definition
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).

Category E. Vegetation Management and Inspections Initiative Activity	Definition
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).
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

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	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

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	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 F. Grid Operations and Operating Protocols

Category F. Grid Operations and Operating Protocols Initiative Activity	Definition
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

Category F. Grid Operations and Operating Protocols Initiative Activity	Definition
	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.

Category G. Data Governance

Category G. Data Governance Initiative Activity	Definition
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

Category G. Data Governance Initiative Activity	Definition
	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.

Category H. Resource Allocation Methodology

Category H. Resource Allocation Methodology Initiative Activity	Definition
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 modeling 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 I. Emergency Planning and Preparedness

Category I. Emergency Planning and Preparedness Initiative Activity	Definition
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.

Category I. Emergency Planning and Preparedness Initiative Activity	Definition
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.

Category J. Stakeholder Cooperation and Community Engagement

Category J. Stakeholder Cooperation and Community Engagement Initiative Activity	Definition
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.

Category J. Stakeholder Cooperation and Community Engagement Initiative Activity	Definition
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).

Appendix F. 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
CBO	Community-based organization
CEJA	California Environmental Justice Alliance
CNRA	California Natural Resources Agency
CPUC	California Public Utilities Commission
D.	Decision
DFA	Distribution fault anticipation
DR	Data request
EBMUD	East Bay Municipal Utility District
EFD	Early fault detection
EPIC	Electric Program Investment Charge

Term	Definition
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
HWT or Horizon West	Horizon West Transmission
I.	Investigation
ICS	Incident command system or structure
IOU	Investor-owned utility

Term	Definition
ISA	International Society of Arboriculture
ITO	Independent transmission operator
IVM	Integrated vegetation management
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
Maturity Survey	Utility Wildfire Mitigation Maturity Survey
MARS	Multi-attribute risk score
MAVF	Multi-attribute value function
MBL	Medical Baseline
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

Term	Definition
OEIS or Energy Safety	Office of Energy Infrastructure Safety
OP	Ordering paragraph
OPD	Open phase detection
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
PoF	Probability of failure
PoI	Probability of ignition
PRC	Public Resources Code
PSPS	Public Safety Power Shutoff
Pub. Util. Code or PU Code	Public Utilities Code
QA	Quality Assurance
QC	Quality Control
R.	Rulemaking
RAMP	Risk Assessment and Management Phase
RAR	Remote automatic reclosers

Term	Definition
RBDM	Risk-based decision making
RCP	Remedial compliance plan
RCRC	Rural County Representatives of California
REFCL	Rapid earth fault current limiter
RFW	Red Flag Warning
RSE	Risk-spend efficiency
SAWTI	Santa Ana Wildfire Threat Index
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, now the Risk-Based Decision-Making Framework Proceeding
SMJU	Small and multijurisdictional utility
SUI	Wildland-urban interface
TAT	Tree Assessment Tool
TBC	Trans Bay Cable
TURN	The Utility Reform Network
USFS	United States Forest Service

Term	Definition
VM	Vegetation management
VRI	Vegetation Risk Index
WMP	Wildfire Mitigation Plan
WRRM	Wildfire Risk Reduction Model
WSAB	Wildfire Safety Advisory Board
WSD	Wildfire Safety Division
WSIP	Wildfire Safety Inspection Program