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

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Caroline Thomas Jacobs, Director

To: Wildfire Mitigation Plan Stakeholders

October 31, 2022

Enclosed is the Draft Decision of the Office of Energy Infrastructure Safety (Energy Safety) presenting its evaluation of Bear Valley Electric Service Inc.'s 2022 Wildfire Mitigation Plan Update.

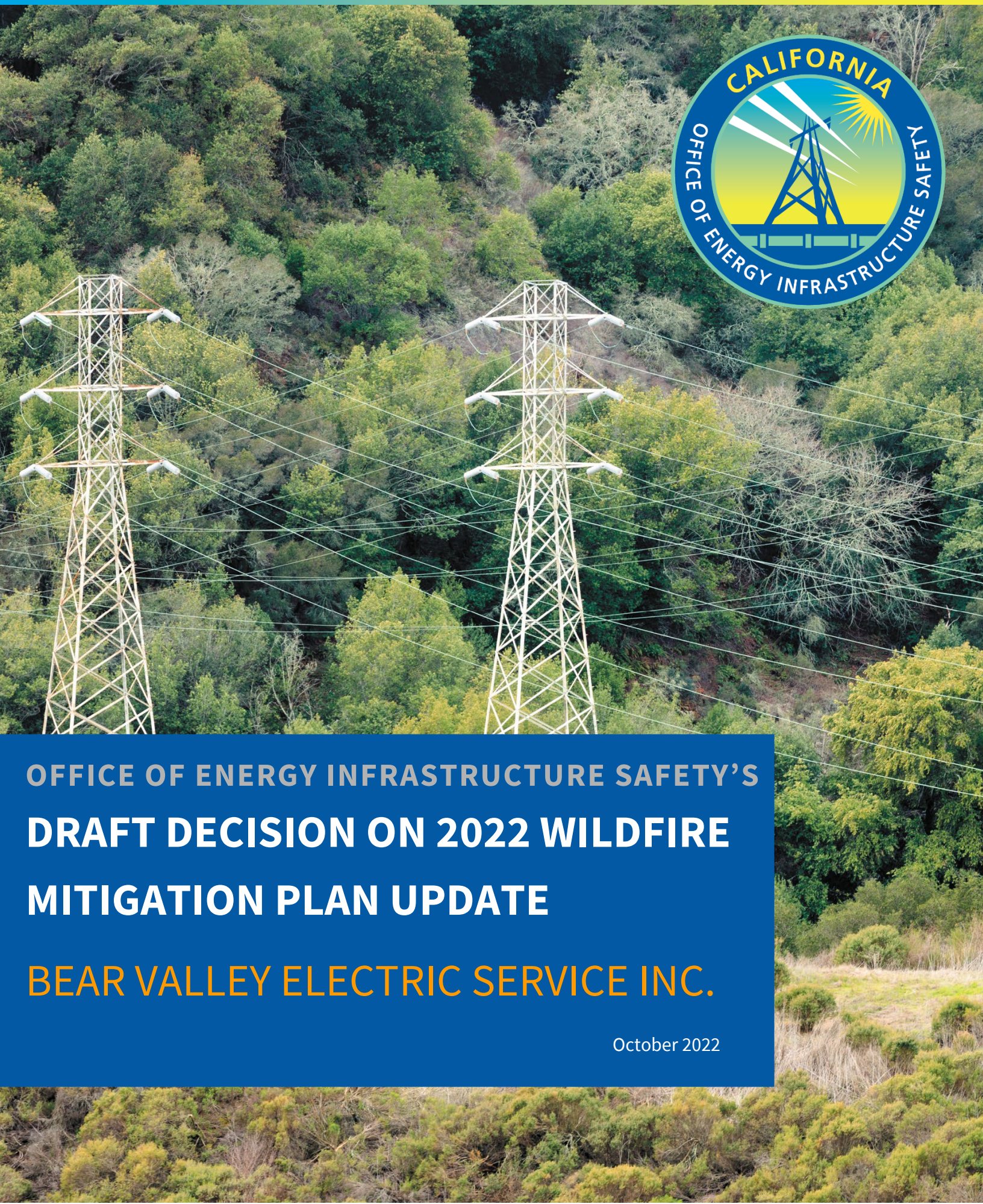
On October 31, 2022, this Draft Decision is hereby published for public review and comment. Comments must be submitted no later than November 21, 2022. Reply comments must be submitted no later than November 28, 2022.[1]

Comments must be submitted to Energy Safety's e-filing system in the 2022 Wildfire Mitigation Plans docket (#2022-WMPs).[2]

Sincerely,

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

[1] Dates falling on a Saturday or holiday as defined in Government Code section 6700 have been adjusted to the next business day in accordance with Government Code section 6707.
[2] Submit comments to the 2022-WMPs docket via the Energy Safety e-filing system here: https://efiling.energysafety.ca.gov/EFiling/DocketInformation.aspx?docketnumber=2022-WMPs (accessed September 21, 2022)



OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

DRAFT DECISION ON 2022 WILDFIRE MITIGATION PLAN UPDATE

BEAR VALLEY ELECTRIC SERVICE INC.

October 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 Bear Valley Electric Service Inc.'s (BVES's) Wildfire Mitigation Plan 2022 Update (2022 Update) as revised on August 29, 2022.

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 BVES's 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 BVES's maturity progress in 2022 and over the three-year plan cycle. Detailed explanations of utility maturity are contained in each section of the evaluation.

- BVES's maturity levels in situational awareness and forecasting and Public Safety Power Shutoff (PSPS) have increased since 2020.
- BVES's maturity levels in grid design and system hardening and stakeholder cooperation and community engagement have decreased since 2020.
- BVES's maturity levels in risk assessment and mapping, asset management and inspections, vegetation management and inspections, data governance, resource allocation methodology, and emergency planning and preparedness have remained static since 2020.
- Generally, BVES projects significant increases to its maturity levels by 2023.

Areas of Significant Progress

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

- BVES reports meeting nearly all its targets for 2021.
- BVES has expanded its weather station network and installed more weather stations per overhead circuit mile than any other electrical corporation. These aid its weather forecasting and situational awareness capabilities.
- BVES reports completion of its fiber optic network installation and is now working towards adding sensors and automating substations and switches. These improvements will also support its weather forecasting and situational awareness capabilities.
- BVES has eliminated all expulsion fuses from its system, with 3,185 total replacements. The new programmable fuses (vacuum style) prevent the expulsion of hot particles and gases during operation.

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 BVES's areas for continued improvement is included in Section 7.

Selected themes from BVES's areas for continued improvement are:

- BVES must demonstrate how its risk modeling informs its prioritization of projects based on sequencing of risk ranking in relation to ignition and consequence risk.
- BVES must provide an analysis on alternative initiatives to covered conductor installation, including an analysis of risk reduction effectiveness for its covered conductor program scope.
- BVES must demonstrate progress implementing its formal quality assurance and quality control program for asset inspections.
- BVES must provide detailed descriptions of its data management systems.
- BVES must apply up-to-date capabilities, protocols, and lessons learned from its own exercises and those conducted by other utilities in an annually updated PSPS plan.
- BVES must participate in scoping meetings and any follow-on activities from these meetings related to covered conductor, vegetation management best practices, and climate change modeling.

1. Introduction and Background

Bear Valley Electric Service Inc. (BVES) 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). BVES 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 BVES's 2022 Update (2022 Update), which BVES submitted on May 6, 2022, in response to Energy Safety's Final 2022 Update Guidelines[1] (Guidelines).

Energy Safety approves BVES's 2022 Update.

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

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]

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.

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

[3] See Rulemaking 18-10-007.

[4] Public Utilities 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/.

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 remedy the issue prior to completion of Energy Safety's evaluation. (See Section 1.3.2 for more information on Revision Notices.) 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 approved BVES's 2021 Update after BVES satisfactorily addressed issues in its response to a Revision Notice.[10] The 2021 Revision Notice included two critical issues and associated required remedies. Energy Safety issued BVES a Revision Notice in 2022 as well (see Section 1.3.2).

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[7] Public Utilities 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.

[10] Revision Notice for Bear Valley Electric Service Inc.'s 2021 Wildfire Mitigation Plan Update (accessed Oct. 25, 2022): https://energysafety.ca.gov/wp-content/uploads/docs/misc/wmp/2021/utility/BVES/BVES-2021-wmp-revision-notice.pdf.

Plan year 2022 is the final year in the first three-year plan cycle. Therefore, Energy Safety's evaluation of BVES'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, BVES submitted its 2022 Update on May 6, 2022.[11]

Energy Safety begins evaluating WMPs and Updates by reviewing the submittal for completeness. 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 1.3.1. 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 1.3.2. The utility must respond to the Revision Notice and revise and resubmit the relevant sections of its WMP or Update.

1.3.1 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.

[11] All references to BVES's 2022 Update throughout this Decision refer to BVES's initial 2022 Update submission dated May 6, 2022, BVES's Revision Notice response dated August 29, 2022, and BVES's Wildfire Mitigation Plan 2022 Update Revised, also dated August 29, 2022.

- *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.[12] In addition, the utility focuses sufficiently on long-term strategies to build the overall maturity of its wildfire mitigation capabilities while 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.[13] 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 BVES's 2022 Update, Energy Safety relied on:

[12] 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.

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

- BVES's WMP and Update submissions
- Input from the California Department of Forestry and Fire Protection (CAL FIRE)
- Comments from stakeholders, including members of the public
- BVES's response to Energy Safety's Revision Notice for BVES's 2022 Update (see Section 1.3.2)
- BVES's response to the Utility Wildfire Mitigation Maturity Survey (Maturity Survey)
- BVES's data submissions
- BVES's responses to data requests

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

1.3.2 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:

- 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[14]
- 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 1.3.1
- An element of the WMP that is critical to life-safety or property is unsatisfactory

Energy Safety issued a Revision Notice to BVES on June 22, 2022. BVES responded to the Revision Notice on August 29, 2022. Appendix B lists the issues contained in the Revision

[14] Also called an Action Statement (2020, 2021).

Notice, a brief overview of the utility's response, and Energy Safety's assessment of the utility's response. Energy Safety considered BVES's Revision Notice Response in its comprehensive WMP assessment, as set forth in Section 4. Section 4 includes Energy Safety's evaluation of both BVES's Revision Notice Response and its 2022 Update, as revised.

1.3.3 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.

2. Energy Safety Decision on BVES's 2022 Update

Pursuant to Public Utilities Code section 8386.3(a), this Decision is the totality of Energy Safety's review of BVES's 2022 Update. BVES'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 comments on BVES's Revision Notice Response and revised 2022 Update were due on September 19, 2022, and reply comments were due on September 29, 2022. The following individuals and organizations submitted comments:

- California Department of Fish and Wildlife (CDFW)
- The Public Advocates Office (Cal Advocates)
- Green Power Institute (GPI)

Comments received on the 2022 Updates can be viewed in the 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log.[15]

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

- BVES should consult CDFW and other responsible agencies as early as possible when implementing wildfire mitigation activities, to complete the required environmental documents and discretionary reviews (CDFW).
- BVES does not sufficiently connect its risk assessment with its mitigation initiative prioritization (Cal Advocates, GPI).
- BVES has not provided sufficient information on quality assurance and quality control (QA/QC) of asset inspections (Cal Advocates, GPI).
- BVES does not describe how quantifiable risk reductions and risk-spend efficiency (RSE) estimates inform initiative selection (Cal Advocates, GPI).

[15] 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log (accessed April 14, 2022): https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2022-WMPs.

- BVES should include the California Public Utilities Commission's Phase 3 PSPS Guidelines in its PSPS Plan (Cal Advocates).
- Equivocating language is a persistent issue in BVES's WMPs (GPI).

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

The following sections present Energy Safety's comprehensive evaluation of BVES's 2022 Update, including Energy Safety's assessment of progress over the past year and throughout the current WMP cycle. Energy Safety looks at BVES'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 BVES's initiatives from year to year, Energy Safety also assesses any new programs, plans, or technologies BVES 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.

Before commencing its evaluation, Energy Safety found BVES's 2022 Update to be complete.

4.1 Introductory Sections of the WMP

The introductory sections of the Guidelines[16] 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.

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

BVES 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[17] 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.[18]

BVES provides all required information regarding expenditures.

Note that BVES's initial WMP submission and its revised WMP in response to a Revision Notice do not have accurate summaries of BVES's WMP expenditures. A correct summary of BVES's WMP expenditures was provided via errata.[19]

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): BVES, Liberty Utilities (Liberty), and PacifiCorp.

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	$17,208.7	$21,332.28	$20,438.97	$58,979.94

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

[18] 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).

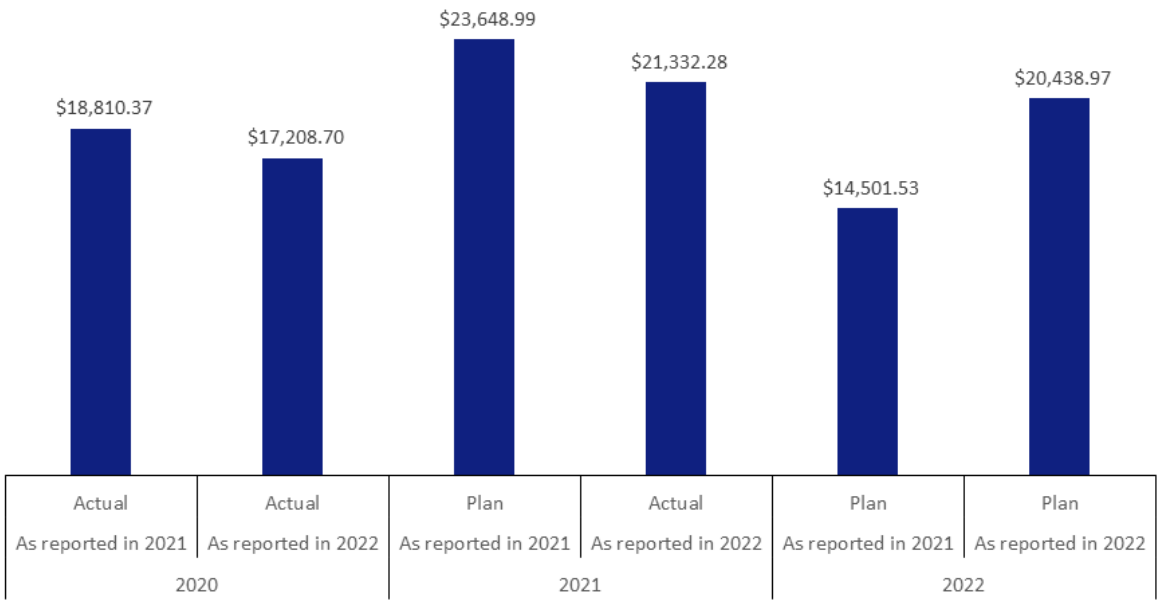
[19] First Errata to Bear Valley Electric Service's 2022 Wildfire Mitigation Plan, June 8, 2022. Accessible at https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52509&shareable=true.

Utility	2020 Actual	2021 Actual	2022 Planned	Total WMP Cycle as Reported in 2022
Liberty	$33,331.1	$33,567.54	$55,126.5	$122,025.1
PacifiCorp	$18,520.26	$42,149.45	$91,899.79	$152,569.5

For the current WMP cycle, BVES's largest WMP expenditures are in the program categories of grid design and system hardening (79 percent of cycle total), vegetation management and inspection (14 percent of cycle total), and asset management and inspections (3 percent of cycle total). All other program spending is modest in comparison (the remaining 4 percent of cycle total).

Figure 4.2-1 below provides a comparison of the planned and actual expenditures BVES reported in its 2021 and 2022 Updates.

Figure 4.2-1: BVES Actual and Planned WMP Expenditure ($ Thousands)



In its 2021 Action Statement, Energy Safety required BVES to provide more information on its allocation of costs, including allocation methodology (BVES-21-01: Inadequate Disaggregation of Expenditure). Energy Safety finds that BVES adequately responded to this requirement, as described below.

BVES-21-01: Inadequate Disaggregation of Expenditure

In its 2021 Update, BVES inappropriately aggregated expenditures: BVES detailed 51 initiatives in the text of its 2021 Update but reported expenditures for just 25 initiatives. Before Energy Safety approved BVES's 2021 Update, it required BVES to disaggregate its expenditures as part of a Revision Notice. In response to that Revision Notice, BVES inadequately disaggregated its expenditures: 17 of BVES's initiatives have identical expense amounts for 2020, 11 for 2021, and 13 for 2022. In its final Action Statement, Energy Safety required BVES, via BVES-21-01, to "identify where common costs are allocated across multiple initiatives… [and] justify its allocation methodology by describing these common costs in detail, explain how they relate to each initiative and demonstrating that allocated values reasonably reflect the initiatives' true costs."[20]

In its 2022 Update, BVES does not "identify where common costs are allocated" or "justify its allocation methodology." Instead, BVES says it "has worked to develop accounting methods to more accurately capture mitigation measures across multiple programs and projects as they correspond with risk reduction efforts of the 88 initiatives."[21] BVES's expenditure reporting[22] shows updated accounting, and there is no obvious sign of lingering aggregation/disaggregation issues (e.g., no initiatives have the same expense amount). Therefore, Energy Safety considers BVES-21-01 resolved.

4.3 Lessons Learned and Risk Trends

The lessons learned and risk trends section of the Guidelines[23] 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.

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[20] Final Action Statement on 2021 Wildfire Mitigation Plan Update – Bear Valley Electric Service, Inc., page 22, from Sept. 8, 2021 (accessed Oct. 25, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51722&shareable=true.

[21] BVES's 2022 Update, Revision 1, Appendix A, page A-2.

[22] Table 12 of "AttachA_2022-05-06_BVES_2021_QDR_Q4_R2.xlsx". Accessible at https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52510&shareable=true

[23] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.4 pages 41-50 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

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 high fire threat district (HFTD) should be modified.
- 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.

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

BVES provides a summary of lessons learned.[24] For example, BVES has encountered material procurement delays related to its grid hardening efforts. In response, BVES has moved to a year-ahead purchasing schedule for grid hardening materials and equipment.

BVES describes its Risk Register model, which quantifies mitigation projects and programs by risk benefit and RSE. BVES's highest-value outputs from its Risk Register model (i.e., initiatives that show the highest risk reduction for the lowest cost) are:

- Personnel work procedures and training in conditions of elevated fire risk
- Documentation and disclosure of wildfire-related data and algorithms
- Allocation methodology development and application

BVES's highest-value outputs from its Risk Register model related to physical systems are:

- Protective equipment and device settings
- Maintenance, repair, and replacement of connectors, including hotline clamps

[24] BVES's 2022 Update, Revision 1, pages 21-23.

BVES also describes its Fire Safety Circuit Matrix, which "aims to characterize all BVES distribution circuits in groups of High, Moderate, and Low wildfire risk and then prioritize the circuits within each wildfire risk group."[25] BVES updates the matrix at least every six months.

4.3.1 BVES's Progress

In 2021, a contractor for BVES modeled ignition risk and consequence for BVES's service territory, producing a series of maps under historical, present (2021), and long-term (2050) climate change impact conditions. These maps provide "an initial screening into areas of greatest concern beyond the HFTD and WUI designations."[26] An example map is provided below in Figure 4.3-1.

In 2022, BVES is hiring another contractor to develop "near-real-time fire risk assessment applications,"[27] including the ability to conduct on-demand fire spread simulations.[28]

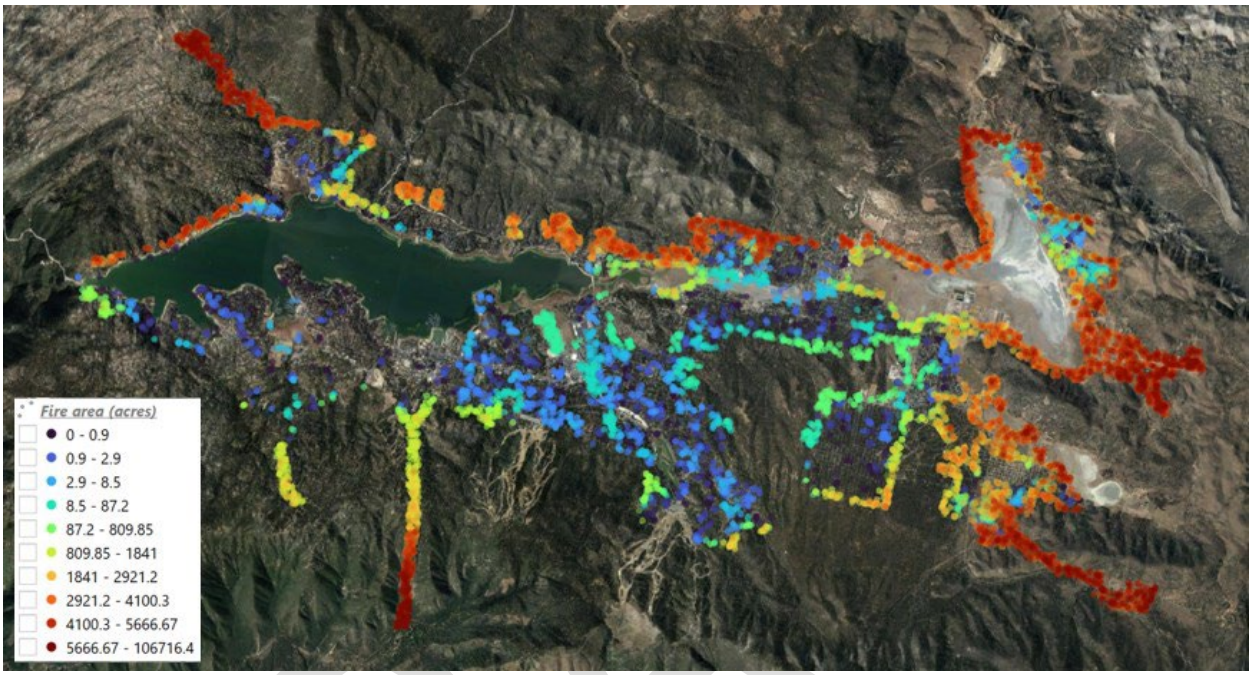
[25] BVES's 2022 Update, Revision 1, page 30.

[26] BVES's 2022 Update, Revision 1, page 32.

[27] BVES's 2022 Update, Revision 1, page 89.

[28] BVES's 2022 Update, Revision 1, page 26. "WUI" stands for "wildland-urban interface," which is a geographical area identified by the state as a Fire Hazard Severity Zone or other area designated by the enforcing agency to be a significant risk from wildfires, established pursuant to Title 24, Part 2, Chapter 7A.

Figure 4.3-1: Map of Ignition Consequence (Fire Size in Acres) by Location in BVES's Territory[29]



4.4 Inputs to the Plan and Directional Vision for the WMP

The inputs and directional vision section of the Guidelines[30] 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.

[29] BVES's 2022 WMP Update, Revision 1, page 39.

[30] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5 pages 52-57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

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[31] 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.

BVES provides the required information.

4.4.1.1 BVES's Progress

BVES met or exceeded each of its 2021 targets, except for installation of covered conductor: it installed 12.3 circuit miles out of a planned 12.9 circuit miles. Notably, in 2021 BVES exceeded its fuse replacement target of 805, replacing 901 expulsion fuses with electronic programmable fuses (vacuum style). There are no conventional expulsion fuses remaining in BVES's service territory.

In its 2021 Update, BVES listed 86 program targets. Of those, 32 had no numerical target and 42 were quantified by the unmeasurable unit "Percent Project Milestones Completed" (or similar). In its 2021 Action Statement, Energy Safety required BVES, via BVES-21-02, to use only quantifiable measurements of activity in its program targets and to ensure it used measurable units.[32] In its 2022 Update, BVES provides 31 diverse and quantifiable targets. This will allow Energy Safety's Compliance Assurance Division to more readily audit BVES's implementation of its WMP. BVES-21-02 is resolved.

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[31] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.1-2.5.3 pages 53-54 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[32] Final Action Statement on 2021 Wildfire Mitigation Plan Update – Bear Valley Electric Service, Inc., page 25, from Sept. 8, 2021 (accessed Oct. 25, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51722&shareable=true.

4.4.2 Workforce Planning

This subsection of the Guidelines[33] 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

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

4.5 Metrics and Underlying Data

The metrics and underlying data section of the Guidelines[34] 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

[33] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.4 pages 56-57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[34] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.6 pages 58-69 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

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

The figures below compare numbers across the three SMJUs for 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).

Notably, BVES has not had an ignition since 2015 (the earliest year for which BVES is required to report ignitions to Energy Safety).

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

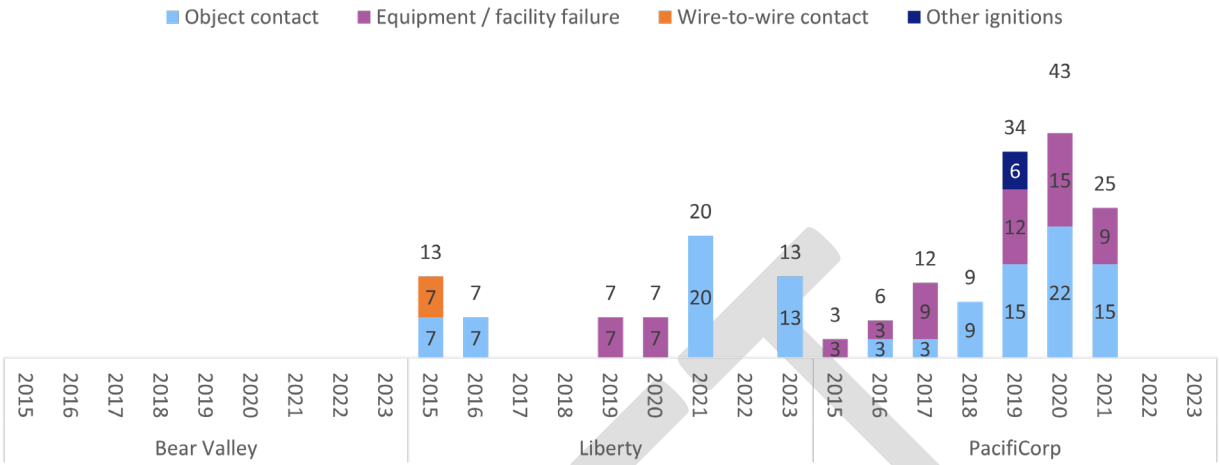


Figure 4.5-2: Risk Events per Overhead Circuit Mile – SMJUs (2015-2021 Actual)

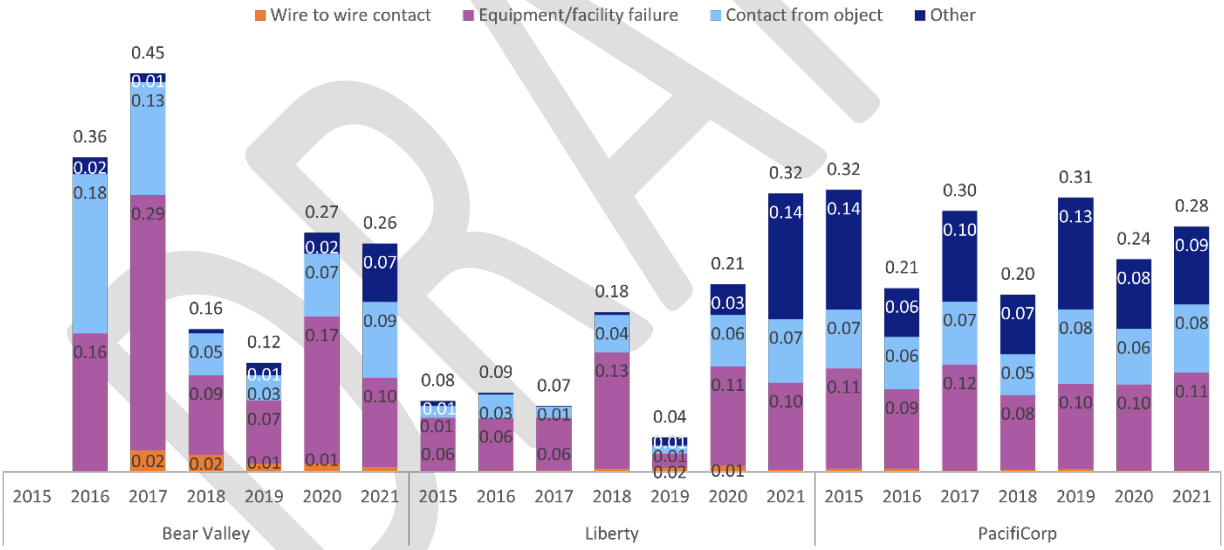


Figure 4.5-3: Red Flag Warning Overhead Circuit Mile Days per Year – SMJUs (2015-2021 Actual)

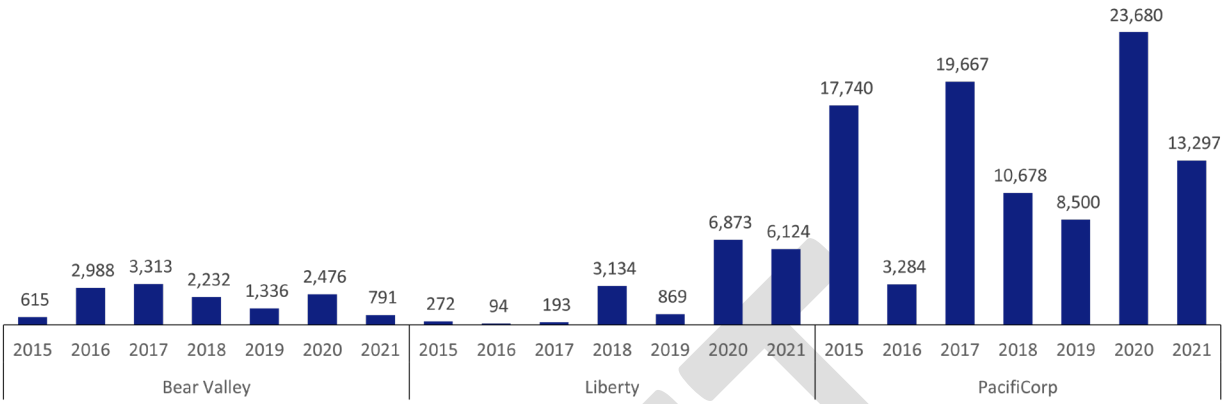
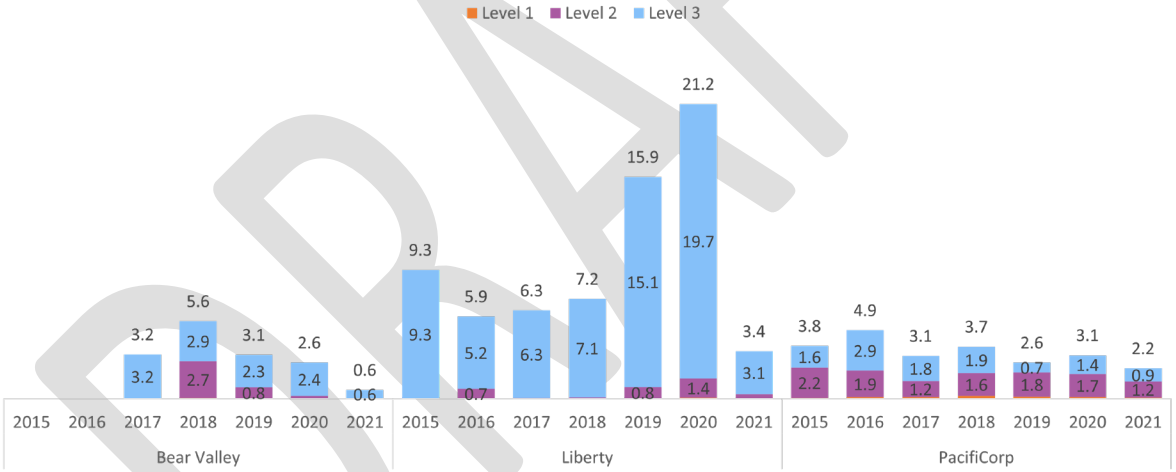


Figure 4.5-4: Asset Inspection Findings Normalized by Circuit Miles Inspected – SMJUs (2015-2021 Actual)



4.6 Mitigation Initiatives and Maturity Evaluation

The mitigation initiatives and maturity evaluation section of the Guidelines[35] 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.[36, 37] 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

[35] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7 pages 70-77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[36] 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 (page 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."

[37] 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 BVES, can be found on the Energy Safety website here (accessed February 15, 2022): https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2022-wmp/.

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

Below, Energy Safety evaluates BVES'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 Revision Notice – General Critical Issues

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to vegetation management and inspections.[38]

Critical Issue RN-BVES-22-01: BVES Has Not Responded to "Additional Issues"

Energy Safety found that BVES's initial 2022 Update did not address "additional issues" identified in Energy Safety's 2021 Final Action Statement.

Energy Safety required BVES to respond to each "additional issue" by detailing the actions BVES has taken or will take to address the issues. Furthermore, Energy Safety required BVES to report on progress made in addressing each "additional issue" since the publication of the Final Action Statement on BVES's 2021 Update.

RN-BVES-22-01: BVES Response Summary

In its revised 2022 Update, BVES provides a table titled "Summary of Actions in Response to Energy Safety's Revision Notice." This table points to where in its 2022 Update BVES addresses each "additional issue" from Energy Safety's 2021 Final Action Statement.

[38] BVES's Revision Notice Response, August 29, 2022.

RN-BVES-22-01: Energy Safety Evaluation

BVES responded to each "additional issue," thereby satisfying the required remedy described in BVES-22-01 and resolving this critical issue. Any issues stemming from BVES's responses are discussed in appropriate sections in this Decision (see Sections 4.6.2 through 4.7).

Critical Issue RN-BVES-22-02: BVES Has Not Provided Adequate Detail on Mitigation Initiative Progress

Energy Safety found that BVES's initial 2022 Update did not adequately detail "[p]rogress on initiative since the last WMP submission and plans, targets, and/or goals for the current year."[39]

Energy Safety required BVES to clearly and fully describe its progress implementing wildfire mitigation initiatives in Section 7.3 of its 2022 Update, in accordance with the 2022 WMP Guidelines.

RN-BVES-22-02: BVES Response Summary

In its revised 2022 Update, BVES provides additional details not present in its initial submission regarding its progress implementing wildfire mitigation initiatives. BVES's progress is described in more detail through the rest of this Decision.

RN-BVES-22-02: Energy Safety Evaluation

BVES satisfied the required remedy described in RN-BVES-22-02 and resolved this critical issue.

4.6.2 Risk Assessment and Mapping

The risk assessment and mapping section of the Guidelines[40] 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

[39] 2022 WMP Guidelines, Attachment 2, page 74.

[40] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

overall wildfire risk, ignition probability, wildfire consequence, risk reduction impact, match-drop simulations,[41] and climate/weather-driven risks.

The parameters of risk assessment (discussed here) and resource allocation (discussed later in Section 4.6.9) to reduce wildfire risk derive from the CPUC's Risk-Based Decision-Making Framework (formerly S-MAP) and RAMP proceedings.[42]

The utility's risk modeling should ultimately inform the utility of the highest-risk risk-spend efficiency (RSE) analyses discussed in Section 4.6.9.

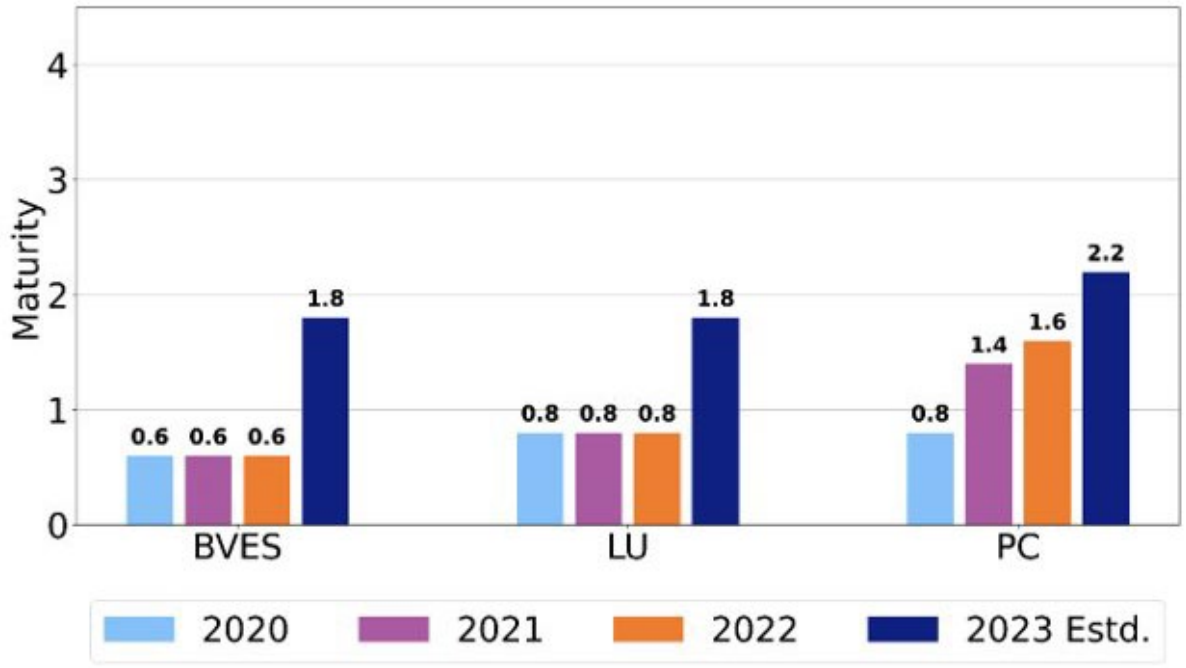
4.6.2.1 Maturity Assessment

BVES has remained stagnant in its risk assessment and mapping maturity from 2020 to 2022, although it projects an increase in this maturity category by 2023, as seen in Figure 4.6.2-1. BVES's maturity is somewhat comparable to Liberty's, although it is lower than that of both other SMJUs.

[41] 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.

[42] The risk-based decision-making framework was adopted in the CPUC's D. 18-12-014 and refined in D. 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).

Figure 4.6: Cross-Utility Maturity Levels for Risk Assessment and Mapping – SMJUs (2020-2022 Actual, 2023 Estimated)



BVES projects increases in maturity for the following areas by 2023:

- BVES plans to increase the sophistication of its weather scenario estimations, ignition risk calculations, and consequence of ignition risk modeling by moving from categorization to reliable estimations of risk.[43]
- BVES plans to assess its weather scenarios and ignition risk impact assessment tool using historical and near-miss data, as opposed to only independent expert assessments.[44]
- BVES plans to move from regional to circuit-based granularity for its weather scenario modeling, as well as its ignition risk calculations, reductions, and estimations.[45]

[43] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.I.a, A.II.a, and A.III.a.

[44] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.I.b and A.III.f.

[45] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.I.c, A.II.c, A.III.e, and A.IV.c.

- BVES plans to move from partially automated (less than 50 percent) to mostly automated (equal to or more than 50 percent) for its weather scenario modeling and ignition risk calculation.[46]
- BVES plans to include additional climate change considerations in its weather scenario modeling. This includes modeling the effects of temperature change, including accounting for differences in geography and vegetation.[47]
- BVES plans to include real-time learning to confirm risk assessment, as opposed to relying only on experts and historical data.[48]
- BVES plans to increase its confidence intervals for wildfire risk assessments from more than 80 percent to more than 90 percent.[49]
- BVES plans to have the ignition risk impact analysis available for all seasons.[50]

Areas limiting BVES's maturity include the following:

- BVES does not include monetary damages, greenhouse gases, and/or air quality in estimating the consequence of ignition risk.[51]
- BVES's ignition risk estimation process, reduction impact assessment, and its process for updating risk modeling algorithms are not automated.[52]
- BVES does not have a defined process for updating its risk mapping algorithms.[53]

[46] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.I.d and A.II.b.

[47] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.I.f.

[48] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.II.d.

[49] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.II.e.

[50] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.III.c.

[51] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.III.b.

[52] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.III.c, A.IV.b, and A.V.b.

[53] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.V.a.

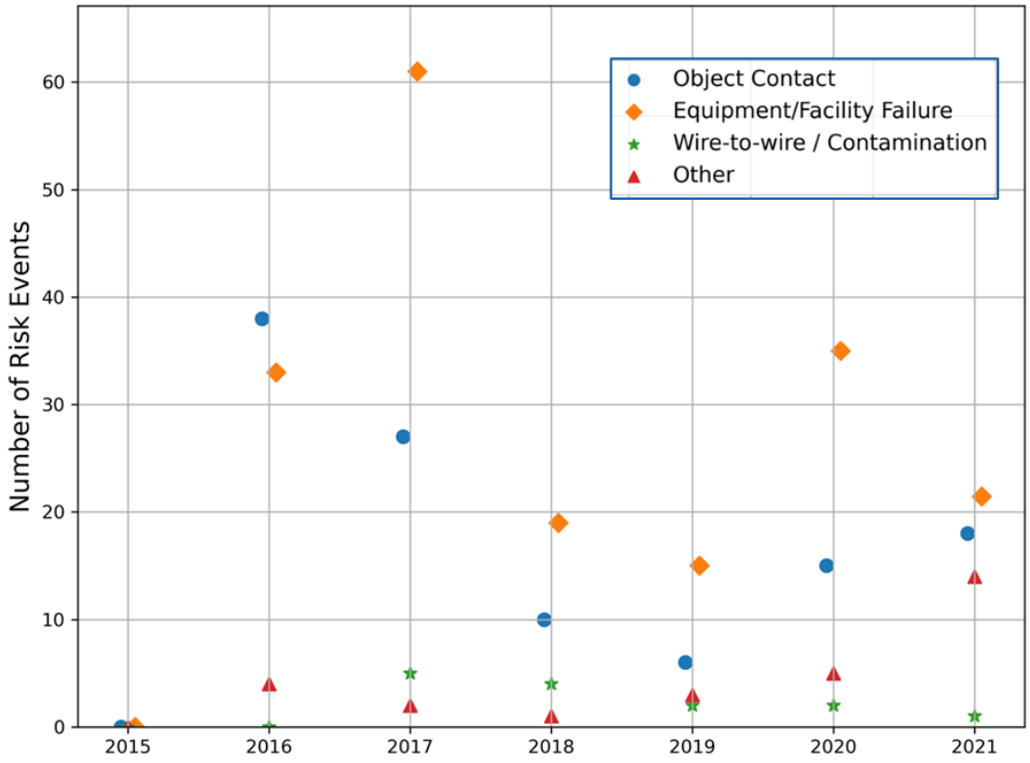
4.6.2.2 BVES's Progress

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

Decreased Risk Events

BVES reports an overall decrease in risk events from 2020 to 2021, moving from 57 to 54.4 events, as seen in Figure 4.6-1. This is primarily due to a decrease in risk events caused by equipment or facility failure. BVES reports a slight increase in risk events from object contact. BVES's average for risk events from 2016 to 2021 is 49.47 per year. BVES reports that it has not had any reportable ignitions since reporting began in 2015.

Figure 4.6-1: Yearly Number of Risk Events by Cause 2015-2016 – BVES[54]



Fire Safety Matrix and Modeling Improvements

BVES has been working to improve its existing risk models to better understand fire ignition predictability. Its risk analysis includes the Fire Safety Matrix and Risk Matrix, which work in

[54] BVES had zero risk events in 2015 because BVES did not track (and thus did not report) risk events in 2015.

conjunction to increase understanding of the frequency of hazardous events and possible impacts of those events at a circuit level. The Fire Safety Matrix is a living document that BVES also uses to update and track initiative implementation. BVES has not made modifications to the Fire Safety Matrix methodology since the 2021 WMP submission, although results have been updated.

In 2021, BVES developed a static map detailing ignition probability, consequence, and risks that is separate from the Fire Safety Matrix. This map helped BVES better understand its consequences along its system, including some future impacts from climate change. BVES used the map as a part of its considerations for initiative planning alongside its Fire Safety Matrix.

Throughout 2022, BVES is working with a third-party vendor to develop a model to integrate ignition risk drivers to ignition probability and wildfire consequence in order to better understand risk along its system and effectively determine and prioritize initiatives accordingly.

4.6.2.3 Areas for Continued Improvement

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

Accounting for Climate Change in Modeling

While BVES's current model provides some predictions for climate change conditions using Weather and Research Forecasting (WRF) 2050 projections, BVES must include more dynamic analysis of climate change impacts on risk and account for long-term risks as part of its initiative selection process. BVES also 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 they will be impacted, instead stating that it intends to revisit its existing model within the next five years. BVES must work with other utilities to evaluate best practices for accounting for climate change moving forward.

Further Integration of Community Vulnerability

While BVES has developed a self-assessment tool to identify where access and functional needs (AFN) customers live, and uses such data to help identify emergency operations, BVES 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. BVES 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, BVES 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) to evaluate spread timing and suppression effects for consequence spread modeling. Given BVES's limited resources, BVES is not required to participate in this evaluation but instead must review the findings and implement relevant measures identified by the three large IOUs into its consequence modeling, where appropriate.

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

Integration of Consequence into Risk Assessment

Currently, BVES uses different risk models that are not integrated, with each producing an individual result that BVES must consider separately as part of its risk determinations, as opposed to being able to evaluate one risk model output that automatically balances various considerations. BVES uses its own internal Fire Safety Circuit Matrix (see Table 4.6-2), which focuses on ignition risk, to prioritize its projects according to the wildfire risk each project addresses. BVES then compares the projects selected through the matrix against its risk maps, which focus on consequence risk, to plan work. By not having the models integrated and having to manually evaluate various considerations, BVES's current methodology lacks sophistication and potentially accuracy in determining overall existing risk along its system.

BVES must work to develop a tool that can process, balance, and consider both ignition and consequence risks consecutively. This will allow BVES to accurately capture, better understand, and represent risk across its territory. In turn, this should allow for more informed decision making and prioritization of areas with the highest wildfire risk.

Prioritization Based on Top-Risk Analysis

As part of the 2022 WMP Guidelines, utilities were required to submit a table that demonstrated the targeted percentage of work being done in self-defined top risk categories and areas. While BVES provides Table 5.3-1 containing this information, BVES did not use risk modeling output to develop a more granular understanding of risk based on risk ranking. Instead, BVES determined that 100 percent of its service territory is in top-risk categories because it all lies within high fire threat district (HFTD) tiers. Given that calculation, 100 percent of the work BVES completes falls into top-risk categories.

BVES must demonstrate how it has used its risk modeling to determine the areas of highest risk and must prioritize projects based on the highest-risk areas. Currently, BVES oversimplifies the calculation of top risk, which obscures how BVES understands and plans mitigations based on known risk.

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

4.6.3 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[55] 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:

[55] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Installation of advanced weather monitoring and weather stations that collect data on weather conditions so as to develop weather forecasts and predict where ignition and wildfire spread 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
- 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

4.6.3.1 Maturity Assessment

BVES's maturity level has slightly increased in the situational awareness and forecasting category throughout the current WMP cycle. According to its responses on the 2022 Maturity Survey, BVES's maturity level is projected to be similar to Liberty's and higher than PacifiCorp's in this category (Figure 4.6-2). BVES made progress from 2020 to 2022 in the following areas of situational awareness and forecasting:

- BVES installed high definition (HD) cameras in its service territory to aid in wildfire detection capabilities.[56]
- BVES increased the frequency of its weather station observations.[57]

However, compared to its 2021 survey responses, BVES's 2022 responses lowered its projected maturity 2023 level from what was originally forecasted. For instance, in its 2021 survey responses, BVES expected to be able to do the following by 2023:

- Collect weather data to measure the physical impact of weather on the grid (e.g., sway in lines, sway in vegetation).[58]

[56] BVES's Utility Wildfire Mitigation Survey, response to B.V.b.

[57] BVES's Utility Wildfire Mitigation Survey, response to B.II.b.

[58] BVES's Utility Wildfire Mitigation Survey, response to B.I.a.

- Improve the granularity of weather data collected to include wind estimations at various atmospheric altitudes relevant to ignition risk.[59]
- Extend weather forecasting to more than two weeks in advance.[60]
- Move from a partially automated to a mostly automated weather forecast.[61]
- Move from manual to automatic field calibration measurements for validating weather data.[62]
- Use ignition detection software in cameras that operates automatically as part of ignition detection procedures.[63]

Based on its 2022 Maturity Survey responses, BVES will not be able to achieve these capabilities by 2023, and therefore it lowered its projected maturity levels for 2023.

[59] BVES's Utility Wildfire Mitigation Survey, response to B.II.a.

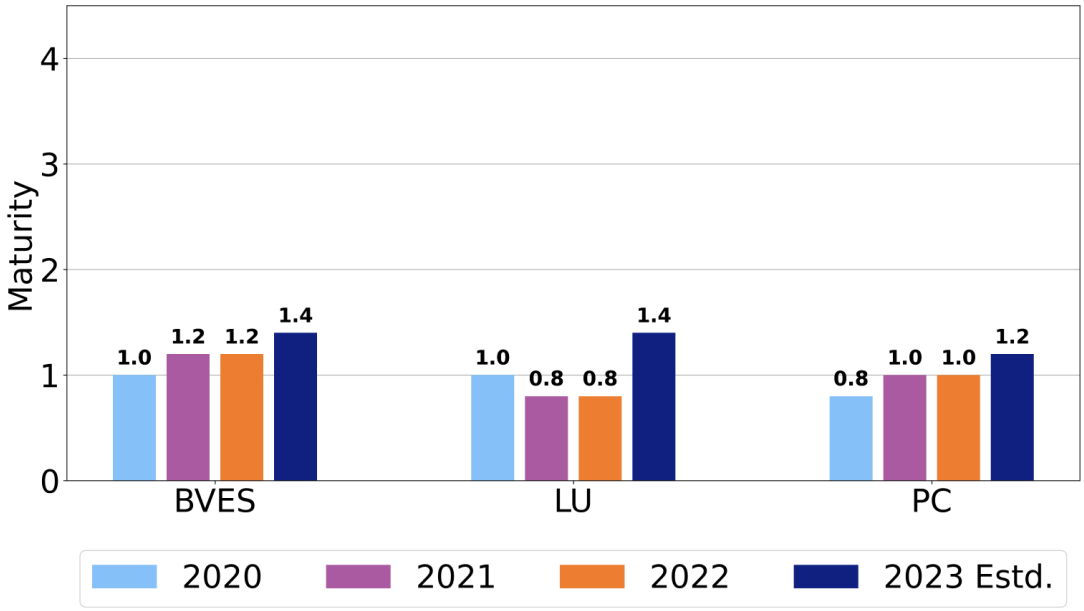
[60] BVES's Utility Wildfire Mitigation Survey, response to B.III.b.

[61] BVES's Utility Wildfire Mitigation Survey, response to B.II.d.

[62] BVES's Utility Wildfire Mitigation Survey, response to B.I.b.

[63] BVES's Utility Wildfire Mitigation Survey, response to B.V.d.

Figure 4.6-2: Cross-Utility Maturity Levels for Situational Awareness and Forecasting – SMJUs (2020-2022 Actual, 2023 Estimated)



4.6.3.2 BVES's Progress

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

- BVES reports installing its final two weather stations in 2021, thereby completing its weather station network. With these installations, BVES met its 3-year WMP program target of 20 weather stations deployed throughout its 32-square-mile service territory. As a result, BVES has a higher ratio of weather stations to circuit miles than any other electrical corporation. BVES reports having sufficient coverage of its service territory and is evaluating whether to integrate the output of the weather stations into supervisory control and data acquisition (SCADA) to provide alarm and notification capabilities.
- BVES worked on installing its fiber optic network to enhance its grid automation capabilities throughout its service territory during the current WMP cycle. In 2021, BVES reported it completed its fiber optic network installation and is now working toward adding sensors and automating substations and switches. BVES reports that these improvements will enhance its remote monitoring and real-time fault detection.
- In 2022, BVES is implementing a new pilot initiative for one circuit using continuous monitoring line sensors to help monitor and pinpoint irregularities. BVES is planning

to install 50 fault indicators in 2022 and 79 additional fault indicators in 2023. BVES reports the continuous monitoring line sensors will improve its early detection of degrading hardware, reduce the time it takes to detect and locate faults, and provide insight into grid analytics.

4.6.3.3 Areas for Continued Improvement

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

Development of a Fire Potential Index

In its 2023 WMP, BVES must describe how it has explored and/or will explore the development and use of a Fire Potential Index (FPI) in its service territory to forecast fire potential. BVES has not historically used an FPI to forecast fire potential. Instead, BVES contracts with a weather consultant and uses the National Fire Danger Rating System (NFDRS) as a guide to make operational decisions. By developing an FPI using its own weather data, fuel conditions, and fuel models, BVES could provide a more granular estimate of fire potential at the circuit level, as opposed to its current region-wide fire potential forecast.

Integrating Weather Stations into SCADA

In its 2023 WMP, BVES must commit to timeline for deciding whether or not it plans to integrate its weather stations into SCADA. If BVES determines to integrate its weather stations, they must provide a timeline for development and implementation. BVES reports in its 2022 Update that it intends to integrate the output of its weather stations into SCADA to provide alarm and notification capabilities. However, in response to a data request,[64] BVES reports it hasn't fully made the determination that this initiative will be implemented, and that it will evaluate whether it is beneficial. BVES does not include a timeline for implementation or a targeted deadline for considering weather station and SCADA integration.

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

[64] Data Request OEIS-BVES-22-003, Question 2.

4.6.4 Grid Design and System Hardening

The grid design and system hardening section of the Guidelines[65] 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
- Pole loading infrastructure hardening and replacement program based on pole loading assessment program
- Transformer maintenance and replacement

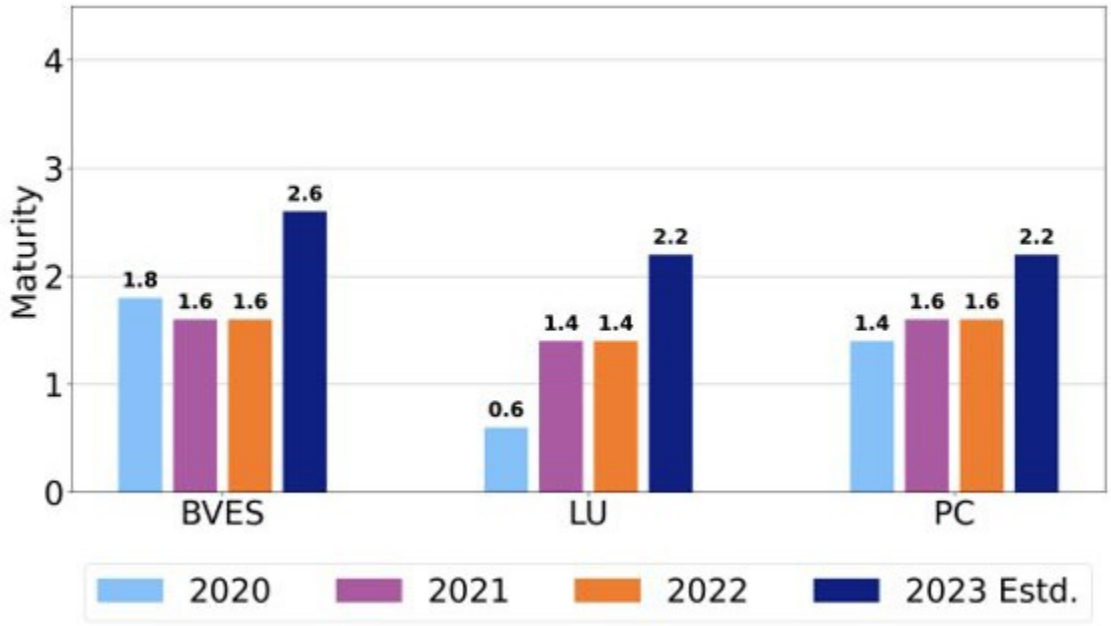
[65] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pages 74-75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- 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

4.6.4.1 Maturity Assessment

BVES's maturity in this category has remained the same since 2021. However, it has decreased since originally reported in 2020, as seen in Figure 4.6-3 (although BVES projects an increase by 2023). BVES's maturity level is comparable to those of its peers, Liberty and PacifiCorp.

Figure 4.6-3: Cross-Utility Maturity Levels for Grid Design and System Hardening – SMJUs (2020-2022 Actual, 2023 Estimated)



BVES plans to progress in the following areas by 2023:

- BVES plans to have grid topology exceed design requirements by having designs based on an accurate understanding of utility ignition risk drivers.[66]

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

- BVES plans to tailor the risk-spend efficiencies (RSEs) of hardening initiatives to the circumstances of different locations on its grid.[67]
- BVES plans to increase its granularity for RSEs of hardening initiatives from a regional to a circuit-based level.[68]
- BVES plans to independently audit the performance of new grid hardening initiatives.[69]

BVES's maturity progression is currently limited by the following:

- BVES does not provide microgrids where grid infrastructure is impracticable and wildfire risk is high. In 2021, BVES planned to do so by 2023, but it no longer projects such progress.[70]
- BVES only has a level of redundancy of its distribution architecture for at least 70 percent of its HFTD customers. In 2021, BVES projected having redundancy for at least 85 percent.[71]
- BVES's sectionalization of its distribution architecture only has isolation of no more than 1,000 customers on one switch, as opposed to 200.[72]
- BVES only uses egress as an input for grid topology design and does not map use of traffic simulations to determine egress points.[73]
- BVES does not include independent testing or field testing to support its grid hardening initiatives evaluation. In 2021, BVES projected including independent testing support by 2023.[74]

[67] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.IV.a.

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

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

[70] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.II.b.

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

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

[73] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.III.d.

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

4.6.4.2 BVES's Progress

BVES has made the following progress thus far in the current WMP cycle in grid design and system hardening:

Piloting Evacuation Route Hardening

From 2020 to 2021, BVES established and completed an evacuation route pilot program that focused on hardening poles. BVES worked with its local sheriff's department and government officials to predetermine three evacuation routes within its service area. Hardening included using fire-resistant pole wrap or replacing poles with steel, concrete, ductile iron, or fire-resistant fiberglass poles. BVES found wire wrap mesh the most cost- and time-effective for deployment, and it plans to continue hardening 800 poles along the three evacuation routes over the next two years. BVES also determined that any wooden poles needing replacement along these evacuation routes will be replaced either with a fire-resistant composite or with light-weight steel or ductile iron, based on additional testing that BVES is performing. This project focuses on increasing reliability and safety during evacuations, not on directly reducing ignition risk.

Completion of Expulsion Fuse Replacements

By the end of 2021, BVES replaced all expulsion fuses in its system, for a total of 3,185 replacements, as seen in Table 4.6-1. As required by Energy Safety's Final 2021 Action Statement, BVES evaluated options for addressing expulsion fuse replacements. It analyzed leaving existing fuses in place, developing a stand-alone program, and combining existing work. Given wildfire risks combined with cost-effectiveness, BVES replaced all expulsion fuses and combined some replacements with other existing work (such as pole replacements) to maximize efficiency of resource usage.

Table 4.6-1: BVES Expulsion Fuse Replacements, 2019-2021[75]

Expulsion Fuse Replacement	2019	2020	2021	Total
Target	600	1,700	805	3,105
Performed	283	2,001	901	3,185

[75] Data from BVES 2022 Update, Table 5.3-1: List and description of program targets, last 5 years, page 91.

Progress on Implementing SCADA

BVES still considers its SCADA network inadequate. It currently has only eight assets, including one substation, monitored via SCADA. However, BVES plans to add two substations to SCADA in 2022 and 29 more assets to SCADA in 2023. As required by Energy Safety's Final 2021 Action Statement, BVES provides locations and details for its planned SCADA additions in its 2022 Update.

4.6.4.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to grid design and system hardening.[76]

Critical Issue RN-BVES-22-03: BVES Has Not Sufficiently Connected Its Risk Assessment with Its Mitigation Initiative Prioritization

In BVES's initial 2022 Update, Energy Safety found that while BVES completes risk assessments to determine the highest-risk circuits along its system, its discussion of how it uses the risk assessment outcomes to prioritize and determine locations for initiatives was inadequate.

Energy Safety required BVES to:

a) Integrate its response to BVES-21-07, found in Appendix A, into WMP Section 7.3.3, "Grid Design and System Hardening."
b) Demonstrate that its risk assessments directly inform the prioritization of initiatives, instead of broadly stating that risk is a consideration or defaulting prioritization to only HTFD Tier 2 and Tier 3 designations.
c) Demonstrate that its future planned grid hardening mitigation initiatives, particularly covered conductor, will address the highest-risk circuits, as self-assessed and identified by BVES and its relevant contractor(s).
d) Describe how it selected the location of its covered conductor pilot program.

[76] BVES's Revision Notice Response, August 29, 2022.

RN-BVES-22-03: BVES Response Summary

In response to subpart *a*, BVES includes additional descriptions of its Risk Register and Fire Safety Circuit Matrix.

In response to subparts *b*, *c*, and *d*, BVES provides more details on its decision-making process for covered conductor selection, including a depiction via flow chart.

RN-BVES-22-03: Energy Safety Evaluation

BVES's revised 2022 Update provides clarifying details regarding its risk assessments and its decision-making process for covered conductor selection. However, BVES's response still lacks some details on the correlation between risk ranking and prioritization of projects, which relies heavily on HFTD tier designations. Additionally, BVES primarily responded about covered conductor projects and did not provide details for other initiatives.

BVES has de-escalated the critical issue described in RN-BVES-22-03; however, this remains an area for continued improvement.

Failure to Demonstrate Installation of Covered Conductor in Highest-Risk Areas

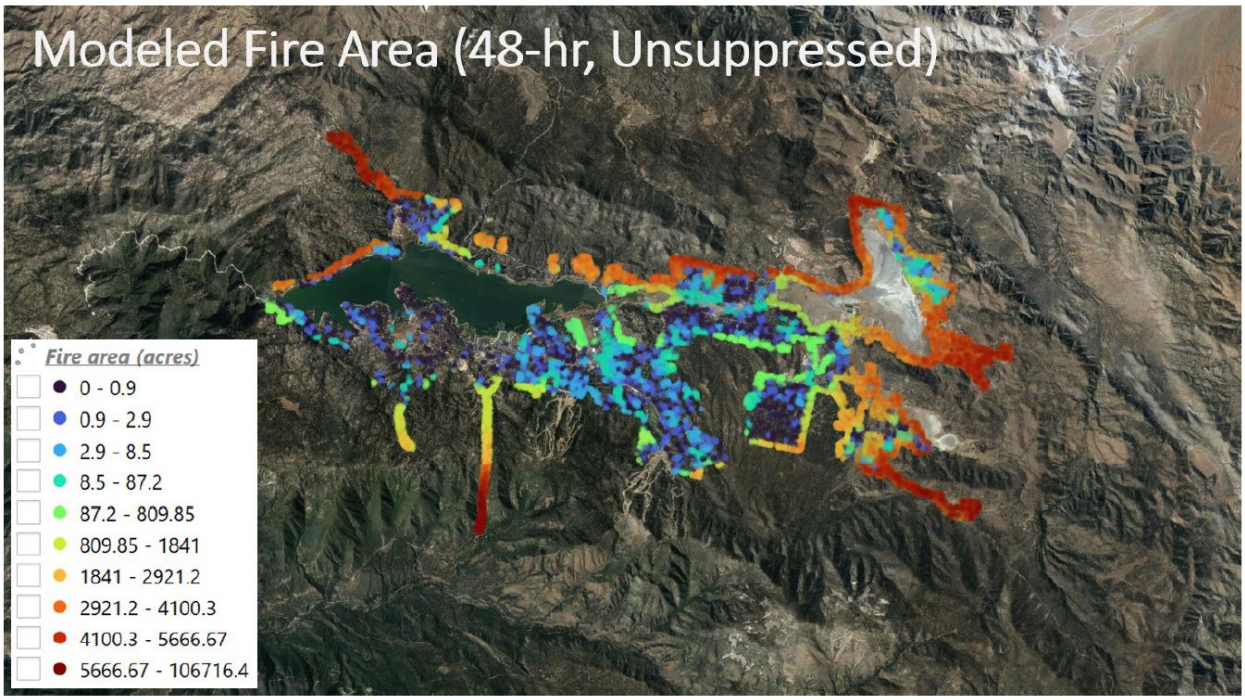
While BVES provides additional details on its decision-making process for covered conductor projects, BVES's descriptions still largely remain at a high level, and BVES has not adequately shown the tie between risk modeling and covered conductor project selection. BVES's risk maps and Fire Safety Circuit Matrix actively demonstrate that BVES's risk varies across its service territory, as seen in Figure 4.6-4 and Table 4.6-2. BVES's description of its decision-making process also primarily focuses on covered conductor. It fails to provide details on other mitigations, including other grid hardening initiatives.

Additionally, BVES plans to expand covered conductor installation for both its 4-kV and its 34.5-kV systems. For its 4-kV system, BVES intends to replace all 86 miles of bare wire in identified high-risk areas over the next 10 years, a rate of about 8.6 miles per year. BVES plans to install covered conductor in or underground its entire 34.5-kV system by 2026, a rate of about 4.3 miles per year for 87.8 total overhead miles. BVES's justification for this project is that all of its territory lies within HFTD tier 2 or 3. However, given that BVES has not adequately shown how it factors its risk modeling into project and initiative selection and prioritization, BVES has not demonstrated the need for and effectiveness of such an extensive use of covered conductor.

BVES must demonstrate how its risk modeling and analysis feed into its selection of initiatives and prioritization of projects. This must include demonstrating effective risk buydown when choosing covered conductor instead of other initiatives.

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

Figure 4.6-4: BVES's Current Risk of Fire Area[77]



[77] BVES's 2022 Update, page A-6.

Table 4.6-2 BVES's Fire Safety Circuit Matrix Risk Scores, 2019-2022[78] (H = High, M = Moderate, L = Low)

Circuit	Substation	2019 Wildfire Risk Group	2020 Wildfire Risk Group	2021 Wildfire Risk Group	2022 Wildfire Risk Group
Radford	SCE Feed	30521 (H)	30521 (H)	31215 (H)	522 (L)
Shay	SCE Feed	14230 (H)	14230 (H)	7103 (H)	4053 (H)
Baldwin	SCE Feed	7185 (H)	7185 (H)	7606 (H)	6884 (H)
Boulder	Village	3351 (H)	3351 (H)	1230 (M)	1141 (L)
North Shore (Fawnskin)	Fawnskin	7518 (H)	7518 (H)	6721 (H)	6721 (H)
Erwin Lake	Maltby	7401 (H)	7401 (H)	2006 (M)	1379 (M)
Pioneer (Palomino)	Palomino	5706 (H)	5706 (H)	2426 (M)	2426 (M)
Clubview	Moonridge	3460 (H)	3460 (H)	3331 (H)	2826 (M)
Goldmine	Moonridge	5559 (H)	5559 (H)	4491 (H)	4491 (H)
Paradise	Maltby	2754 (M)	2754 (M)	2894 (M)	1646 (M)
Sunset	Maple	3583 (H)	3583 (H)	2533 (M)	2533 (M)
Sunrise (Maple)	Maple	2650 (M)	2650 (M)	2217 (M)	2217 (M)
Holcomb (Bear City)	Bear City	5916 (H)	5916 (H)	4205 (H)	4120 (H)
Georgia	Pineknot	1919(M)	1919 (M)	1280 (M)	1280 (M)
Eagle	Pineknot	2072 (M)	2072 (M)	1813 (M)	1813 (M)
Harnish (Village)	Village	385 (L)	385 (L)	793 (L)	786 (L)
Garstin	Meadow	2440 (M)	2440 (M)	1392 (M)	1366 (M)
Lagonita	Village	2023 (M)	2023 (M)	1576 (M)	1539 (M)
Interlaken	Meadow	3275 (H)	3275 (H)	1652 (M)	1472 (M)
Castle Glen (Division)	Division	1982 (M)	1982 (M)	2365 (M)	1725 (M)
Country Club	Division	984 (L)	984 (L)	709 (L)	693 (L)
Fox Farm	Meadow	0 (L)	0 (L)	0 (L)	0 (L)
Pum House (Lake)	Lake	287 (L)	287 (L)	202 (L)	202 (L)
Lift (Summit TOU)	Summit	28 (L)	28 (L)	627 (L)	627 (L)
Skyline (Summit Res)	Summit	0 (L)	0 (L)	0 (L)	0 (L)
Geronimo Bear Mtn.	Bear Mtn.	0 (L)	0 (L)	0 (L)	0 (L)
	Total	115230	115230	90386	52464

[78] BVES's 2022 Update, Table 4.3-2: 10 Year Fire Risk Reduction Outlook, page 45. Scores are decreasing based on implementation of initiatives.

4.6.4.4 Areas for Continued Improvement

BVES must continue to improve in the following areas, in addition to the areas for continued improvement resulting from BVES's Revision Notice Response (see Section 4.6.4.3 above).

Covered Conductor Effectiveness Lessons Learned

The covered conductor effectiveness joint study clarified the differences in covered conductor installation across utilities. However, BVES 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"). BVES 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

BVES does not have a separate maintenance program or training program for covered conductor inspections. The covered conductor joint study described in BVES's 2022 Update found that several covered-conductor-specific failure modes exist that require operators to consider 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 BVES 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.

Pole Replacements Aggregated with Covered Conductor

In its 2022 Update, BVES stated its pole replacement program is included in its covered conductor program. In response to Energy Safety's Final 2021 Action Statement,[79] BVES was required to demonstrate prioritization of pole replacements and remediations that addresses risk separate from its covered conductor program. While some aggregation of pole replacements and covered conductor projects may help to effectively use available resources, the correlation of the two programs may not be one to one. Some pole hardening or replacement, such as BVES's evacuation route hardening, may target different types of risks than covered conductor. BVES must show that it has a proper pole replacement program that evaluates and addresses risks outside of its covered conductor program.

New Technologies

While BVES's WMP mentions the use of fault localization, isolation, and system restoration (FLISR), it does not mention many new technologies being piloted by other utilities. Other utilities have either already completed pilots of or are at different stages of implementing and observing promising new technologies. These include distribution fault anticipation (DFA), early fault detection (EFD), and rapid earth fault current limiters (REFCL). Some of these capabilities are discussed in Section 4.6.3, Situational Awareness and Forecasting.

BVES must provide more details on how it plans to collaborate with and learn from other utilities to further explore the benefits of other system hardening and situational awareness technologies.

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

4.6.5 Asset Management and Inspections

The asset management and inspections section of the Guidelines[80] requires the utility to discuss power line and infrastructure inspections for distribution and transmission assets

[79] Final Action Statement on 2021 Wildfire Mitigation Plan Update – Bear Valley Electric Service, Inc., from Sept. 8, 2021 (accessed Oct. 25, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51722&shareable=true.

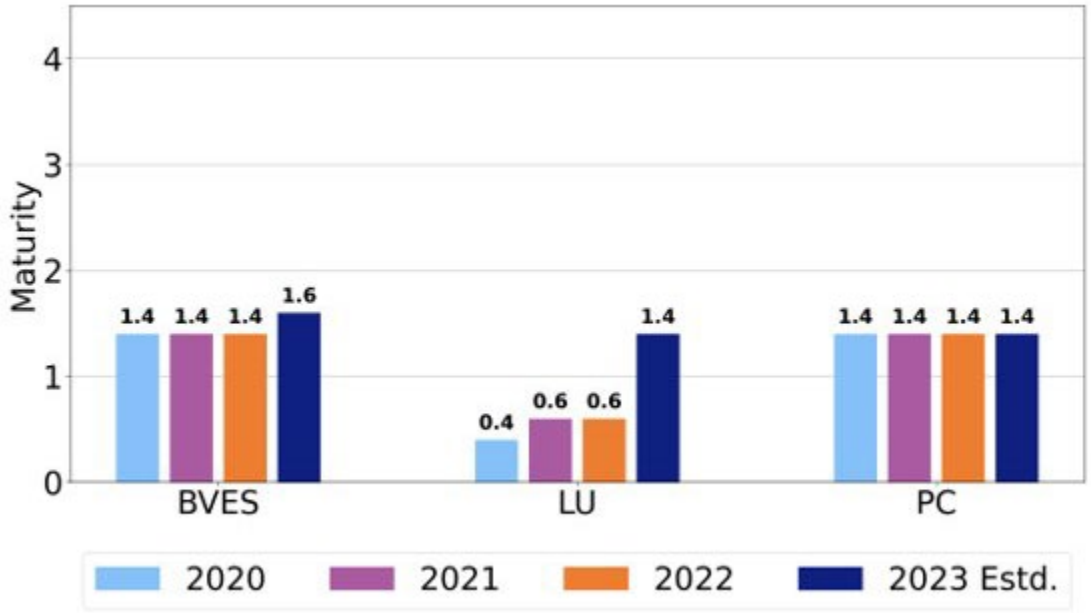
[80] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

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.

4.6.5.1 Maturity Assessment

BVES's maturity in asset management and inspections has remained the same from 2020 to 2022, with a slight increase projected for 2023, as seen in Figure 4.6-7. BVES remains comparable to the other SMJUs in this category. Of the three, BVES projects the highest maturity for 2023.

Figure 4.6-5: Cross-Utility Maturity Levels for Asset Management and Inspections – SMJUs (2020-2022 Actual, 2023 Estimated)



BVES plans to increase maturity in the following areas by 2023:

- BVES plans to schedule patrol, detailed, and other inspections based on modeling and risk assessments.[81]

[81] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.b, D.II.c, D.II.f, D.II.g, D.II.h, and D.II.i.

- BVES plans to include lines and equipment typically responsible for ignitions and near misses in its inspection procedures and checklists, as opposed to only items required by statute and regulations.[82]
- BVES plans to base procedures and checklists on predictive modeling and to increase the granularity from a service territory to a circuit level.[83]
- BVES plans to include performance history and past operating conditions when accounting for maintenance and repair procedures.[84]

BVES is limited in maturing in the following areas:

- BVES's equipment inventory database does not include up-to-date work plans for expected future repairs and replacements. In its 2021 submission, BVES projected including these by 2023.[85]
- BVES's condition assessment within its equipment inventory database is only updated annually. In 2021, BVES projected updating assessments quarterly by 2023.[86]
- BVES does not use continuous monitoring equipment or have the ability to de-activate electric lines and equipment exhibiting incipient malfunctions likely to cause ignition.[87]
- BVES sets service intervals based on a circuit's wildfire risk, as opposed to having them informed by real-time monitoring. In 2021, BVES projected including real-time monitoring by 2023.

[82] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.III.a.

[83] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.III.b and D.III.c.

[84] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.IV.c.

[85] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.I.a.

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

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

- BVES's QA/QC process for asset management does not grade individuals or recommend specific pre-made and tested trainings based on weaknesses. In 2021, BVES projected including these by 2023.[88]

4.6.5.2 BVES's Progress

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

BVES augments its routine inspections with additional inspection types, including unmanned aerial vehicle (UAV) thermography, UAV HD photography, LiDAR inspections, and third-party ground patrols. In 2021, BVES met its target of 211 circuit miles (BVES's entire system mileage) for each of these inspection types. For 2022, BVES again plans to continue inspecting its entire system (211 circuit miles) using each inspection type.

4.6.5.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to asset management and inspections.[89]

Critical Issue RN-BVES-22-04: BVES Has Not Provided Sufficient Information on Quality Assurance and Quality Control (QA/QC)

In its Final Action Statement on BVES's 2021 WMP Update, Energy Safety identified a key area of improvement (BVES-21-09) that required BVES to develop and provide updates on its adoption of a formal QA/QC process for asset inspections. Energy Safety found that in its 2022 Update, BVES provided little detail on its progress in developing its formal QA/QC program and little to no detail on any pre-existing or interim QA/QC processes.

Energy Safety required BVES to:

a) Provide details on progress made developing and implementing its formal QA/QC process, including implementation timing.

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[88] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to D.V.d.

[89] BVES's Revision Notice Response, August 29, 2022.

b) Provide information on the "interim" QA/QC processes BVES has used for assets, including details on what type of QA/QC was performed, the percentage of asset inspections on which BVES completed QA/QC, and the results of the QA/QC performed since the 2021 Update.

RN-BVES-22-04: BVES Response Summary

In response to subparts *a* and *b*, BVES provides additional descriptions of its QA/QC process via an additional attachment, as well as a table on QC program tracking.

RN-BVES-22-04: Energy Safety Evaluation

In its revision, BVES includes an attachment outlining its QA/QC process, which demonstrates tangible and adequate progress towards developing its formal QA/QC program. However, BVES's descriptions of its QA/QC program remain relatively broad, and BVES does not provide actual results of its completed interim QA/QC processes for asset inspections. BVES's formal QA/QC process still needs further development and documentation, including concrete targets that can be tracked for progress.

BVES has de-escalated the critical issue described in RN-BVES-22-04. However, this remains an area for continued improvement.

Demonstration of QA/QC Process for Asset Inspections

While BVES provides additional details about its formal QA/QC process for asset inspections, BVES does not provide adequate documentation to show the adoption and implementation of the new process. For instance, in response to a data request about which initiatives the process covered, BVES only included its covered conductor program, not its asset inspections.[90] This implies that the asset inspection QC either was not implemented or was not documented. BVES does not demonstrate that it documented the results of its interim QA/QC process for asset inspections.

BVES also does not provide quantitative targets to track its QA/QC progress, such as pass rate goals. Lastly, BVES does not provide any iterative process demonstrating that the QA/QC results will inform its existing asset inspection program. This limits BVES's ability to apply lessons learned and improve quality moving forward. BVES must continue developing and

[90] Data Request CalAdvocates-BVES-2022WMP-12, Question 8.

improving its QA/QC process for asset inspections to adequately track the quality and accuracy of its asset inspection programs.

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

4.6.5.4 Areas for Continued Improvement

BVES must continue to improve in the following areas, in addition to the areas for continued improvement resulting from BVES's Revision Notice Response.

Decline in Pole Loading Assessments

Given BVES's integration of its pole replacement program and covered conductor program, BVES states that it intends to end its existing pole loading assessment program in 2022. From 2020 to 2021, BVES assessed 748 poles. Of these, 386 failed, giving a fail rate of around 51.6 percent.[91] With such a high fail rate, it is unclear why BVES is choosing to eliminate the existing program, especially given the differing risks of pole failures compared to covered conductor replacements. BVES must either provide more support for its decline in pole loading assessments, including the number of poles assessed within the highest-risk areas (as determined by BVES's risk modeling), or show that future programs will adequately cover risks presented by pole loading moving forward.

Effectiveness of Various Asset Inspection Initiatives

As discussed above, BVES is integrating various technologies and additional inspection types, such as UAV thermography, LiDAR, and third-party patrols, to augment its routine detailed and patrol inspections. Within its 2022 Update, BVES discusses the effectiveness of each asset inspection type by comparing results and effectiveness as part of its future improvements. However, BVES does not detail how it measures and evaluates effectiveness, nor does it provide additional details of how the results of effectiveness for inspections may affect the scope of work for a given inspection type.

[91] BVES's 2022 Update, QDR Table 3.

Given BVES's efforts to pilot and run these additional inspections, BVES must provide more data showing how it has analyzed their effectiveness and success in defining the scope and appropriateness of use of additional technologies moving forward.

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

4.6.6 Vegetation Management and Inspections

The vegetation management and inspections section of the Guidelines[92] 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).

4.6.6.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, BVES's average maturity level of 1.8 in vegetation management and inspections has remained the same since 2020 (Figure 4.6-6). BVES has a higher maturity level than its peers, Liberty and PacifiCorp, and the second highest of all electrical corporations, behind SDG&E.

By 2023, BVES plans to increase its average maturity level to 2.5 by:

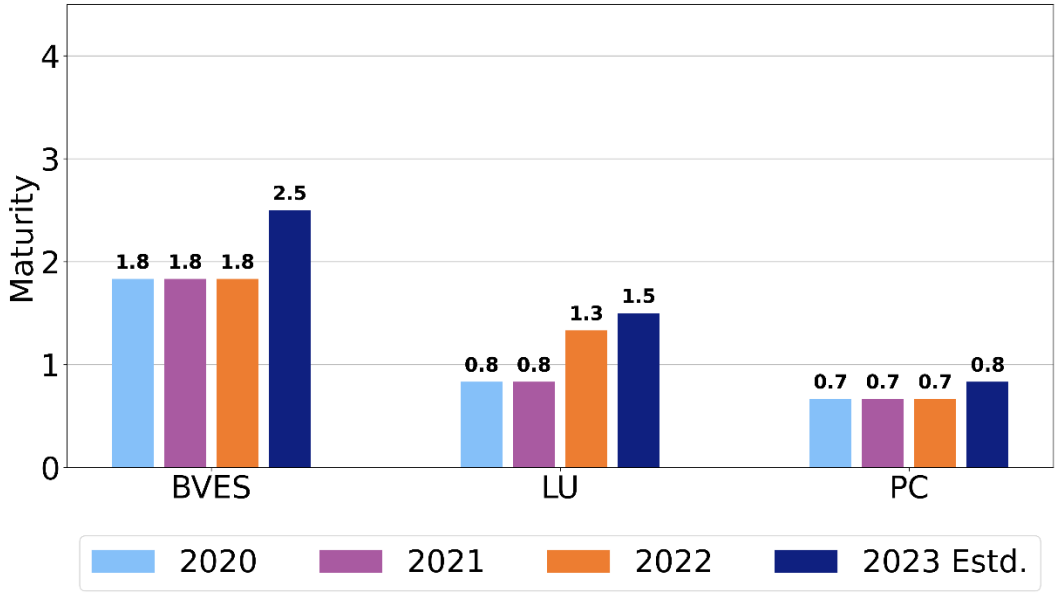
- Including individual vegetation species and their expected growth rate in its centralized vegetation inventory.[93]

[92] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pages 75-76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[93] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.I.a.

- Scheduling vegetation inspections using risk determined by predictive modeling of vegetation growth.[94]
- Including vegetation types typically responsible for ignitions and near misses in inspection procedures and checklists.[95]
- Basing inspection procedures and checklists off predictive modeling.[96]
- Using independent experts to validate inspection procedures and checklists.[97]
- Systematically removing vegetation outside of the right-of-way and informing relevant communities of removal.[98]
- Recommending training based on weaknesses discovered during QA/QC audits.[99]

Figure 4.6-6: Cross-Utility Maturity Levels for Vegetation Management and Inspections – SMJUs (2020-2022 Actual, 2023 Estimated)



[94] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.II.b and E.II.c.

[95] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.III.a.

[96] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.III.b.

[97] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.III.b.

[98] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.V.a.

[99] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, responses to E.IV.d.

4.6.6.2 BVES's Progress

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

Tree Inventory

BVES is working with a contractor to update its tree inventory. This new inventory will create unique IDs for individual trees and hold relevant data on those individuals (e.g., species, height, condition). The system will alert BVES to individual trees that require revisits based on growth rates. BVES expects this system to be in use by the end of 2023.[100]

Quality Assurance Audits

In 2021, BVES began performing quarterly QA audits, conducted by BVES's wildfire mitigation and reliability engineer, and annual program audits, conducted by the contracted forester, each January for the previous calendar year. Quarterly audits include various metrics, such as the number of Level 1[101] vegetation discrepancies identified, and a discussion of corrective action taken on issues noted in previous quarterly audits. The annual audit is "intended to be a comprehensive review of the [Vegetation Management] Program"[102] and asks the contracted forester to answer such questions as:[103]

- Are changes to the vegetation management contract scope of work needed?
- Should additional inspections be performed?
- Is the scheduling of inspections appropriate, or should it be modified?
- Are vegetation management quality control checks effective at identifying vegetation clearance issues?
- Are changes in the company's execution of its vegetation management program warranted?

[100] BVES's 2022 Update, Revision 1, page 247.

[101] BVES uses the priority levels defined in General Order 95, Rule 18, to describe its vegetation-related findings. A Level 1 finding is an "immediate safety and/or reliability risk" for which it must "take action immediately, either by fully repairing the conditions, or by temporarily repairing and reclassifying the condition to a lower priority."

[102] BVES's 2022 Update, Revision 1, pages 238.

[103] BVES's 2022 Update, Revision 1, pages 238-240.

Both the quarterly and the annual audits appear designed to allow BVES to adapt to challenges related to vegetation management and regularly question the effectiveness of its vegetation management program in an effort to improve process, procedures, and protocols.

4.6.6.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to vegetation management and inspections.[104]

Critical Issue RN-BVES-22-05: BVES Claims Aspects of Its Vegetation Management Program Are "Enhanced" Despite Meeting Only Minimum Regulatory Requirements

Energy Safety found that in its initial 2022 Update, BVES did not explain what aspects of "enhanced" initiatives exceed general orders (GOs) and other regulatory minimums.

Energy Safety required BVES to:

a) Clearly and fully articulate its detailed inspections, fuels mitigation, patrol inspections, and hazardous tree removal practices.
b) Clarify how these mitigation initiatives are "enhanced," exceeding the regulatory requirements it cited or alluded to throughout Section 7.3.5, "Vegetation Management and Inspections," of its 2022 Update. If these mitigation initiatives are not "enhanced," Energy Safety required BVES to dispense with such language.

RN-BVES-22-05: BVES Response Summary

In response to subpart *a*, BVES describes its detailed inspections, fuels mitigation, patrol inspections, and hazardous tree removal practices.

In response to subpart *b*, BVES provides Table 7.3-5, "Comparison of BVES VM Program to GO 95," to illustrate how its vegetation management program exceeds GO 95 and GO 165 requirements.

[104] BVES's Revision Notice Response, August 29, 2022.

RN-BVES-22-05: Energy Safety Evaluation

BVES's revised 2022 Update clarifies which aspects of its vegetation management program exceed minimum regulatory requirements. Generally, BVES's clearance practices exceed the radial clearances required per GO 95. For inspections, BVES applies GO 165 asset inspection frequencies to its vegetation management program and performs other discretionary inspections such as LiDAR and a third-party ground patrol.

BVES has satisfied each required remedy for RN-BVES-22-05 and has resolved this critical issue.

4.6.6.4 Areas for Continued Improvement

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

Quality Control Personnel Qualifications

In Appendix E of its 2022 Update, "BVES Vegetation Management and Vegetation QA/QC Programs," BVES lists the designated staff that are assigned vegetation management QC checks.[105] In a data request, Energy Safety asked BVES to describe and/or list the qualifications (e.g., education, training, experience, certifications, licenses) that qualify each designated staffer to perform vegetation management QC checks.[106] From BVES's response, it is evident that BVES staff are knowledgeable in various aspects of utility operations. However, it seems that BVES staff have limited direct experience in arboriculture or forestry, other than performing BVES's QC checks. It is essential for BVES to have qualified personnel examining completed vegetation management and assessing the performance of its sole vegetation management contractor. BVES must consider alternative qualified staffing for its vegetation management QC checks. This consideration must include the possibility of employing or contracting with certified arborists or registered professional foresters to perform these QC checks. In its 2023 WMP, BVES must report on how it considered alternative staffing for vegetation management QC checks and any resulting action it has taken or will take.

[105] BVES's 2022 Update, Appendix E, Table 5-2, page E-12.

[106] Data Request OEIS-BVES-22-003, Question 7.

Participation in Vegetation Management Best Management Practices Scoping Meeting

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 between electrical corporations' vegetation management programs and allow for collaboration among the electrical corporations, stakeholders, and academic experts. BVES 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.

4.6.7 Grid Operations and Operating Protocols, Including PSPS

The grid operations and operating protocols section of the Guidelines[107] requires discussion of ways the utility operates its system to reduce wildfire risk. For example, disabling the reclosing function of automatic reclosers[108] 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.

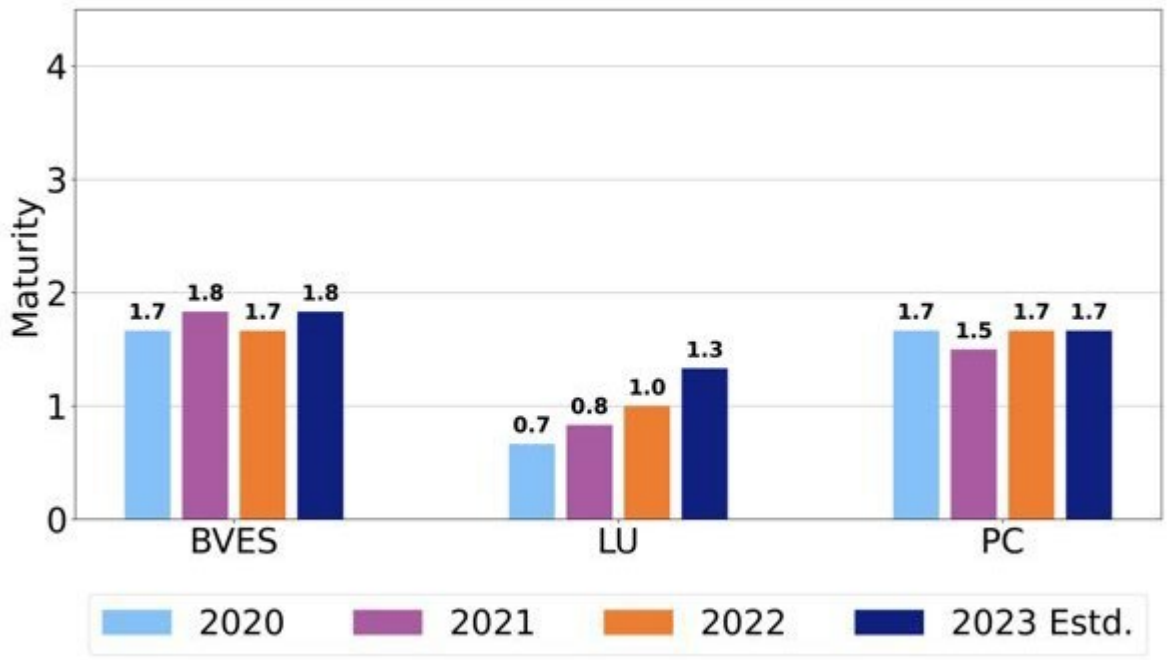
[107] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[108] 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.

4.6.7.1 Maturity Assessment

BVES has remained at a steady maturity level from 2020 to 2022, with a slight decrease from 2021 to 2022 and an increase projected in 2023, as seen in Figure 4.6-7. BVES's grid operations maturity level of 1.7 in 2022 is comparable to PacifiCorp's (also at 1.7) and higher than Liberty's (1.0).

Figure 4.6-7: Cross-Utility Maturity Levels for Grid Operations and Operating Protocols – SMJUs (2020-2022 Actual, 2023 Estimated)



BVES is planning to improve in the following areas by 2023:

- BVES plans to base adjustments to grid elements during high-threat weather conditions on risk mapping.[109]

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

- BVES plans to provide training to workers at other utilities and outside the utility industry on best practices for minimizing, reporting, and suppressing ignitions.[110]

BVES's maturity is limited by the following areas:

- BVES's process for adjusting the sensitivity of grid elements and evaluating effectiveness is only partially, as opposed to fully, automated.[111]
- From 2021 to 2022, BVES moved from "yes" to "no" in answer to the question of having a clear process for determining whether to operate the grid beyond current or voltage designs.[112] In response to a data request, BVES explains that it changed its response because "its policy is not to intentionally operate the grid beyond current or voltage designs; therefore, such a process is unnecessary."[113]
- BVES does not use predictive modeling to inform its grid operations. In 2021, BVES projected using modeling by 2023.[114]
- BVES does not augment its re-energization process with sensors and aerial tools, with the process only being partially (less than 50 percent) automated.[115]
- BVES does not have communication tools that function without cell reception. It also does not provide training by suppression professionals. In 2021, BVES projected having these by 2023.[116]

4.6.7.2 BVES's Progress

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

[110] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.VI.d.

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

[112] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.II.a.

[113] Data Request OEIS-BVES-22-005, Question 3.

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

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

[116] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.VI.b.

Ignition Suppression Crew

As required in Energy Safety's Final 2021 Action Statement, BVES provided additional detail on why it does not have a designated crew for ignition prevention and suppression. BVES explains that it has procedures in place during high fire threat days. BVES finds that an additional separate crew for ignition suppression is not necessary and would not be effective, given BVES's small service territory size, the adequacy of local fire department response, and BVES's requirement that field employees carry fire extinguishers.

4.6.7.3 Areas for Continued Improvement

In addition to progress made, BVES must continue to improve in the following area:

Updates on Protective Device Settings

BVES has not yet implemented fast trip settings on its protective devices and is currently coordinating studies to evaluate doing so. This includes establishing a contract with engineering firms to evaluate whether and how to implement sensitivity settings for protective devices. However, BVES has not provided any details on the timeline or scope of this process. BVES must update its progress in evaluating and establishing sensitivity settings on its protective devices, especially given the progress seen in this area for other utilities.

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

4.6.8 Data Governance

The data governance section of the Guidelines[117] 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.

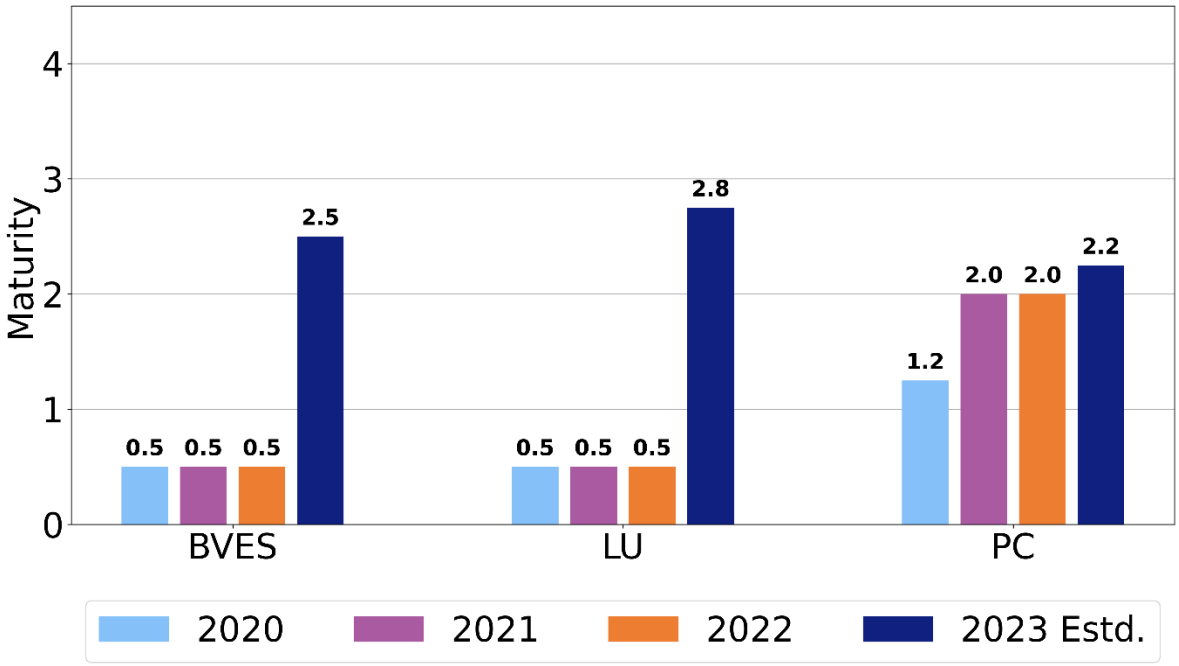
4.6.8.1 Maturity Assessment

BVES's average maturity level of 0.5 for data governance is low compared to that of its peer PacifiCorp but similar to that of its other peer, Liberty. BVES's level has remained static from

[117] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pages 76-77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

2020 to 2022 (Figure 4.6-8). However, BVES projects increased maturity in all four data governance-related capabilities by 2023, for an overall maturity level of 2.5. This large increase in maturity relates to projected improvements in data collection and curation, near-miss tracking, and data sharing with the research community. These projected improvements are not supported by information found in any of BVES's WMP submissions over the current WMP cycle.

Figure 4.6-8. Cross-Utility Maturity Levels for Data Governance – SMJUs (2020-2022 Actual, 2023 Estimated)



4.6.8.2 BVES's Progress

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

BVES reports that it hired a contractor to assist with updating its geographic information systems (GIS) and a GIS specialist to digitize assets, outages, inspections, and initiatives.[118]

[118] While these actions are reported as progress in BVES's 2022 Update, they were previously reported in its 2021 Update.

BVES also reports that, by the end of 2021, "50 percent of GIS were updated to the correct format."[119] However, it is not clear what those updates are or to what format BVES is referring.

4.6.8.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to data governance.[120]

Critical Issue RN-BVES-22-06: BVES Has Misinterpreted Data Management Initiatives

Energy Safety found that in its initial 2022 Update, BVES misinterpreted 2022 WMP Guidelines requirements for Section 7.3.7, "Data Governance." BVES limited its discussion of data governance to data collected and managed for its quarterly spatial data submissions. This misinterpretation resulted in underreporting.

Energy Safety required BVES to describe how it currently manages all data relevant to wildfire mitigation and any planned or ongoing improvements to these systems, in accordance with the 2022 WMP Guidelines.

RN-BVES-22-06: BVES Response Summary

In its revised 2022 Update, BVES responds to RN-BVES-22-06 by adding Table 7.3-9 "Detailed Data Information" which describes several data sources and those sources' storage location, type, and "planned next steps."[121] According to the table, BVES plans to migrate its vegetation management and substation inspection data to a cloud-based software by the end of 2022. Vegetation management data are currently in Excel workbooks and geodatabases, with some data possibly held by other external entities. Substation inspection records are stored via a "paper-based-database."

[119] BVES's 2022 Update, Revision 1, page 265.

[120] BVES's Revision Notice Response, August 29, 2022.

[122] BVES's 2022 WMP Update, Revision 1, page 264.

RN-BVES-22-06: Energy Safety Evaluation

Table 7.3-9, described above, outlines how BVES currently manages data relevant to wildfire mitigation and planned improvements to the relevant systems. This satisfies Energy Safety's requirements in part. However, the narrative text of WMP Section 7.3.7, "Data Governance," is still "focused on gathering the required [Energy Safety] GIS feature datasets."[122] This focus ignores the full extent of the 2022 Guidelines requirements.

BVES has described data relevant to wildfire mitigation; therefore, it has de-escalated the critical issue in RN-BVES-22-06. However, because BVES only partially fulfilled the 2022 Guidelines requirements for data goverance, this remains an area for continued improvement.

Reporting of Data Management Systems

In its 2023 WMP, BVES must provide detailed descriptions of its existing data systems, integration, and planned upgrades in accordance with the 2023-2025 WMP Technical Guidelines.

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

4.6.9 Resource Allocation Methodology

The resource allocation methodology section of the Guidelines[123] 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.

4.6.9.1 Maturity Assessment

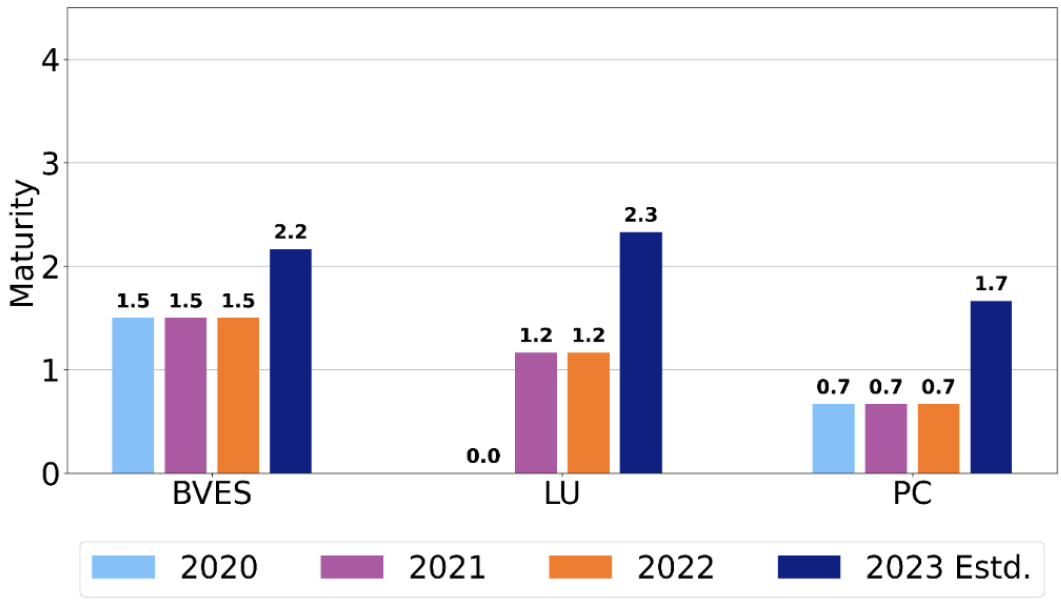
BVES's maturity level has remained static at 1.5 in the resource allocation methodology category over the current WMP cycle. BVES has the highest maturity level of the SMJUs in this

[122] BVES's 2022 WMP Update, Revision 1, page 264.

[123] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

category, with Liberty and PacifiCorp reaching maturity levels of 1.2 and 0.7, respectively, in 2022. BVES projects increasing its maturity level to 2.2 by 2023.

Figure 4.6-9: Cross-Utility Maturity Levels for Resource Allocation Methodology – SMJUs (2020-2022 Actual, 2023 Estimated)



BVES plans to progress in the following areas by 2023:

- BVES plans to increase the granularity for its risk scenario projections and risk efficiency figures from a regional to a circuit level.[124]
- BVES plans to evaluate risk reduction synergies from a combination of various vegetation management and grid hardening initiatives.[125]
- BVES plans to verify RSE estimates through confirmation by independent experts or other California utilities.[126]

[124] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.I.b, H.II.e, H.III.b, and H.IV.b.

[125] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.III.e and H.IV.e.

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

- BVES plans to use pilots followed by in-field testing and to measure direct reduction in ignition events and near misses to develop and evaluate the efficacy of new wildfire initiatives.[127]
- BVES plans to have reviews of innovative initiatives independently audited.[128]

BVES's maturity is limited by the following:

- BVES does not provide its proposed scenario as part of its projected cost and total risk reduction potential.[129]
- BVES does not include emerging initiatives in its RSE rankings. In 2021, BVES responded that these were included, as well as all commercial initiatives.[130]
- BVES does not include estimates of impact on reliability factors in its explanation for investments in each initiative.[131]
- BVES does not include sensitivities in its RSE calculations for vegetation management or system hardening initiatives. In 2021, BVES projected inclusion of these sensitivities by 2023.[132]
- BVES does not support its vegetation management initiatives evaluation using independent testing. In 2021, BVES projected doing this by 2023.[133]
- BVES does not include grid hardening initiatives that are lab tested. In 2021, it projected including these by 2023.[134]

4.6.9.2 BVES's Progress

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

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

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

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

[130] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.II.b.

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

[132] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.III.a and H.IV.a.

[133] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.III.d.

[134] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to H.IV.d.

RSE Estimates and Prioritization

BVES provided more RSE estimates for wildfire and PSPS mitigation initiatives in its 2022 Update than in past WMP submissions. To date, BVES has calculated 52 RSEs for wildfire mitigation and 19 RSEs for PSPS mitigation initiatives. As BVES explains, changes in year-to-year RSE estimates are almost exclusively due to updating the annualized cost data for each initiative. BVES annually reviews and updates cost estimates for WMP initiatives to ensure they are reflective of the market, including adjustments for inflation, and any changes to project scope.

BVES continues to use its prioritization methodology for personnel and financial resources, seeking to achieve the largest risk reduction per dollar spent. Its Risk Register Model quantifies mitigation projects and programs by risk benefit and RSE. BVES uses a 7x7 log score model matrix to determine impact risk scores, where risk scoring inputs and total risk score form the basis of evaluation for each identified wildfire mitigation initiative. BVES then calculates the risk reduction for each scoring input to arrive at a weighted mitigated risk score. It determines the risk reduction for each combination of mitigation activity and risk event by subtracting the mitigated risk score from the total risk score. BVES also defines an annual cost for each mitigation activity and uses the risk register to calculate the RSE by dividing the risk benefit by the annual cost.

Initiative Selection and Decision Making

The results of BVES's analysis for the 2022 Update show that several critical hardening programs are capital intensive and therefore yield lower RSE estimates. BVES sees these programs as critical to hardening its system and as proactive measures that have been adopted widely across California to mitigate wildfire risks. In addition to evaluating the risk reduction and RSE, BVES must consider the timing and proper sequencing of its wildfire mitigation initiatives. For example, while establishing a distribution management center represents a high RSE, this cannot be done until certain grid automation initiatives are near completion in 2025.

BVES evaluates enterprise risk using a risk-based decision-making framework and has adopted a Fire Safety Circuit Matrix to prioritize wildfire risk and evaluate mitigation. The combination of these two methods serves as a proxy for the wildfire ignition risk assessment. The Fire Safety Circuit Matrix is also a living document that BVES uses to re-evaluate mitigations as they are implemented and gauge overall progress. According to BVES's analysis for the 2022 Update, the results show a decrease in risk weight of four formerly high-risk circuits. These are now categorized as moderate risk following 2021 WMP implementation activities.

Figure 4.6-10: BVES's Risk-Based Decision-Making Framework

Risk Modeling and Mapping

BVES has hired a contractor to develop a fire model. This work has resulted in several risk maps based on service area characteristics, climate history, and climate forecast. In 2022, BVES plans to contract with an additional fire modeling firm to assist with future risk algorithms as a next step now that static results have been developed.

In 2021, BVES enhanced its ignition risk mapping methodology by completing several ignition probability models. To further improve initiative selection, BVES is working with a contractor to develop a model that better quantifies ignition risk drivers and their probabilities. This effort is expected to increase BVES's understanding of the risk environment and therefore improve resource allocation. BVES plans to use the results to help it decide which mitigations to apply to targeted circuits and assets to achieve the greatest reduction in wildfire risk. This project is expected to be complete in 2022.

BVES reports it is also building and investing in tools, procedures, and expertise to support analysis of wildfire mitigation initiative RSEs. In 2022, BVES plans to contract for real-time modeling support, including a suite of tools (e.g., the Wildfire Risk Reduction Model) to aid in risk assessment and planning. For example, BVES will secure a subscription platform that will provide live risk reduction event scenario planning. This tool will provide live daily risk forecasting analysis and on-demand fire simulation runs under current or forecasted weather conditions. Other California utilities are currently using these technologies. BVES seeks to learn from other utilities and is taking steps to align its approach with industry best practices.

4.6.9.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice

on August 29, 2022. This section evaluates that response as it relates to resource allocation methodology.[135]

Critical Issue RN-BVES-22-07: BVES Does Not Describe How Quantifiable Risk Reductions and RSE Estimates Inform Initiative Selection

Despite progress made, Energy Safety found that BVES's initial 2022 Update lacked transparency regarding its decision-making process and did not explain where quantifiable factors such as costs, risk reduction values, and RSE estimates are considered in initiative selection.

Energy Safety required BVES to provide:

a) An overview of its decision-making framework that includes the rankings of decision-making factors (e.g., planning and execution lead times, resource constraints) and points where quantifiable risk reductions and RSE estimates are considered in the initiative selection process.
b) A cascading, dynamic "if-then" style flow chart to effectively demonstrate this prioritization process.

RN-BVES-22-07: BVES Response Summary

In response to subpart *a*, BVES provides additional descriptions of its decision-making framework.

In response to subpart *b*, BVES provides a flow chart demonstrating its decision making, primarily focusing on covered conductor, as discussed in Section 4.6.4.

RN-BVES-22-07: Energy Safety Evaluation

In its revised 2022 Update, BVES responds to RN-BVES-22-07 by providing more details on how it uses its Fire Safety Matrix, further descriptions of its project selection and prioritization process, and a flow chart for its decision making. Though BVES addresses the absence of explanations for its decision-making process, its response demonstrates there is still room for improvement in that process. Specifically, BVES's flow chart is linear, as opposed to being in

[135] BVES's Revision Notice Response, August 29, 2022.

an "if-then" format (as required by RN-BVES-22-07). Further, the flow chart does not adequately demonstrate where and how BVES considers risk and RSEs in its project selection.

BVES has de-escalated the critical issue described in RN-BVES-22-07. However, this remains an area for continued improvement.

Improving the Decision-Making Process

In the flow chart that BVES provides in response to the Revision Notice, the descriptions are high-level and demonstrate a linear, as opposed to an iterative "if-then," process. In particular, the flow chart provides only a short description of integration of risk and RSEs. It says the two are "determined" and "calculated" without providing much detail on the process for doing either; the thresholds or considerations for using these calculations within its decision-making process; or their weights in that process.

Additionally, BVES's linear style does not show how it cascades or compares different initiatives or how and where BVES implements lessons learned. BVES needs to continue to evolve its decision-making process and provide more details on how it selects initiatives, project locations, and scope. It also needs to focus on how risk and RSE estimates play into these decisions.

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

4.6.10 Emergency Planning and Preparedness

The emergency planning and preparedness section of the Guidelines[136] 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

[136] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

deemed prevalent in its territory (Decision 19-05-036, supplemented by Decision 20-03-004),[137] and other languages required by the CPUC.

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.

4.6.10.1 Maturity Assessment

BVES is equal to PacifiCorp in emergency planning and preparedness maturity, with both at higher levels than their peer, Liberty, from 2020 to 2022. BVES, also like PacifiCorp, anticipates this maturity to increase from 2022 to 2023, rising from 3.6 to 4.0. See Figure 4.6.12.

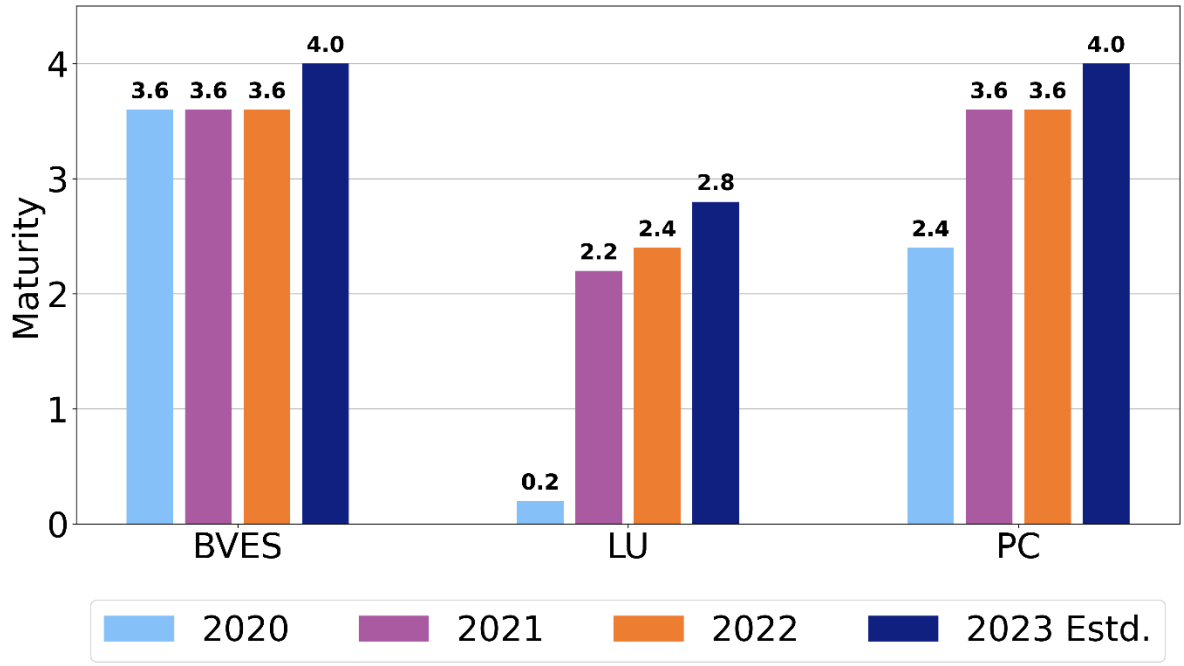
BVES's emergency planning maturity is currently limited by the following:

- As part of its continuous improvement process after wildfire and PSPS events, BVES engages in debriefs with partners, but it does not yet engage in public listening sessions. However, by 2023, BVES plans to do so, among other post-wildfire and PSPS engagement activities.[138]

[137] 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 percent or more of the population within a "public safety answering point" in the utility territory. See California Government Code section 53112 for more information.

[138] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to I.V.c.

Figure 4.6-11: Cross-Utility Maturity for Emergency Planning and Preparedness – SMJUs (2020-2022 Actual, 2023 Estimated)



4.6.10.2 BVES's Progress

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

- BVES implemented the iRestore application, which provides first responders and BVES's internal Damage Assessment Teams (DAT) a tool to quickly document and report problems along its distribution system and facilities. BVES asserts iRestore will meet emergency and remedial response needs at the ground level by allowing public safety partners, utility personnel, and contractors to coordinate and execute emergent corrections and quickly identify at-risk events to bolster near-miss tracking in the future.[139]

[139] BVES's 2022 Update, Revision 1, page 280.

- BVES intends to improve customer support during emergencies by cross-training staff to provide service connection inspections every hour of every day of the week.[140]

4.6.10.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to emergency planning and preparedness.[141]

Critical Issue RN-BVES-22-08: BVES Uses Vague Language to Describe Its Service Restoration Workforce

Energy Safety found that BVES's initial 2022 Update did not provide details or information on hiring, retention, and training practices for its service restoration workforce.

Energy Safety required BVES to:

a) Provide information on, and specific examples of, hiring and retention practices and policies as they relate to BVES's service restoration workforce, including any information on worker titles, qualifications, certification requirements, and current numbers of BVES's service restoration employees.
b) Provide information on its training program for service restoration workforce, including details on when employees are required to complete trainings and what specific training BVES provides.
c) Provide information on its short-term contracting strategy and what this strategy entails.

RN-BVES-22-08: BVES Response Summary

In response to subparts *a*, *b*, and *c*, respectively, BVES provides information on its workforce hiring and retention policies, its service restoration workforce training, and its emergency support contracting. Notably, BVES reports that it fills vacancies for service restoration staff

[140] BVES's 2022 Update, Revision 1, page 276.

[141] BVES's Revision Notice Response, August 29, 2022.

as soon as possible, conducts a yearly exercise to practice service restoration, and maintains several mutual aid contracts.

RN-BVES-22-08: Energy Safety Evaluation

BVES has satisfied each required remedy described in RN-BVES-22-08 and has resolved this critical issue.

4.6.11 Stakeholder Cooperation and Community Engagement

The stakeholder cooperation and community engagement section in the Guidelines[142] 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, agencies outside California, fire suppression agencies, the U.S. Forest Service, and others engaged in vegetation management or fuel reduction.

4.6.11.1 Maturity Assessment

BVES's stakeholder cooperation and community engagement maturity has steadily declined from 2020 to 2022 (see Figure 4.6-13). This is due to a decrease in the maturity level for three capabilities: engagement with communities on utility wildfire mitigation initiatives (capability 49), collaboration with emergency response agencies (capability 51), and collaboration on wildfire mitigation planning with stakeholders (capability 52) (see Figure 4.6-14). Additionally, BVES's maturity level for a fourth capability, engagement with limited English proficiency (LEP) and access and functional needs (AFN) populations (capability 50), has been 0 from 2020 through 2022.

However, BVES's 2022 maturity level in this category is comparable to those of its peers (at the same level as Liberty's and slightly lower than PacifiCorp's) (Figure 4.6-12). BVES projects a substantial increase in this category by 2023 to 3.0, higher than either of its peers' projections.

[142] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 page 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6-12: Cross-Utility Maturity for Stakeholder Cooperation and Community Engagement – SMJUs (2020-2022 Actual, 2023 Estimated)

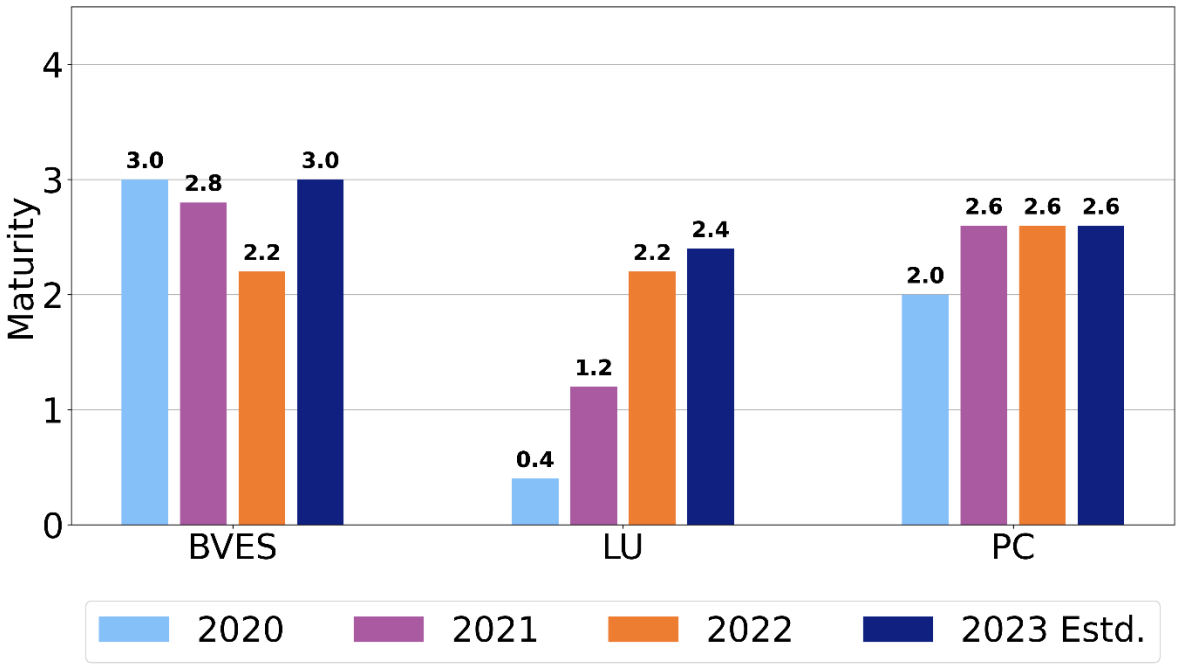
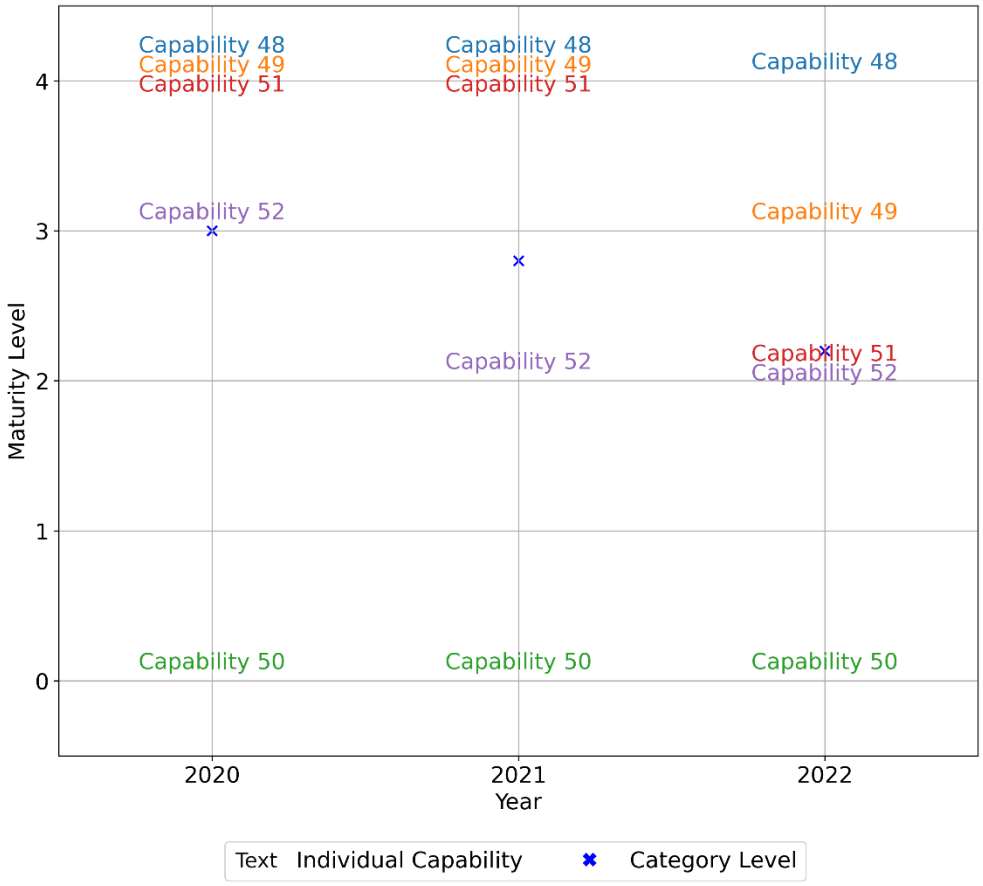


Figure 4.6-13: BVES's Maturity Survey Responses for All Stakeholder Cooperation and Community Engagement Capabilities (2020-2022)



According to its responses to the 2022 Maturity Survey, BVES's maturity did not improve for any question from 2021 to 2022. BVES's maturity is currently limited by the following:

- There are communities in BVES's high fire threat district (HFTD) where meaningful resistance is expected in response to efforts to mitigate fire risk (e.g., vegetation clearance).[143]
- BVES cannot provide a plan to partner with organizations representing LEP and AFN communities.[144] It anticipates being able to provide this plan by 2023.

[143] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.II.b.

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

- BVES cannot outline how community partnerships create pathways for implementing suggested activities to address the needs of these communities.[145] It anticipates being able to provide such an outline by 2023.
- BVES cannot point to clear examples of how community relationships have driven its ability to interact with and prepare LEP and AFN communities for wildfire mitigation activities.[146] BVES anticipates being able to provide clear examples by 2023.
- The cooperative model between BVES and suppression agencies does not include working cooperatively to detect ignitions.[147]
- BVES conducts substantial fuel management along rights-of-way but not throughout its service area.[148]
- BVES shares fuel management plans with other stakeholders. However, it does not work with other stakeholders conducting fuel management concurrently.[149] BVES anticipates working with other stakeholders by 2023.

4.6.11.2 BVES's Progress

BVES has made minimal progress in the WMP cycle thus far; however, BVES commits to the following in 2022:

- BVES intends to implement its key stakeholder web portal.[150]
- BVES intends to conduct community and stakeholder briefings on Public Safety Power Shutoffs (PSPS) and wildfire mitigation prior to the fire season and again in September prior to the Santa Ana wind period. BVES plans to increase the number of stakeholder meetings held to four times per year.[151]
- BVES sends customer engagement surveys to measure awareness of BVES wildfire mitigation, PSPS, and other emergency response efforts. BVES states that its recent

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

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

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

[148] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to J.V.a.

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

[150] BVES's 2022 Update, Revision 1, page 274.

[151] BVES's 2022 Update, Revision 1, page 274.

survey results show some increases and some decreases in public awareness about BVES's programs. BVES is analyzing the results and exchanging information with other utilities to improve awareness.[152] BVES will focus its attention on the quality of messaging to increase awareness.[153]

- In the future, BVES anticipates having routine meetings with Big Bear Fire Department, CAL FIRE, and the U.S. Forest Service (USFS). The meetings will focus on the prioritization of wildfire mitigation initiatives, specifically grid hardening efforts and inspection efforts.[154]

4.6.11.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice on August 29, 2022. This section evaluates that response as it relates to stakeholder cooperation and community engagement.[155]

Critical Issue RN-BVES-22-09: BVES Uses Vague Language to Describe United States Forest Service and Fuel Reduction Cooperation Activities

Energy Safety found that BVES's initial 2022 Update did not provide details or information on what specific strategies it is implementing or what actions it is taking to improve its engagement with the USFS and fuel reduction stakeholders.

Energy Safety required BVES to:

a) Provide information on and specific examples of its "strategies" and "actions" to engage with forest management and fuel reduction stakeholders, including with which entities and stakeholders BVES is currently engaging.
b) Provide information on its utility cooperation strategy and joint stakeholder roadmap, including the progress and current status of this strategy/roadmap, as well as which stakeholders are involved.

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[152] BVES's 2022 Update, Revision 1, pages 274, 286.

[153] BVES's 2022 Update, Revision 1, page 286.

[154] BVES's 2022 Update, Revision 1, page 288.

[155] BVES's Revision Notice Response, August 29, 2022.

RN-BVES-22-09: BVES Response Summary

In response to subpart *a*, BVES provides examples of strategies and actions taken to engage forest management and fuel reduction stakeholders, and a list of its emergency preparedness and response stakeholders.

In response to subpart *b*, BVES provides information on its collaboration with other utilities through the California Utilities Emergency Association, information on the development and implementation of its Emergency Preparedness and Response Plan, and a list of its emergency preparedness and response stakeholders.

RN-BVES-22-09: Energy Safety Evaluation

BVES has satisfied each required remedy described in RN-BVES-22-09 and has resolved this critical issue.

4.6.11.4 Areas for Continued Improvement

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

Improving Stakeholder and Community Engagement

As discussed in the maturity assessment above, BVES does not have a plan to partner with organizations representing LEP and AFN communities. Additionally, BVES does not outline how community partnerships create pathways for implementing suggested activities to address the needs of these communities. According to its responses to the Maturity Survey, BVES anticipates being able to provide this plan and clear examples of plan provisions by 2023. Effectively engaging with its stakeholders and communities, including tribal, LEP, Medical Baseline (MBL), and AFN communities, is vital to wildfire and PSPS consequence risk reduction. BVES must provide a plan for improving the effectiveness of its stakeholder and community engagement efforts.

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

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 and 20-03-004).[156] This section of the Guidelines[157] 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 Senate Bill 533[158] 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 distinct PSPS category does not exist in the 2022 Maturity Survey: PSPS questions are found under capabilities in various maturity categories. The PSPS-related capabilities referenced here are in the following maturity categories: situational awareness, grid operations and protocols, and emergency planning and preparedness.

According to its responses on the 2022 Maturity Survey, BVES started the current WMP cycle at a maturity level comparable to those of its peers in several categories and capabilities related to PSPS. In 2020, BVES assessed itself at a maturity level of 2.2. It reached a slightly higher maturity level of 2.4 in its 2021 assessment and maintained this level in 2022. Overall, BVES has a higher maturity level than Liberty or PacifiCorp (Figure 4.7-1).

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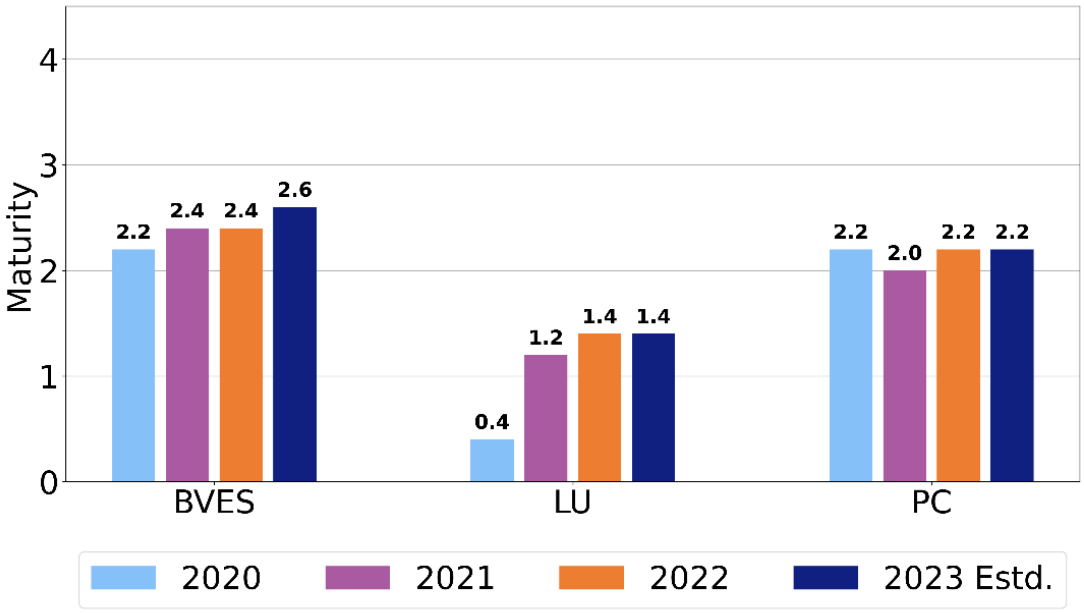
[156] When calculating RSE for PSPS, electrical corporations generally assume 100 percent wildfire risk mitigation and very low implementation costs because societal costs and impact are not included. When calculated this way, PSPS will always rise to the top as a wildfire mitigation tool, but it will 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.

[157] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.8 pages 78-83 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[158] Senate Bill No. 533, Chapter 244, An act to amend Section 8386 of the Public Utilities Code, relating to electricity: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB533 (accessed April 11, 2022).

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



Some areas that may be preventing BVES from maturing further are discussed below.

BVES's maturity level has remained steady in the "estimation of wildfire and PSPS risk-reduction" capability of the risk assessment and mapping category. Its maturity level may be limited by four responses on the Maturity Survey:

- BVES reports its risk reduction impact estimates use an ordinal scale (e.g., 1-5). Higher levels of maturity use an interval (which BVES projects using in 2023) or quantitative confidence interval.[159]
- As in 2021, BVES reports its ignition risk reduction impact assessment tool is not automated. The highest level of maturity is full automation; BVES anticipates achieving partial automation (<50 percent) in 2023.[160]

[159] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.IV.a.

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

- As it did in 2021, BVES reports that the granularity of its ignition risk reduction impact assessment tool is at a regional level. The highest level of maturity is asset based; BVES projects a step forward, to circuit based, for 2023.[161]
- BVES again reports its ignition risk reduction impact assessment tool estimates are assessed with evidence and logical reasoning. The highest level of maturity would be achieved through independent expert assessment supported by historical data of incidents and near misses. BVES aims to attain independent expert assessment for 2023.[162]

BVES's maturity level remains flat in the "grid design for resiliency and minimizing PSPS" capability of the situational awareness category. Its maturity level may be limited by its response to three questions on the Maturity Survey:

- As in 2021, BVES's level of redundancy for its distribution architecture is that it covers at least 70 percent of customers in the HFTD. At least 85 percent of customers in the HFTD would represent the highest level of maturity.[163]
- BVES's sectionalization of its distribution architecture includes switches in HFTD areas to individually isolate circuits so that no more than 1,000 customers sit within one switch. This level was reported in 2021 and is one step below the highest level of maturity, in which no more than 200 customers sit within one switch.[164]
- BVES uses egress points as an input for grid topology design. It does not model traffic and egress when considering topology design. The highest level of maturity in this area includes the following: having egress points available and mapped for customers, with potential traffic simulated and taken into consideration for grid topology design, and having microgrids or other means to reduce consequences for customers at frequent risk of PSPS.[165]

[161] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.IV.c.

[162] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.IV.d.

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

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

[165] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to C.III.d.

In the grid operations and protocols category, BVES's maturity is limited by five answers under three different capabilities:

- In response to a question under the "PSPS operating model and consequence mitigation" capability, BVES specifies that >99 percent of affected customers and >99.9 percent of MBL customers are communicated with regarding forecasted PSPS action in advance of that action. The highest level of maturity would include 100 percent of MBL customers, which BVES projects achieving in 2023.[166]
- In response to a question under the "protocols for PSPS initiation" capability, BVES explains that it considers subject matter expert (SME) opinion when making PSPS decisions. The highest level of maturity would include having a partially automated system that recommends circuits for which PSPS should be activated and is validated by SMEs.[167]
- In response to a question under the "protocols for PSPS re-energization" capability, BVES reports it has a process for accurately inspecting de-energized sections of the grid prior to re-energization. This is consistent with its 2021 answer. BVES could reach the highest level of maturity by including sensors and aerial tools in the process.[168]
- In response to a question under the "protocols for PSPS re-energization" capability, BVES answered that its process for inspecting de-energized sections of the grid prior to re-energization is partially automated (<50 percent). This is consistent with its 2021 response.[169]
- In response to a question under the "protocols for PSPS re-energization" capability, consistent with its response in 2021, BVES states that some probability estimates exist regarding ignitions after PSPS events. The highest level of maturity would be a

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

[167] BVES's 2022 Utility Wildfire Mitigation Maturity Survey, response to F.IV.b.

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

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

quantitative understanding of ignition risk following re-energization, by asset, validated by historical data and near misses.[170]

In the "process for continuous improvement after wildfire and PSPS events" capability of the *emergency planning and preparedness* category, BVES remained at a high level throughout the current WMP cycle, with no survey responses limiting its maturity.

4.7.2 BVES's Progress

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

Outcome Metrics

According to Table 11 of its 2022 Update, which covers recent use of PSPS and other metrics regarding scale, scope, and frequency of PSPS events, BVES did not implement any PSPS from 2018 through 2021 (as shown in Figures 4.7-2, 4.7-3, and 4.7-4 below); however, BVES continues to work on reducing its ignition risk. BVES is evaluating how to reduce the scale, scope, and frequency of PSPS should it be necessary. Overall, for the same period, BVES compares well to Liberty and PacifiCorp in terms of event frequency: Liberty reports one PSPS event and PacifiCorp three.

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

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

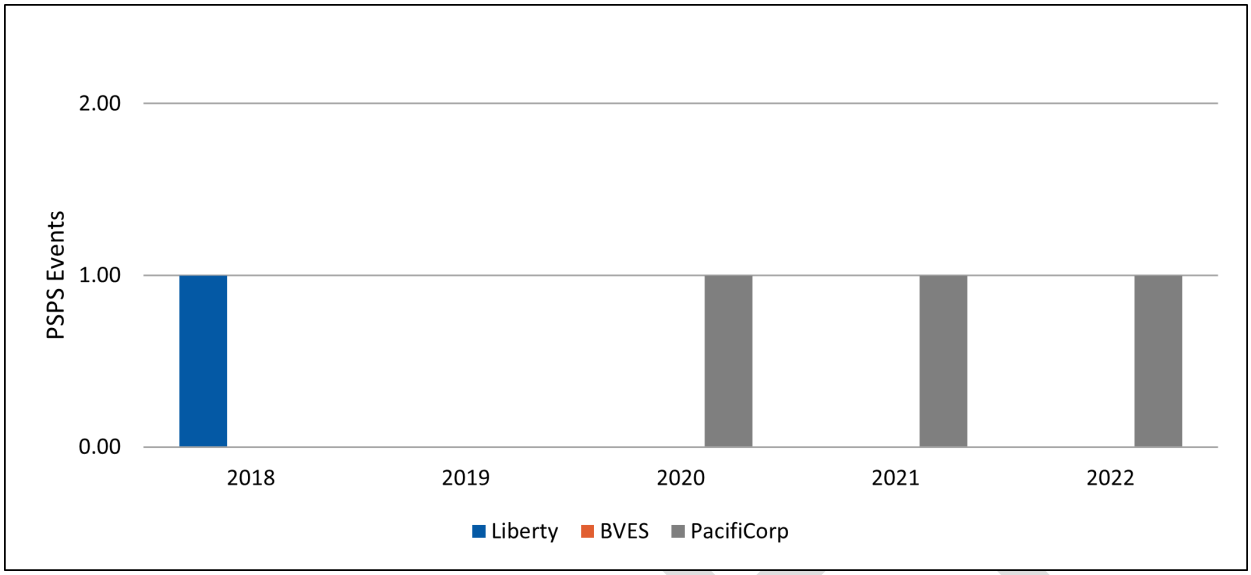


Figure 4.7-3: Recent Use of PSPS Circuits: Scope of PSPS Events (Total) per 1,000 Overhead Circuit Miles – SMJUs (2018-2021 Actual, 2022 Projected)

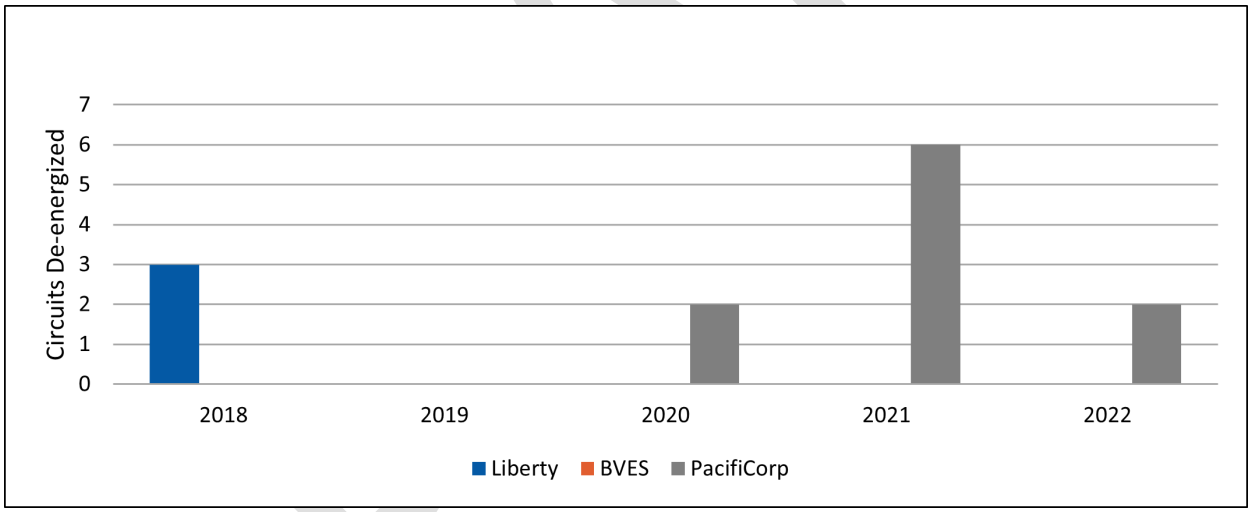
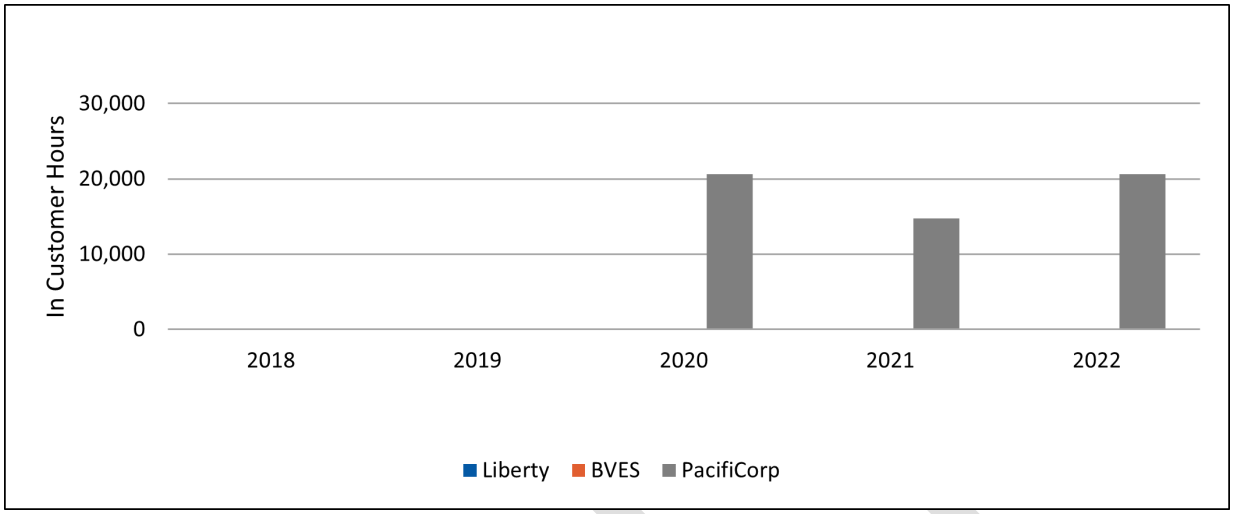


Figure 4.7-4: Recent Use of PSPS, Duration of PSPS Events (Total) – SMJUs (2018-2021 Actual, 2022 Projected)



PSPS Preparedness and Methodology

BVES has no findings from BVES-initiated events to apply to its 2022 Update because BVES has never had to implement PSPS. However, BVES incorporates lessons learned from review of PSPS actions taken by other utilities in California. BVES reports it will re-evaluate its PSPS trigger thresholds as mitigations are implemented and real-time modeling capabilities advance.

BVES has the following near-term plans:

- In 2022, BVES plans to contract for on-demand fire spread predictions and impact analysis. This will include wildfire risk forecasting for customer assets and the service area using daily weather prediction integration. It will also include asset risk analysis using historical weather climatology. Full deployment is anticipated in 2023.
- BVES conducts quarterly engagements with members of the public safety partner network to improve pre- and post-season activities for PSPS awareness. BVES also conducts public outreach and publishes its vision for the necessity of PSPS on its website.
- On April 15, 2022, BVES held a tabletop simulation to run through the process of protocol activation with emergency and fire response personnel. On June 21, 2022, BVES conducted a community awareness workshop to address any pre-season concerns, review its protocols, and review its forecast for proactive de-energization as part of its functional exercise.

- BVES states it is in the process of updating its current PSPS plan and protocols to align with Phase 3 de-energization guidelines issued under D.21-06-034 for CPUC evaluation.

Currently, BVES considers the highest-probability trigger for a PSPS event within its service territory to be loss of SCE's energy imports to BVES due to an SCE-directed PSPS of its supply lines. In its 2022 Update, BVES includes its action plan to address loss of power due to SCE PSPS events. Additionally, BVES has proposed constructing a lithium-ion, utility-grade battery energy storage project. This storage capability, combined with that of the existing Bear Valley Power Plant and potential utility-scale solar,[171] would enable BVES to meet its energy demands for several hours during a potential PSPS event.

Protocols for De-Energization and Re-Energization

BVES describes its de-energization and re-energization processes in Appendix B, "PSPS Plan," of its 2022 Update. BVES notes no changes since the last plan update in February 2021.

BVES plans to reduce the scale, scope, and impact of PSPS through line sectionalization efforts, subject to further enhancement of GIS data architecture over the next year. In addition, BVES's Switch and Field Device Automation Project[172] is anticipated to reduce or mitigate potential PSPS activation as well as limiting the scope and scale of the impact of PSPS on community members. Seasonal operations also play a role in minimizing PSPS potential.[173]

BVES does not have a formal quantitative method to evaluate the potential consequences of PSPS and wildfires. However, through a new service contract established in 2022, BVES

[171] Project planning and evaluation of an energy storage and solar facility within the BVES service territory is in progress. BVES reports this project has been delayed due to siting issues until 2023.

[172] In 2023, BVES intends to implement a new project to install additional switching devices for supply transfer ability to mitigate load loss or PSPS event impact.

[173] The Radford Line, which supplies power during winter high-load periods, is de-energized from April through October. Under the automation project, from April through October, BVES will place certain auto-reclosers in "manual" mode. When an auto-recloser trips open, the impacted circuit will be patrolled prior to re-energization. During reduced load in the non-winter period, BVES will implement reduced settings for select auto-reclosers and other protective devices to enhance fire prevention.

expects it will develop a near-real-time ability to quantify the consequences of wildfires and therefore to compare them to the consequences of PSPS.

Community Engagement

Proactive outreach methods include regular fire prevention and de-energization preparedness messaging through public workshops, newsletters, social media, website posts, printed material, public service announcements, and briefings by BVES.

BVES is working to increase outreach to AFN customers, senior citizen groups, business owners, and public health and healthcare providers. BVES evaluates the anticipated PSPS impact on customers and creates warning notifications via email, phone, an interactive voice response proactive call system, social media, and text messaging. BVES has also established protocols for helping ensure MBL and AFN customers receive prior notices of and support during PSPS events.

BVES also plans to integrate recommendations stemming from its survey outreach conducted in 2020 and 2021. These recommendations include the following:

- Increase messaging around preparation of an emergency kit, irrigation, a readiness plan, and purchase of fire extinguishers, as customers are considerably less likely to have taken these actions than to have engaged in vegetation management.
- Use direct mail, bill inserts, email, and the BVES website as the channels for communications about wildfire preparedness and safety. Consider increasing BVES presence on social media to reach a wider audience.
- Use TV news and social networks to educate consumers about PSPS events. Make a special effort to reach those with medical conditions requiring electricity.

Frequently De-Energized Circuits

BVES has no frequently de-energized circuits to report in its 2022 Update.[174]

4.7.3 Revision Notice

As described in Section 1.3.2, Energy Safety issued BVES a Revision Notice in response to its 2022 Update submitted on May 6, 2022. BVES submitted its response to the Revision Notice

[174] A frequently de-energized circuit is defined as a circuit that has been de-energized pursuant to a de-energization event to mitigate the risk of wildfire three or more times in a calendar year.

on August 29, 2022. This section evaluates that response as it relates to vegetation management and inspections.[175]

Critical Issue RN-BVES-22-10: BVES Does Not Describe How Its PSPS Planning Has Evolved

BVES described its current PSPS outcome metrics and existing protocols in its initial 2022 Update. However, Energy Safety found that BVES did not describe what measures it is taking to continue to improve its PSPS planning. It also did not provide justification for why its current plan will remain adequate without improvement. BVES's 2022 Update describes lessons learned from 2022 PSPS exercises and observations of practices by other utilities that have enacted PSPS events. However, BVES continues to state it "does not anticipate a need to develop an organization-wide plan to reduce the scale, scope, and frequency of PSPS impacts [by the next Annual WMP Update] beyond the recently adopted PSPS Plan and the updates required as part of Phase III. The current protocols outlined in the PSPS Plan are reasonable and suitable for this period."

Energy Safety required BVES to:

a) Provide more information to describe how its planning has evolved, as specified by Section 8.3 of the Guidelines. This should include lessons learned from other utilities and internal exercises, and how BVES used these to update its PSPS plan.
b) File a revised PSPS Plan within 30 days of Energy Safety's Decision on BVES's 2022 Update integrating the requirements of D. 21-06-034.53.

RN-BVES-22-10: BVES Response Summary

In response to subpart *a*, BVES indicates that following its April 15, 2022, exercise, it learned that its PSPS planning must include the following: continued improvement of communication coordinated with external parties, increased exercise complexity, additional background training for certain roles, and more preparedness for in-person and remote work emergencies.

Additionally, BVES held an awareness workshop and functional exercise on June 21, 2022, to engage public safety partners on PSPS activation potential and an overview of the PSPS plan

[175] BVES's Revision Notice Response, August 29, 2022.

and protocols. In its 2022 Update, BVES reports on its coordination with SCE. It also includes an action plan addressing loss of power due to SCE supply line de-energization, which it identifies as its highest-probability trigger for a PSPS. BVES indicates it also learns from PSPS actions taken by other utilities.

In response to subpart *b*, Energy Safety expects BVES will file a revised PSPS plan within 30 days of Energy Safety's Decision on BVES's 2022 Update integrating the requirements of CPUC Decision 21-06-034.[176]

RN-BVES-22-10: Energy Safety Evaluation

In response to the RN-BVES-22-10, BVES provides the lessons learned following the exercises it conducted in 2022. It also reports it is working to update the next version of its protocols to align with Phase 3 PSPS guidelines issued in June 2021 by the CPUC.

However, BVES's revised 2022 Update still does not fully indicate that it intends to evolve its planning beyond 2022. Rather, it reiterates the following language from the initial 2022 Update: "BVES does not anticipate a need to develop an organization-wide plan to reduce the scale, scope, and frequency of PSPS impacts by [the next Annual WMP Update] beyond the recently adopted PSPS Plan and the updates required as part of Phase 3."[177]

BVES has de-escalated the critical issue described in RN-BVES-22-10. However, this remains an area for continued improvement.

Describe How PSPS Planning Is Evolving

While BVES has never implemented a PSPS event and has continued system hardening that reduces the likelihood of future PSPS, BVES must conduct strategic planning to anticipate how the program may change over the coming 1-, 3-, and 10-year periods.

In its 2023 WMP, BVES must continue to apply up-to-date capabilities, protocols, and lessons learned from exercises and other utilities and incorporate them into an annually updated PSPS plan. Lessons learned from other California utilities can inform action. However, the

[176] Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions from June 29, 2021 (accessed Oct. 26, 2022): https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-and-enforcement-division/documents/decision-phase-3-gl.pdf

[177] BVES's 2022 Update Revised, page 314.

specific circumstances of BVES's service territory and operations warrant deeper long-term analysis of PSPS potential and impact mitigation.

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

4.7.4 Areas for Continued Improvement

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

Commit to Short-Term PSPS Reduction Targets

BVES'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. In its 2023 WMP, BVES must provide quantifiable risk reduction projections of potential need for and potential frequency, scope, and duration of PSPS events during the plan term, including timelines for achieving these reduction projections. Energy Safety expects that BVES will be able to more fully quantify this information as it deploys its risk consequence modeling capability in 2023. As described in the 2022 Update, BVES expects to provide real-time situational awareness through on-demand fire spread predictions and impact analysis and through wildfire risk forecasting on its assets.[178]

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

[178] BVES's 2022 Update Revised, page 290.

5. Next Steps

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

5.1 Change Orders

If BVES seeks to modify (reduce, increase, or end) WMP mitigation measures in response to data and results on electrical corporation ignition risk reduction impacts, BVES must submit a Change Order Request. For information and requirements regarding the change order process, refer to the 2022 Change Order Guidelines.[179]

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.[180] 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.

[179] 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.

[180] Required by Public Utilities Code § 8386.5.

7. List of BVES'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 BVES's areas for continued improvement follows.

- **BVES-22-01. Collaboration and Research in Best Practices in Relation to Climate Change Impacts and Wildfire Risk and Consequence Modeling.**
    - Description: While BVES includes some climate projections within its modeling, BVES 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 from 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 of a working group. Energy Safety will provide additional details on the specifics of this scoping meeting in due course.
    - Discussed in Decision Section 4.6.2, "Risk Assessment and Mapping."

- **BVES-22-02. Inclusion of Community Vulnerability in Consequence Modeling.**
    - Description: BVES 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 from 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 4.6.2, "Risk Assessment and Mapping."

- **BVES-22-03. Wildfire Consequence Modeling Improvements.**
    - Description: BVES'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 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. BVES must leverage these findings and implement the measures identified by the large IOUs into its consequence modeling, where appropriate. In its 2023 WMP, BVES must explain which measures it selected for implementation and provide a report on its progress.
    - Discussed in Section 4.6.2, "Risk Assessment and Mapping."

- **BVES-22-04. Integration of Consequence into Risk Assessment.**
    - Description: BVES has not yet integrated consequence modeling into its Fire Safety Circuit Matrix.

- Required Progress: In its 2023 WMP, BVES must:
  a) Provide details on its integration of consequence into its modeling efforts. If BVES makes limited progress, it must include justification as well as an estimated timeline for completion.
  b) Explain how integration of consequence has shifted its understanding of risk and subsequent prioritization of projects.
- Discussed in Decision Section 4.6.2, "Risk Assessment and Mapping."

- **BVES-22-05. Prioritization Based on Risk Analysis.**
  - Description: In Table 5.3-1, BVES only calculated the cumulative top risk coverage estimates since BVES's service territory is only within HFTD Tiers.
  - Required Progress: In its 2023 WMP, BVES must provide an update on its progress using risk model output to inform its initiative plans based on highest-risk areas, including determination of the riskiest areas, for all initiatives.
  - Discussed in Decision Section 4.6.2, "Risk Assessment and Mapping."

- **BVES-22-06. Fire Potential Index.**
  - Description: BVES does not use a Fire Potential Index (FPI) to forecast its fire potential, instead using the National Fire Danger Rating System (NFDRS).
  - Required Progress: In its 2023 WMP, BVES must describe how it has explored and/or will explore the development and use of an FPI in its service territory to forecast fire potential. If BVES determines there is no value in developing its own FPI and believes the NFDRS fire potential has sufficient granularity, it must describe the analysis that was conducted to make that determination.
  - Discussed in Decision Section 4.6.3, "Situational Awareness and Forecasting."

- **BVES-22-07. Integration of SCADA with Weather Station Network.**

- Description: BVES has not integrated its weather station network into SCADA.
- Required Progress: In its 2023 WMP, BVES must commit to a timeline for deciding whether or not it plans to integrate its weather stations into SCADA. If BVES determines to integrate its weather stations, it must provide a provide a timeline for development and implementation. If it does not plan to integrate its weather stations into SCADA, BVES must describe its evaluation process, including considerations and outcomes that led to the decision.
- Discussed in Decision Section 4.6.3, "Situational Awareness and Forecasting."

- **BVES-22-08. Apply Joint Lessons Learned Concerning Covered Conductor.**
  - Description: BVES has not yet provided goals or timelines for implementing lessons learned from the covered conductor effectiveness joint study.
  - Required Progress: In its 2023 WMP, BVES must:
    a) Provide a list of goals with planned dates of implementation for any lessons learned from the covered conductor effectiveness joint study.
    b) 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 4.6.4, "Grid Design and System Hardening."

- **BVES-22-09. Determine Best Practices for Covered Conductor Inspection and Maintenance.**
    - Description: BVES 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 4.6.4, "Grid Design and System Hardening."

- **BVES-22-10. Failure to Demonstrate Installation of Covered Conductor in Highest-Risk Areas.**
    - Description: BVES continues to tie identification of highest-risk areas to HFTD tier designations and does not provide direct correlations of highest-risk areas with covered conductor project location selection.
    - Required Progress: In its 2023 WMP, BVES must:
        a) Demonstrate how BVES's risk modeling informs its prioritization of projects based on sequencing of risk ranking relating to ignition and consequence risk.
        b) Provide a ranked list of BVES's circuit segments based on risk analysis performed.

c) Provide BVES's analysis on alternative initiatives compared to covered conductor, including effectiveness of risk reduction for BVES's covered conductor program scope.

- Discussed in Decision Section 4.6.4, "Grid Design and System Hardening."

- **BVES-22-11. Pole Replacements Aggregated with Covered Conductor.**
  - Description: BVES's pole replacement program as it relates to wildfire risk is integrated into its covered conductor program and does not describe how BVES identifies and prioritizes pole replacements outside of covered conductor installation.
  - Required Progress: In its 2023 WMP, BVES must:
    a) Disaggregate its pole replacement program to include targeted replacements to address known wildfire risk, including egress/ingress issues; OR
    b) Demonstrate that complete aggregation of its covered conductor and pole replacement programs provides the most cost/benefit efficiency.
  - Discussed in Decision Section 4.6.4, "Grid Design and System Hardening."

- **BVES-22-12. Exploration of New Technologies.**
  - Description: BVES's WMP lacks discussion of exploration, piloting, and monitoring of new technologies, such as DFA, EFD, and REFCL.
  - Required Progress: In its 2023 WMP, BVES must:
    a) Explain BVES's process for monitoring pilot programs being performed by IOUs, including BVES's plan and criteria on how and when to decide which technologies to select.
    b) Provide an update on BVES's exploration of technologies being explored by IOUs, including DFA, EFD, and REFCL. This should detail why and how BVES is moving forward with any such technologies.
  - Discussed in Decision Section 4.6.4, "Grid Design and System Hardening."

- **BVES-22-13. Demonstration of QA/QC Progress for Asset Inspections.**
  - Description: BVES does not provide adequate details demonstrating use of a formal QA/QC program for its asset inspections, including documentation of its processes and results.
  - Required Progress: In its 2023 WMP, BVES must:
    a) Describe the processes for its QA/QC of asset inspections, including supporting documentation of procedures.
    b) Provide the results of the QA/QC of its asset inspections performed in 2022.
    c) Provide quantitative targets for BVES's QA/QC of asset inspections (such as pass rates per quarter).
    d) Demonstrate how BVES documents and performs corrective actions based on QA/QC results and associated programmatic lessons learned.
  - Discussed in Decision Section 4.6.5, "Asset Management and Inspections."

- **BVES-22-14. Decline in Pole Loading Assessments.**
  - Description: BVES is closing out its pole loading assessment program in 2023, despite high failure rates during the assessments completed in 2020 and 2021.
  - Required Progress: In its 2023 WMP, BVES must:
    a) Provide justification for why BVES is planning to close out its pole loading assessment program in 2023, including supporting data.
    b) Describe the results of the pole loading assessments completed from 2020 to 2022, including analysis on trends for number and types of failures found.
  - Discussed in Decision Section 4.6.5, "Asset Management and Inspections."

- **BVES-22-15. Effectiveness of Various Asset Inspection Initiatives.**

- Description: BVES is conducting multiple types of additional inspections but has not provided data demonstrating justification and effectiveness of these initiatives.
- Required Progress: In its 2023 WMP, BVES must:
  a) Include a list of the data being tracked to measure effectiveness across asset inspection initiatives (third-party ground patrols, light detection and ranging (LiDAR), unmanned aerial vehicle (UAV) imagery, UAV thermography, etc.).
  b) Describe BVES's findings based on the data provided in (a), including lessons learned on the scale and scope of these programs moving forward.
  c) Provide any best practices and lessons learned gathered from other utilities regarding asset inspections that BVES has implemented.
- Discussed in Decision Section 4.6.5, "Asset Management and Inspections."

- **BVES-22-16. Vegetation Management Quality Control Personnel Qualifications.**
  - Description: BVES staff who perform vegetation management QC checks have limited direct experience in arboriculture or forestry, other than performing BVES's QC checks.
  - Required Progress: BVES must:
    a) Consider alternative staffing for its vegetation management QC checks, including considering employing or contracting with certified arborists or registered professional foresters to perform these checks.
    b) In its 2023 WMP, report on how it considered alternative staffing for vegetation management QC checks and any resulting action it has taken or will take.
  - Discussed in Decision Section 4.6.6, "Vegetation Management and Inspections."

- **BVES-22-17. 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, BVES 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. BVES 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 4.6.6, "Vegetation Management and Inspections."

- **BVES-22-18. Updates on Protective Device Settings.**
    - Description: BVES does not currently implement changes to protective device settings, such as fast-trip or fast-curve settings.
    - Required Progress: In its 2023 WMP, BVES must:
        a) Include its timeline for exploration of sensitivity changes to protective device settings.
        b) Provide an update on its progress towards exploring sensitivity changes to protective device settings, including findings from coordination studies and details on any changes made to settings, if applicable.
    - Discussed in Decision Section 4.6.7, "Grid Operations and Operating Protocols, Including PSPS."

- **BVES-22-19. Reporting of Data Management Systems.**

- Description: BVES has not fully described its data management systems and planned improvements in accordance with the WMP Guidelines.
- Required Progress: In its 2023 WMP, BVES must provide detailed descriptions of its existing data systems, integration, and planned upgrades, in the following sections:
  - Section 8.1.5,[181] "Asset Management and Inspection Enterprise System"
  - Section 8.2.4, "Vegetation Management Enterprise System"
  - Section 8.3.2, "Environmental Monitoring Systems"
  - Section 8.3.3.5, "Grid Monitoring Enterprise System"
  - Section 8.3.4.5, "Ignition Detection Enterprise System"
  - Section 8.3.5.5, "Weather Forecasting Enterprise System"

  In general, the 2023-2025 WMP Technical Guidelines[182] require the electrical corporations to describe the parameters of each enterprise system for data management, including inputs, data storage, integration with other systems, and any planned updates. Each section above has slightly different requirements, tailored to the system being discussed. Considering the identified need for improvement in data governance reporting, BVES must avoid providing only general information and describe each system in detail.
- Discussed in Decision Section 4.6.8, "Data Governance."

- **BVES-22-20. Updating Decision-Making Process.**
  - Description: BVES's current decision-making process for initiative selection is linear and does not adequately demonstrate where and how BVES considers risk and risk-spend efficiencies (RSEs) in its project selection.

[181] These section numbers are provisional and are subject to change pending the finalization of the Draft 2023-2025 Wildfire Mitigation Plan Guidelines (accessed Oct. 26, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53032&shareable=true.

[182] The 2023-2025 WMP Technical Guidelines are currently in draft as of the publishing of this draft Decsion.

- Required progress: In its 2023 WMP, BVES must:
    a) Provide a more dynamic decision-making flow chart that considers "if-then" scenarios and more accurately demonstrates considerations across different initiatives, as well as lessons learned.
    b) Provide more details on how risk reductions and RSEs are weighted within the decision-making process, including details on how both are considered for actual project selection.
- Discussed in Decision Section 4.6.9, "Resource Allocation Methodology."

- **BVES-22-21. Improving Stakeholder and Community Engagement.**
    - Description: BVES lacks a plan for improving the effectiveness of its stakeholder and community engagement efforts.
    - Required Progress: In its 2023 WMP, BVES must provide a plan that includes, but need not be limited to, the following components:
        a) Strategies for developing partnerships with organizations representing Native American, limited English proficiency, MBL, and AFN communities.
        b) Actions planned to improve community-level awareness of BVES wildfire mitigation and PSPS strategies.
        c) The most recent community awareness survey results, target benchmarks for improving the level of community awareness, and a timeline for reaching those benchmarks.
    - Discussed in Decision Section 4.6.11, "Stakeholder Cooperation and Community Engagement."

- **BVES-22-22. Describe How PSPS Planning Is Evolving.**
    - Description: BVES's 2022 Update does not fully describe how it will evolve its PSPS planning beyond 2022.
    - Required Progress: In its 2023 WMP, BVES must continue to apply up-to-date capabilities, protocols, and lessons learned from exercises and other utilities and incorporate them into an annually updated PSPS plan.

- Discussed in Decision Section 4.7, "Public Safety Power Shutoff (PSPS), Including Directional Vision for PSPS."

- **BVES-22-23. Commit to Short-Term PSPS Reduction Targets.**
  - Description: BVES'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, BVES must provide quantifiable risk reduction projections of potential need for and potential frequency, scope, and duration of PSPS events during the plan term, including timelines for achieving these reduction projections. Energy Safety expects that BVES will be able to more fully quantify this information as it deploys its risk consequence modeling capability in 2023.
  - Discussed in Decision Section 4.7, "Public Safety Power Shutoff (PSPS), Including Directional Vision for PSPS."

8. Conclusion

The BVES 2022 Update is approved.

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electrical corporations, including BVES, must continue to make progress toward reducing utility-related ignition risk. Energy Safety expects BVES 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. BVES 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.

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Office of Energy Infrastructure Safety

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APPENDICES

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. BVES 2021 Key Issues Status

Issue #	Title	Status
BVES-21-01	Inadequate disaggregation of expenditure	BVES sufficiently addressed the required remedy.
BVES-21-02	Program targets are unmeasurable and difficult to track	BVES sufficiently addressed the required remedy.
BVES-21-03	Vegetation inspection roles lack minimum forestry and arboriculture qualifications	BVES sufficiently addressed the required remedy.
BVES-21-04	No climate driven risk mapping	BVES did not sufficiently address the required remedy. For more information on how the utility must improve, see areas for continued improvement, Section 4.6.2 of this Decision.
BVES-21-05	Lack of consistency in approach to wildfire risk modeling across utilities	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
BVES-21-06	Disparities between BVES's situational awareness and Forecasting capabilities and maturity model reporting	BVES sufficiently addressed the required remedy.

Issue #	Title	Status
BVES-21-07	Lack of detail on prioritization of initiatives based on determined risk	BVES 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.
BVES-21-08	Limited evidence to support the effectiveness of covered conductor	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
BVES-21-09	Lack of asset inspection quality assurance and quality control (QA/QC) program	BVES did not sufficiently address the required remedy. For more information on how the utility must improve, see areas for continued improvement, Section 4.6.5 of this Decision.
BVES-21-10	Limited discussion of community outreach	BVES sufficiently addressed the required remedy.
BVES-21-11	Inadequate discussion of QA/QC of VM inspections	BVES sufficiently addressed the required remedy.
BVES-21-12	Spatial data issues	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.
BVES-21-13	Unexplained changes to RSE estimates for wildfire and PSPS mitigation initiatives	Sufficiently addressed thus far; Energy Safety will continue to monitor progress.

Issue #	Title	Status
BVES-21-14	Limited discussion on reduction of scale, scope, and frequency of PSPS	BVES sufficiently addressed the required remedy. For a related area for continued improvement see Section 4.7 of this Decision.

Appendix B. Revision Notices Issued to BVES in 2022

Public Utilities Code section 8386.3(a) states, "Before approval, the division may require modifications of the plan." Energy Safety effectuates this provision through issuance of a Revision Notice.

Table B-1 lists critical issues that Energy Safety identified in BVES's 2022 Update, the corresponding Revision Notice, and the status of each area.

Table B-1: 2022 BVES Revision Notice Critical Issues

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
RN-BVES-22-01	BVES has not responded to "Additional Issues"	BVES was required to respond to each "additional issue" identified in Energy Safety's 2021 Final Action Statement by detailing actions BVES has or will take to address these issues, and BVES was required to report on progress made since the publication of the Final Action Statement on BVES's 2021 Update. If BVES did address certain additional issues in its initial 2022 WMP submission, BVES was required to direct Energy Safety to the location of the information. If BVES has not or is not intending on taking action(s)	BVES has resolved the critical issue; BVES has satisfied each required remedy.

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		to make progress on certain additional issues, BVES was required to explain why for each applicable issue. Energy Safety provided a list of the "additional issues" and associated remedies BVES was required to respond to in Appendix A of the Revision Notice; each issue was assigned a tracking code.	
RN-BVES-22-02	BVES has not provided adequate detail on mitigation initiative progress	BVES was required to clearly and fully describe its wildfire mitigation initiatives in accordance with the requirements set forth in the 2022 WMP Guidelines throughout Section 7.3 of its WMP so that Energy Safety can evaluate BVES's operations and progress towards reducing wildfire risk in service territory.	BVES has resolved the critical issue; BVES has satisfied each required remedy.
RN-BVES-22-03	BVES has not sufficiently connected its risk assessment with its mitigation initiative prioritization	BVES was required to: a) Integrate its response to BVES-21-07, found in Appendix A, into WMP Section 7.3.3 "Grid Design and System Hardening."	BVES has de-escalated the critical issue; BVES must demonstrate continued progress as described in Section 7 (BVES-22-##).

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		b) Demonstrate that its risk assessments directly inform the prioritization of initiatives, instead of broadly stating that risk is a consideration or defaulting prioritization to only HTFD Tier 2 and Tier 3 designations. c) Demonstrate that its future planned grid hardening mitigation initiatives, particularly covered conductor, will address the highest risk circuits as self-assessed and identified by BVES and its relevant contractor(s). d) Describe how it selected the location of its covered conductor pilot program.	
RN-BVES-22-04	BVES has not provided sufficient information on quality assurance & quality control (QA/QC)	BVES was required to: a) Provide details on progress made developing and implementing its formal QA/QC process, including implementation timing.	BVES has de-escalated the critical issue; BVES must demonstrate continued progress as described in Section 7 (BVES-22-##).

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		b) Provide results of the "interim" QA/QC processes BVES has used for assets, including details on what type of QA/QC was performed, the percentage of asset inspections on which BVES completed QA/QC, and the results of the QA/QC performed since the 2021 Update.	
RN-BVES-22-05	BVES claims aspects of its vegetation management program are "enhanced" despite meeting only minimum regulatory requirements	BVES was required to: a) Clearly and fully articulate its detailed inspections, fuels mitigation, patrol inspections, and hazardous tree removal practices. b) Clarify how these mitigation initiatives are "enhanced," exceeding the regulatory requirements it cited or alluded to throughout Section 7.3.5 "Vegetation Management and Inspections" of its 2022 Update. If these mitigation initiatives are not	BVES has resolved the critical issue; BVES has satisfied each required remedy.

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		"enhanced," BVES was required to dispense with such language.	
RN-BVES-22-06	BVES has misinterpreted data management initiatives	BVES was required to describe how it currently manages all data relevant to wildfire mitigation and any planned or ongoing improvements to these systems, in accordance with the 2022 WMP Guidelines. BVES should not limit the discussion to the provision of quarterly spatial data required by Energy Safety.	BVES has de-escalated the critical issue; BVES must demonstrate continued progress as described in Section 7 (BVES-22-##).
RN-BVES-22-07	BVES does not describe how quantifiable risk reductions and RSE estimates inform initiative selection	BVES was required to provide: a) An overview of its decision-making framework that includes the rankings of relative decision-making factors (e.g., planning and execution lead times, resource constraints, etc.) and pinpoints where quantifiable risk reductions and RSE estimates are considered in the initiative selection process.	BVES has de-escalated the critical issue; BVES must demonstrate continued progress as described in Section 7 (BVES-22-##).

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		b) A cascading, dynamic "if-then" style flow chart to effectively demonstrate this prioritization process.	
RN-BVES-22-08	BVES uses vague language to describe its service restoration workforce	BVES was required to: a) Provide information on, and specific examples of, hiring and retention practices and policies as they relate to BVES's service restoration workforce, including any information on worker titles, qualifications, certification requirements, and current numbers of BVES's service restoration employees. b) Provide information on its training program for service restoration workforce, including details on when employees are required to complete trainings and what specific training BVES provides. c) Provide information on its short-term contracting strategy and what this strategy entails.	BVES has resolved the critical issue; BVES has satisfied each required remedy.

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
RN-BVES-22-09	BVES uses vague language to describe United States Forest Service and fuel reduction cooperation activities	BVES was required to: a) Provide information on and specific examples of its "strategies" and "actions" to engage with forest management and fuel reduction stakeholders, including with which entities and stakeholders BVES is currently engaging. b) Provide information on its utility cooperation strategy and joint stakeholder roadmap, including the progress and current status of this strategy/roadmap, as well as which stakeholders are involved.	BVES has resolved the critical issue; BVES has satisfied each required remedy.
RN-BVES-22-10	BVES does not describe how its PSPS planning has evolved	BVES was required to: a) Provide more information to describe how its planning has evolved, as specified by Section 8.3 of the Guidelines. This should include lessons learned from other utilities	BVES has de-escalated the critical issue; BVES must demonstrate continued progress as described in Section 7 (BVES-22-##).

Critical Issue #	Critical Issue Title	Required Remedy	Energy Safety Evaluation
		and internal exercises, and how those were used to update its PSPS Plan. b) File a revised PSPS Plan within 30 days of Energy Safety's Decision on BVES's 2022 Update integrating the requirements of D.21-06-034.53.	

Appendix C. Energy Safety Data Request Responses

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

Regarding: Weather Stations

Data Request: OEIS-BVES-22-003 (Question 2)

Request date: June 3, 2022

Request:

a. In Section 7.3.2.1 (pg. 141), BVES describes integrating weather station outputs with SCADA to be able to display and set alarms and notifications based on weather conditions.
   i. When does BVES expect to integrate weather stations with SCADA?

Response date: June 8, 2022

Response: No date has been set yet as there are two issues that Bear Valley is considering. They are:

- Bear Valley recently (December 2021) completed installing its Fiber Network in its service area and is integrating substations and key switches into SCADA as a priority.
- Weather station information is currently captured via a cellular network and monitored continuously with alarm capability through the weather stations (Orion) network. This system is providing excellent information real-time displays and history. Please refer to the sample screen display below. Therefore, Bear Valley is still evaluating whether or not to integrate the weather stations into SCADA and is considering the following factors (1) will there be an improvement in weather station information displays in SCADA over the current setup and (2) will the bandwidth taken up by shifting weather stations to the SCADA worth the gain.

Regarding: Qualifications of Vegetation Management Quality Control Personnel

Data Request: OEIS-BVES-22-003 (Question 7)

Request date: June 3, 2022

Request:

a. In Appendix E "BVES Vegetation management and Vegetation QA/QC/ Programs" Table 5-2, BVES lists the designated staff that are assigned vegetation management quality control (QC) checks. Describe and/or list the qualifications (e.g., education, training, experience, certifications, licenses) for each designated staff that qualifies them to perform vegetation management QC checks.

Response date: June 8, 2022

Response: Qualifications (e.g., education, training, experience, certifications, licenses) for each designated staff that qualifies them to perform vegetation management QC checks are as follows.

Contracted Personnel:

- Shane Smith (Davey Resource Group) serves as the main contractor managing BVES's account and holds more than four years of experience as a Utility Forester with three years attributed to certifications through the International Society of Arboriculture Certified Arborist. Mr. Smith also holds a Tree Risk Assessment Qualification.
- Additional foreman (Mowbray Tree Service) account for:
  - 29 ISA Certified Arborists
  - One Registered Professional Forester
  - Two biologists supporting environmental compliance and commitments

BVES Personnel:

- Paul Marconi (President)
  - 38 years of engineering and technical experience with electrical power systems including field inspections of equipment
  - Managed the vegetation management program for four years and provided oversight of the vegetation management program for an additional three years
  - Has conducted vegetation management clearance inspections for seven years
- Jeff Barber (Operations Supervisor)
  - Spent over 42 years in the utility industry
  - Journeyman Lineman-Trimmed and maintained proper clearances

  - Power Troubleman–Emergency trimming and identification for planned vegetation crew trimming
  - Line Crew Foreman –Direct crews during emergency power restoration on proper vegetation clearing
  - Operations Manager –Developed and directed the day to day vegetation trimming program through operations staff
  - Assistant General Manager of Operations –Oversee the entire vegetation management program for Pasadena Water and Power Municipal Utility (PWP) – under my program implementation and oversight, for 17 years PWP received the highest award given to a utility vegetation program; the Tree Line Utility USA award given by the National Arbor Day Foundation
- Jon Pecchia (Utility Manager)
  - BS and PE Chemical Engineer
  - Over a year of conducting quality check (QC) tree trims
  - 10 years as environmental consultant conducting site inspections and project management involving a variety of environmental and safety issues
  - 13 years of experience in general management of industrial equipment used in hazardous areas
- Tom Chou (Utility Engineer and Wildfire Mitigation Supervisor)
  - 13 years as an Electrical Engineer
  - Eight Years with BVES as substation designer, transmission/distribution designer and compliance engineer
  - Over a year of conducting QC experience for vegetation management Jared Hennen (Wildfire Mitigation and Reliability Engineer)
  - 10+ years as a wildland firefighter, three of which were utility firefighter contracted by San Diego Gas & Electric and Pacific Gas & Electric
  - Almost two year of conducting tree trim QC for BVES
  - Manages the vegetation management programs at BVES
- Rick Villines (Field Inspector)
  - 22-year Journeyman lineman
  - Has been conducting tree trimming QC for 4 months

Regarding: Grid Operations Maturity Survey

Data Request: OEIS-BVES-22-005 (Question 3)

Request date: October 11, 2022

Request:

a. In BVES's responses to the Utility Wildfire Mitigation Maturity Survey, for question F.II.a, BVES responds that it does not have a clearly explained process for determining whether to operate the grid beyond current or voltage designs. However, last year, BVES responded that it did have such a process. Why has BVES's response changed?

Response date: October 14, 2022

Response: BVES changed its response to F.II.a because its policy is not to intentionally operate the grid beyond current or voltage designs; therefore, such a process is unnecessary.

Appendix D. Comments on the Draft Decision

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

Appendix E. 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

	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 outside California; coordinating fuel management with the U.S Forest Service

Appendix F. 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 current fire risk and to create a forecast

Category B. Situational Awareness and Forecasting Initiative Activity	Definition
	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 electrical circuits from damage caused by overload of electricity or short circuit.

Category C. Grid Design and System Hardening Initiative Activity	Definition
Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is

Category C. Grid Design and System Hardening Initiative Activity	Definition
	defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95.
Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole

Category C. Grid Design and System Hardening Initiative Activity	Definition
	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 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

Category C. Grid Design and System Hardening Initiative Activity	Definition
	operation of local generation equipment (at the community, household, or other level).
Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.
Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.
Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV).
Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located

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

Category D. Asset Management and Inspections Initiative Activity	Definition
	and the condition of each rated and recorded.
Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots," or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
Infrared inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots," or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.
LiDAR inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in

Category D. Asset Management and Inspections Initiative Activity	Definition
	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, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
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

Category D. Asset Management and Inspections Initiative Activity	Definition
	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 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.
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

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	produce vegetation material such as branch trimmings and felled trees.
Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
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

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Quality assurance / quality control of vegetation inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility's wildfire mitigation plan, in addition to rules and regulations for safety.

Category E. Vegetation Management and Inspections Initiative Activity	Definition
Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement.
Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.
Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.
Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.

Category E. Vegetation Management and Inspections Initiative Activity	Definition
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.

Category F. Grid Operations and Operating Protocols Initiative Activity	Definition
Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.
PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.
Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.

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

Category G. Data Governance Initiative Activity	Definition
	collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.
Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.
Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.

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-

Category H. Resource Allocation Methodology Initiative Activity	Definition
	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

Category I. Emergency Planning and Preparedness Initiative Activity	Definition
	(such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.
Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.
Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.

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

Category J. Stakeholder Cooperation and Community Engagement Initiative Activity	Definition
	of access and functional needs populations and limited English proficiency populations in particular.
Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.
Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.
Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).

Appendix G. 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

Term	Definition
EPIC	Electric Program Investment Charge
EPUC	Energy Producers and Users Coalition
EVM	Enhanced vegetation management
FERC	Federal Energy Regulatory Commission
FGDC	Federal Geographic Data Committee
FIRIS	Fire Integrated Real Time Intelligence System
FMEA	Failure Modes and Effects Analysis
FPI	Fire Potential Index
GIS	Geographic information systems
GO	General order
GPI	Green Power Institute
GRC	General rate case
HFRA	High fire risk area
HFTD	High fire threat district
HWT or Horizon West	Horizon West Transmission
I.	Investigation

Term	Definition
ICS	Incident command system or structure
IOU	Investor-owned utility
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

Term	Definition
MMAA	Mountain Mutual Aid Association
NERC	North American Electric Reliability Corporation
NFDRS	National Fire Danger Rating System
OCFA	Orange County Fire Authority
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

Term	Definition
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
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

Term	Definition
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
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